EDITED BY

RICHARD M.
RYAN

# The Oxford Handbook *of* SELF-DETERMINATION THEORY

The Oxford Handbook of
Self-Determination Theory

# The Oxford Handbook of Self-Determination Theory

*Edited by*

Richard M. Ryan

**OXFORD**
UNIVERSITY PRESS

# CONTENTS

## Special Topics and Models

## Development

## Education and Learning

## Physical Needs, Activity, and Sport

## The Self in Society

## Epilogue

# FOREWORD: SELF-DETERMINATION THEORY'S FORWARD MOTION

Shannon L. Cerasoli

The Center for Self-Determination Theory (CSDT) is proud to have been a part of producing this authoritative volume documenting the current state of research using self-determination theory (SDT). CSDT is a nonprofit organization created to sponsor and advance SDT's scientific research as well as help people learn more about intrinsic motivation, basic psychological needs, and human autonomy and apply these concepts in their professional and daily lives. Now in our sixth year, CSDT's work engages people worldwide through our online library of articles and metrics, interviews, videos, and posts by SDT experts. In addition, we host a variety of events, including SDT's international conferences. CSDT's commitment and the purpose of this present handbook are one and the same: disseminating the latest scholarship and creating the best possible conditions for high-quality motivation, engagement, and wellness.

The release of *The Oxford Handbook of Self-Determination Theory* will mark 20 years since the first handbook of SDT research was published, derived from presentations at the first International Conference on Self-Determination Theory. At that inaugural event, a group of approximately 75 researchers and students from four countries gathered in a small conference room at the University of Rochester, sharing the latest evidence, thoughts, and ideas and asking each other to think big: What could SDT contribute to human flourishing? Although the answers to that question may not have been fully apparent at the time, in the more than 20 years since then SDT has had enormous impact in many different areas of basic research and real-world practice, showing its *forward motion* in promoting human flourishing that continues today.

To put this growth into perspective: in 1999, there were fewer than 800 published papers on self-determination theory, according to Google Scholar; today the collection of publications on SDT is roughly 100,000—that is an increase of over 12,000%. And the number of citations for these publications is beyond remarkable, at over 1.5 million (per Publish or Perish data pulled from Google Scholar; see Figure 0.1).
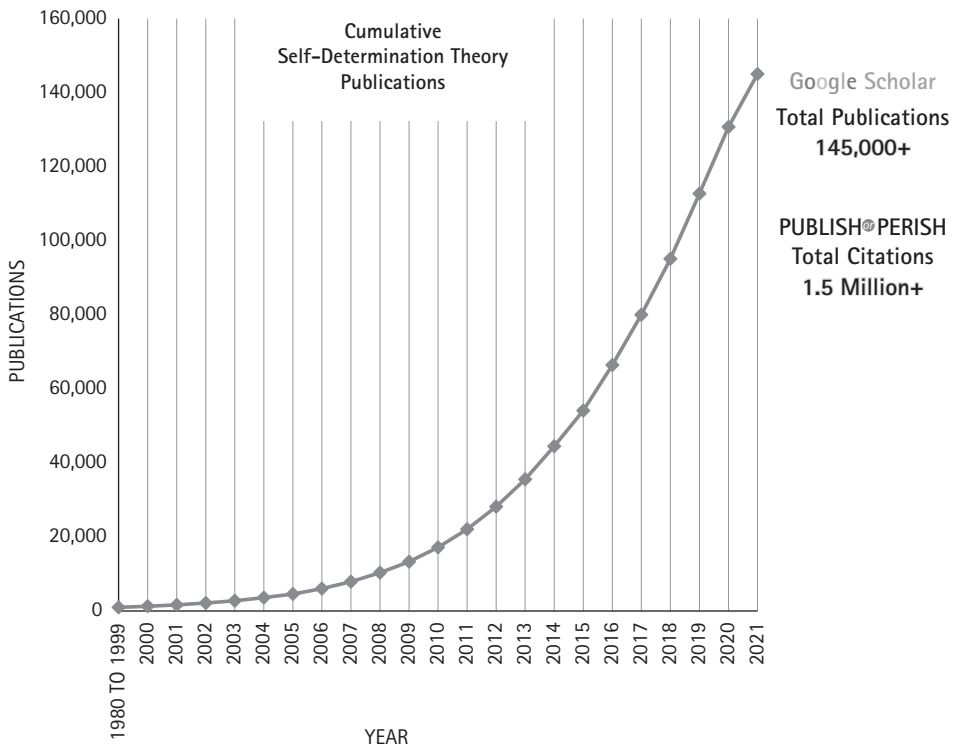
**Figure 0.1** Cumulative Self-Determination Theory publications from 1980 to 2021.

Since that first conference, scholars adopting an SDT lens have also proliferated, with hundreds now actively researching and applying the theory. They are generating new ideas and elaborating the theory's contents to make it ever more useful. SDT's principles backed by rigorous scholarship and action-oriented approaches have meaningfully contributed across the fields of basic and applied behavioral science, a fact well-evidenced in this *Handbook*.

For us at CSDT, the most fulfilling part of the theory has been the journey: the shared stories, the connections to others around the world, and the building of the sturdy framework that this book is helping to document. This work emerges from small research groups around the world in places like Rochester, Montreal, Ghent, Sydney, Be'er Sheeva, Lima, Paris, Singapore, and many other locations where new ideas are being spawned using the SDT framework. Particularly important for the theory's growth have been the SDT international conferences (held every three years prior to the COVID pandemic), which have always felt like family reunions as well as being incubators of innovation. It's all of those stories and the generativity of this community that has defined SDT. As we organized this *Handbook*, communicating with this varied group of authors, we reexperienced the thread that connects the SDT community, which is a focus on human flourishing and its facilitators. No matter how big or far-reaching, our community also comes together (perhaps more virtually these days) and connects through the shared language of SDT.

In this regard we at CSDT are particularly excited to present this new *Handbook*, with 57 chapters examining the latest findings, exploring newfound domains, grappling with complex issues that have local and global impact, and mapping directions for future research and interventions for the next generation of SDT scholars. We have many times thought the work in SDT had reached its conclusions, only to have new questions arise and new ways of applying SDT introduced, continuously expanding its scope, as the contents of this *Handbook* demonstrate. So, whether you've been a part of the SDT journey or this is the first SDT book that you've held in your hands, we hope you'll find in this volume new perspectives, methods, and creative solutions for many of the problems facing our science and our world today.

# LIST OF CONTRIBUTORS

Paul J. C. Adachi
  Immersyve, Inc.

Nathalie Aelterman
  Department of Developmental,
  Personality and Social Psychology,
  Ghent University

Alexios Arvanitis
  Department of Psychology,
  University of Crete

Avi Assor
  Department of Education, Ben
  Gurion University of the Negev

Polina Beloborodova
  Department of Psychology, Virginia
  Commonwealth University

Moti Benita
  Department of Education, Ben
  Gurion University of the Negev

Jamie M. Besel
  Department of Collaborative Science
  & Innovation, Billings Clinic

Emma L. Bradshaw
  Institute for Positive Psychology
  and Education, Australian Catholic
  University

Kirk Warren Brown
  Department of Psychology, Virginia
  Commonwealth University

Lindsay Browne
  Department of Psychology,
  University of Houston

Rafael A. Calvo
  Dyson School of Design
  Engineering, Imperial
  College London

Rachel Campbell
  Faculty of Science, School of
  Psychology, University of Sydney

Joëlle Carpentier
  École des Sciences de la Gestion de
  l'Université du Québec à Montréal

Shannon L. Cerasoli
  The Center for Self-
  Determination Theory

Sung Hyeon Cheon
  Department of Physical Education,
  Korea University

Randall Curren
  Department of Philosophy,
  University of Rochester

Edward L. Deci
  Department of Psychology,
  University of Rochester

Cody R. DeHaan
  Immersyve, Inc.

Stefano I. Di Domenico
  Department of Psychology,
  University of Toronto Scarborough

Paul Evans
  School of Education, University of
  New South Wales, Sydney

Jacques Forest
  Departement of Organization
  and Human Resources, École des
  Sciences de la Gestion de l'Université
  du Québec à Montréal

Christina Frederick
  Human Factors and Behavioral
  Neurobiology, Embry-Riddle
  Aeronautical University

Marylène Gagné
    Future of Work Institute, Curtin
    University
Yael Geifman
    Ben Gurion University of the Negev
Ryan Goffredi
    Psychological Sciences, University of
    Missouri
Marc-Antoine Gradito Dubord
    Department of Psychology,
    Université du Québec à Montréal
Wendy S. Grolnick
    Frances L. Hiatt School of
    Psychology, Clark University
Frédéric Guay
    Department of Fundamentals
    and Practices in Education,
    Université Laval
Martin S. Hagger
    Department of Psychological
    Sciences, University of
    California, Merced
Anne Elisabeth Münster Halvari
    Department of Dental Hygienist
    Science, University of Oslo
Hallgeir Halvari
    University of South-Eastern Norway
Heather Hansen
    University of Reading
Anne C. Holding
    New York University
Joshua L. Howard
    Department of Management, Monash
    Business School, Monash University
Mireille Joussemet
    Department of Psychology,
    Université de Montréal
Frank J. Kachanoff
    Wilfrid Laurier University
Konstantinos Kalliris
    School of Law, University of Essex
Yaniv Kanat-Maymon
    Department of Psychology,
    Reichman University

Haya Kaplan
    Center for Motivation and Self-
    Determination, Kaye Academic
    College of Education
C. Raymond Knee
    Department of Psychology,
    University of Houston
Richard Koestner
    Department of Psychology, McGill
    University
Rashmi A. Kusurkar
    Amsterdam UMC, Vrije Universiteit
    Amsterdam, Research in Education;
    LEARN! Research Institute for
    Learning and Education; Faculty
    of Psychology and Education, VU
    University Amsterdam
Woogul Lee
    Department of Education, Korea
    National University of Education
Nicole Legate
    Illinois Institute of Technology
Lisa Legault
    Department of Psychology, Clarkson
    University
Rachel E. Lerner
    Frances L. Hiatt School of
    Psychology, Clark University
Shelby L. Levine
    Department of Psychology, McGill
    University
Chris Lonsdale
    Institute for Positive Psychology
    and Education, Australian Catholic
    University
Martin F. Lynch
    Warner School of Education,
    University of Rochester; Kazan
    Federal University; National
    Research University Higher School of
    Economics
Geneviève A. Mageau
    Department of Psychology,
    Université de Montréal

Frank Martela
  School of Science, Aalto University
Lennia Matos
  Department of Psychology, Pontifical
  Catholic University of Peru
Arlen C. Moller
  Department of Psychology, Illinois
  Institute of Technology
Annabelle Moore
  Department of Psychology,
  University of Toronto
Thuy-vy Nguyen
  Department of Psychology, Durham
  University
Kimberly A. Noels
  Department of Psychology,
  University of Alberta
Alexander Nordgren Selar
  Department of Psychology,
  Stockholm University
Nikos Ntoumanis
  Department of Sports Science and
  Clinical Biomechanics, Danish Centre
  for Motivation and Behaviour Change,
  University of Southern Denmark
Anja H. Olafsen
  School of Business, University of
  South-Eastern Norway
Virginie Paquette
  Laboratoire de Recherche sur le
  Comportement Social, Département
  de Psychologie, Université du
  Québec à Montréal
Luc G. Pelletier
  School of Psychology, University
  of Ottawa
Dorian Peters
  University of Cambridge
Frederick L. Philippe
  Department of Psychology,
  University of Quebec at Montreal
Catherine F. Ratelle
  Department of Foundations
  and Practices in Education,
  Université Laval

Johnmarshall Reeve
  Institute for Positive Psychology
  and Education, Australian Catholic
  University
C. Scott Rigby
  Immersyve, Inc.
Meredith Rocchi
  Department of Communication,
  University of Ottawa
Guy Roth
  Department of Education, Ben
  Gurion University of the Negev
Richard M. Ryan
  Institute for Positive Psychology
  and Education, Australian Catholic
  University, College of Education,
  Ewha Womans University
William S. Ryan
  Department of Psychology,
  University of Toronto
Nobuo R. Sayanagi
  Faculty of Human Sciences and
  Cultural Studies, Yamanashi Eiwa
  College
Kennon M. Sheldon
  University of Missouri; Higher
  School of Economics, Russian
  National University
Gavin R. Slemp
  Centre for Wellbeing Science,
  Melbourne Graduate School
  of Education, University of
  Melbourne
Bart Soenens
  Department of Developmental,
  Personality, and Social Psychology,
  Ghent University
Martyn Standage
  Centre for Motivation and Health
  Behaviour Change, Department for
  Health, University of Bath
Magnus Sverke
  Department of Psychology,
  Stockholm University

Ian M. Taylor
School of Sport, Exercise, and Health Sciences, Loughborough University

Robert J. Vallerand
Laboratoire de Recherche sur le Comportement Social, Département de Psychologie, Université du Québec à Montréal

Anja Van den Broeck
Department of Work and Organisation Studies, Faculty of Economics and Business

Jolene van der Kaap-Deeder
Department of Psychology, Norwegian University of Science and Technology (NTNU)

Marieke C. van Egmond
Tranzo, Scientific Center for Care and Wellbeing, Tilburg School of Social and Behavioral Sciences, Tilburg University

Maarten Vansteenkiste
Department of Developmental, Personality, and Social Psychology, Ghent University

John C. K. Wang
Physical Education and Sport Science, National Institute of Education, Nanyang Technological University

Michael L. Wehmeyer
Department of Special Education, University of Kansas

Netta Weinstein
University of Reading

Geoffrey Williams
Collaborative Science and Innovation and Department of Endocrinology, Billings Clinic

David C. Zuroff
Department of Psychology, McGill University

# Introduction

# Self-Determination Theory: Metatheory, Methods, and Meaning

Richard M. Ryan *and* Maarten Vansteenkiste

**Abstract**

Self-determination theory (SDT) represents a comprehensive framework for the study of human motivation, personality development, and wellness as evidenced by the breadth and variety of chapters in this *Handbook*. This introductory chapter provides a review of the basic assumptions, philosophy of science, methods, and mission of SDT. It also includes a brief history of SDT, linking various developments within the theory to the contributions found in this volume. Finally, discussion focuses on the place of SDT within the landscape of past and contemporary theoretical psychology, as well as its relations with modern historical and cultural developments, in part explaining the continued growth of interest in SDT's basic research and real-world applications.

**Key Words:** Key terms: self-determination theory, organismic theory, basic psychological needs, theory crisis, autonomy, homonomy

Over the history of psychology there have been periodic attempts to provide overarching theories of human behavior. Within the behaviorist tradition the associationist views of Watson, the drive theory of Hull, the operant approach of Skinner, and the social-cognitive framework of Bandura are prominent examples. Within the humanistic perspective, both Rogers and Maslow presented comprehensive views. And for over a century the psychodynamic thinking of Freud and his followers has supplied both a method of analysis and a worldview for many. Each of these perspectives has shed light on important phenomena, opened up unique lines of inquiry, used distinctive research methods, and spawned applied practices. Each has also, by making their assumptions and predictions explicit, helped to illuminate what is within their theoretical horizons, as well as what they cannot, or will not in principle, explain.

*Self-determination theory* (SDT) represents a general framework for understanding why we do what we do, and what leads to flourishing versus degradation in a human life. As a broad, evidence-based, theory of motivation and personality development, it aims to supply an integrative yet open framework for a truly human behavioral science, using a set of concepts and assumptions that make sense philosophically, phenomenologically, empirically, mechanistically, and historically. It is also intended to be a practical theory,

with direct and meaningful implications for familial, educational, organizational, health-care, and clinical contexts.

*The Oxford Handbook of Self-Determination Theory* is comprised of chapters presenting both basic and applied research on SDT, authored by current experts in the field. Our purpose in this introduction will therefore not be to comprehensively review SDT research, as the chapters that follow will accomplish that task. Instead, our primary aim will be to articulate the theory's basic assumptions, its unique framing of questions central to human motivation and wellness, and the methods and criteria it uses to establish its knowledge base. We then briefly describe its development and, in doing so, connect the varied chapters in this *Handbook* to that history of inquiry and practical applications. Suggesting that SDT cuts across traditional subfields of psychology, we distinguish SDT from related or overlapping movements or approaches in the field such as humanistic psychology, positive psychology, and "third wave" cognitive behaviorisms, all of which share some important sensibilities. Finally, we discuss the social significance of building a broad theory focused on meeting human needs, both as levers for personal change and as criteria for evaluating the effectiveness of social contexts and institutions in promoting human flourishing.

## Self-Determination Theory: Some Basic Assumptions

### Why Have a Theory at All?

SDT is unabashedly a *theory*, which is to say, a framework for organizing ideas, observations, reflections, and inquiries. It is a broad theory because in addressing the most central of human concerns such as motivation and well-being it carries implications across developmental periods, cultures, and life domains. It is also a theory with depth, as its cumulative knowledge base allows for ongoing refinement in terms of both specificity and underlying mechanisms.

Attitudes toward broad theory vary within behavioral sciences, with many recent commentators describing the field as facing a theory crisis (Muthukrishna & Henrich, 2019). The claim is that new broad theories have not taken root, with the result that there is an absence of cumulative and actionable knowledge. Hastings, Michie, and Johnston (2020) argue that, contributing to this, too few theories make explicit their ontological and epistemological tenets, making them difficult to coordinate with other theories and bodies of knowledge in other disciplines. Eronen and Bringmann (2021, p. 785) suggest that solid theory construction has been hindered because "not enough attention is paid to defining and validating constructs." This absence of deep theory and careful validation of constructs is also accompanied by an academic culture that rewards publishing "new" phenomena (or rebranding old ones) rather than the pursuit of what Kuhn (1970) called the "normal science" of slowly extending extant theory. Finally, Berkman and Wilson (2021) suggest that contemporary theories can rarely pass a "practicality test"; too often

they are simply not useful in real-world settings and have meaning and significance only within academia.

In large part we agree with these critiques, which apply to many theories and models in the current psychological landscape. In fact, these are all pitfalls that SDT scholars and researchers have been navigating by making explicit the theory's assumptions, carefully validating constructs, focusing on meaningful themes, and doing research and interventions with translational value. In contrast to most current approaches, SDT's formal theory has been built "brick by brick" (Ryan & Deci, 2019; Vansteenkiste, Niemiec, & Soenens, 2010), with newer SDT theorizing being iteratively scaffolded upon already well-validated constructs and findings, leading to an ever-widening space for hypotheses. In this way the theory has grown from a more restricted focus on the dynamics of intrinsic motivation (Deci & Ryan, 1980a) to address the wider spheres of both intrinsic and extrinsic motivations, and then further to the study of values, personality development, emotion regulation, and the social supports necessary for wellness and flourishing (Ryan et al., 2021). Applied research in education, parenting, organizations, sport, health, and other areas has followed from this theory building, with more and more intervention studies and randomized trials.

We see theory as critically important to both basic science and evidence-based, effective practice. As a scientific theory, SDT supplies constructs that serve to coordinate its empirical observations and formal propositions to organize its cumulative knowledge. A theory also constrains and sharpens hypotheses, which must fit within its logic and established knowledge base to be seriously proposed. This rules out flashy yet anomalous ideas that too often are headlining as psychology yet fail to stand up across time or situations. Good theory reduces the uncertainty space in exploring new problems or applications, while providing clear hypotheses in novel situations. It also yields principles that are generalizable, crossing domains and types of inquiry. In addition, a truly scientific theory must connect with empirical observations at every level of analyses, locating its own body of knowledge within the larger disciplinary and interdisciplinary spaces. It must be compatible within the systems of science, including both evolutionary and biological perspectives on the reductive side and broader political and economic perspectives on the societal side.

### SDT's Organismic Metatheory

As a theory of human motivation and flourishing, SDT has from its outset been explicitly formulated as an *organismic* approach (see Deci & Ryan, 1985b; Ryan & Deci, 2017). Organismic approaches are focused on the qualities associated with living entities, including their active tendencies to expand and express themselves while maintaining their integrity (Mayer, 1982). Organismic approaches are distinctive in conceptualizing living things as open systems that must actively sustain themselves through exchanges with an

environment. In these exchanges every organism has needs, and its environment presents affordances and challenges that meet or thwart those needs.

Organismic thinking emerged as a resolution of century-long debates within biology between *vitalists* and *reductionists*. Vitalists championed something unique and special about life that would escape mechanistic and determinist thinking, whereas reductionists posited that all processes observed in living things could be reduced to basic chemical-physical causes. Organismic perspectives arose as neither an endorsement of vitalism, which failed to provide researchable hypotheses, nor a vindication of reductionism, which had difficulties explaining the coordination and ordered behaviors of living systems (see Jacob, 1973). Instead, organismic thinking acknowledges that living beings, while material, exhibit properties that distinguish them from inanimate nature and which are essential to understanding their activities.

**Organization.** Among these attributes, the most general is that of *organization*. As per the etymology of that term, living entities actively and systematically work in the direction of maintaining and extending themselves. Such organization entails the hierarchical coordination of multiple parts into a relative unity that manifests as adaptive behavior. In social organisms this organization is reflected within the individual through increasing self-regulation and congruence, and by the anchoring and integration of the individual within a social network. Angyal (1965) described these as the dual trends toward *autonomy* (integration within the self) and *homonomy* (integration of the self within a larger social group).

Organismic frameworks are also inherently *developmental*, as living things are assumed to unfold and grow their inherent capabilities over time. Healthy development involves increasing differentiation and hierarchical integration, as new learning and abilities are brought into coherence, unity, and control. In this developmental view, adaptation and wellness at later stages are built on earlier foundations of support and nurturance, whereas developmental harms and threats often produce cascading negative effects across age (Vansteenkiste & Ryan, 2013; Soenens & Vansteenkiste, this volume).

**Person-centered and psychologically focused**. Another key assumption underlying organismic perspectives is that individual living things, rather than merely being objects of external forces, are *centers* of activity and experience (Polanyi, 1958). They are purposive entities (Walsh, 2015). Behavior is therefore analyzed and understood not only from an external point of view but also, and we think more effectively, by taking an *internal frame of reference*. In this perspective even what we call an environment is defined by the individual insofar as the parts of an environment that they act toward and react to are most often those related to their interests, needs and goals, variables located at a psychological level of analysis. It is in this sense that SDT's organismic view is by definition *person-centered*, understanding motivational dynamics from the *psychological* viewpoint of the actor (Ryan et al., 2021).

Personhood is an emergent feature of the human organism, entailing not only self-consciousness but also agency. Because we can reflect on our own behaviors and can evaluate alternative pathways for action, we can exert top-down influences upon behavior; that is, we can self-regulate actions and experiences. This means that we can distinguish and enact behaviors we value and can experience volition and ownership of actions via personal knowledge and awareness (de Charms, 1968). At the same time, as social beings we are influenced and even controlled at times by external factors, which engenders phenomenal experiences distinct from those underlying self-regulated action. SDT captures this with its distinctions between autonomous and controlled forms of motivation.

Psychologists have often argued against notions of both autonomy and self-determination because, they suggest, these have biological causes or neurological sources (see Ryan & Deci, 2004). But when understood from a person-centered perspective, autonomy describes an experiential quality of behavior that is not in any way at odds with a biological view of organismic functioning (see chapters in this volume by Arvanitis & Kalliris; Lee; Sheldon & Goffredi). Research has so far revealed that the neurological underpinnings of autonomy and control reflect networked processes with meaningful patterning, including the striatal responses expected with satisfactions, mechanisms reflective of initiation (e.g., insula) and oversight (e.g., medial prefrontal cortex), and most generally interconnectivity (Di Domenico & Ryan, 2017, this volume). Autonomous motivation also involves physiological processes reflected in cardiac responses and variability in oxygen intake. Again, the goal of SDT's organismic thinking is to coordinate observations at this biological level with psychological, behavioral, and social accounts of events, as these are mutually informative and complementary analyses.

Persons are unique among living things not only in their self-awareness and capacity for autonomy, but also in their awareness that others are similarly self-aware and potentially agentic. This inner recognition that other persons have their own perspectives and motives shapes all of our social experiences and behaviors, and it is this phenomenal world within which we lawfully act and react and about which SDT is concerned. For example, it is not merely the magnitude of rewards that motivates people but also their functional significance or meaning as being controlling or as conveying competence information that determines their effects (e.g., Deci, Koestner, & Ryan, 1999). Similarly, emotions such as guilt, resentment, admiration, and gratitude all entail an assumption of the potential autonomy of others, as when we feel more gratitude when help is autonomously provided (Weinstein, DeHaan, & Ryan, 2010). In the phenomenal realm within which people actually live and act, reasons and motives most often supply the relevant explanations for behavior. To put it briefly, psychology matters.

SDT's person-centered perspective redirects inquiries in empirical psychology toward the dynamics of agency and need satisfaction, affording new avenues of understanding. For most of empirical psychology's history the central question has been: How do external

factors control people's behavior? This locution stems from long-standing Baconian traditions in experimental science of manipulating external variables to look for causal effects on behavioral "outputs." Although this is a powerful method, it mainly tells us how external factors "can" alter behaviors; it tells us much less about what people spontaneously do, what motivates them in the absence of such external impositions, or how external controls impact people's motivations from within. SDT thus asks instead: What are people volitionally motivated to do? and What internal and external factors facilitate, hinder, or even undermine that motivation to act? This reframing starts from the assumption that organisms are active and open systems: they are "already" motivated to act in ways that are neither random nor reactive as operant theory suggested (Skinner, 1953), but rather are organized by inherent physical and psychological needs.

This organismic perspective was apparent even in SDT's earliest focus on *intrinsic motivation,* which describes people's spontaneous propensities to explore, assimilate, and master their worlds (Deci & Ryan, 1985b). Healthy development in humans is universally characterized by this active, synthetic nature described by interest, curiosity, and desire to learn. Across the lifespan intrinsic motivation supplies an engine of growth and learning. SDT also sees this synthetic propensity expressed in people's proactive *internalization* of practices and values. As people take in and endorse new regulations and acquire new skills, they gain increasing control over outcomes, greater autonomy in the regulation of their behavior, and greater homonomy within their families, communities, and social groups, satisfying competence, autonomy, and relatedness needs, respectively. These integrative tendencies can also be discerned at the emotional level in people's tendency to be receptive to and interested in their inner emotional world, finding meaning in it and using it as an informational resource for action (Roth, Shane, & Kanat-Maymon, 2017). Overall, then, the organismic approach sees healthy human functioning as becoming increasingly complex yet more integrated and coordinated over time, expressing inherent capacities to grow, quest, connect, and ultimately flourish.

The assumption of such an internal propensity for growth and integration has significant ramifications for real-world practice and applications, as it speaks to the sensibilities and aims of practitioners. When practitioners such as teachers, managers, and mentors assume an inner growth propensity and respect the importance of volition, their attention goes to ideas about facilitating and nurturing that inner resource of development. In the absence of such an assumption, attention goes instead to controlling, shaping, and training people to act in specific ways. For instance, an organismic approach suggests that schools support and nurture students' active inquiry to grow their knowledge from within, whereas an external approach prescribes contingent control using rewards and punishments to shape predetermined learning outcomes. We shall see throughout this volume how the very tenets of organismic theory inform SDT perspectives on supportive environments in various life domains.

*Basic Needs as Organismic Foundations*

Even though an organismic approach is built upon the assumption of an active, growth-oriented nature, this natural growth propensity, like all developmental processes, requires specific affordances and supports. SDT thus inquires into the conditions within which these inherent organismic propensities are facilitated and under what conditions they are undermined. It is these questions that led to the specification of *basic psychological needs* for autonomy, competence, and relatedness, as satisfactions essential to thriving.

These three needs *inductively* emerged as central to SDT across its first two decades of research. In keeping with its organismic orientation, SDT was initially focused on intrinsic motivational processes, with intrinsic motivation defined as activity that is motivated (energized and directed) by its inherent satisfactions. Through experiments and field research it became clear that intrinsic motivation for any given activity requires a sense of both autonomy and competence (Deci & Ryan, 1980b; Reeve, this volume). Subsequently, SDT research showed that supports for autonomy, competence, and relatedness also described the conditions under which *internalization* and *integration* of social regulations were most likely (Pelletier & Rocchi, this volume). Beyond these motivational phenomena, SDT research was increasingly confirming that as these psychological need satisfactions are enhanced, people demonstrate not only more intrinsic motivation and internalization but also more wellness, meaning, and vitality, ultimately leading to SDT's basic psychological needs theory (Vansteenkiste, Soenens, & Ryan, this volume).

Notably, these three basic needs also have a *deductive* rationale within SDT's organismic theorizing; that is, they can be derived from what is meant by a vitally functioning living being. A general principle is that organisms actively move in a direction of self-regulation, where possible, and away from heteronomy, relating to our deeply evolved sensibilities about autonomy and control. Organisms are also oriented toward increasing effectiveness in their behavior and toward moving in a direction of competence and efficacy when possible. Finding satisfaction in experiences of mastery and progress is undoubtedly related to this propensity. As social organisms we are equipped with inherent propensities toward social integration and are accordingly extremely sensitive to inclusion and rejection. From an organismic perspective, these living propensities toward autonomy, competence, and relatedness pervade activities, life domains, and developmental phases.

Reductionist scholars may argue that there is no such "thing" as a basic psychological need. They would be correct. SDT instead specifies these basic needs are not things but rather are *organizing constructs* that can be used to coordinate observations that have functional import such as those described above. This functional view specifies and gives expression to the salient factors supporting integrity and wellness, which are robustly captured by SDT's trio of autonomy, competence, and relatedness and their various constituting facets.

These three basic needs have also been found to have a dual nature, their satisfaction associated with personal flourishing and psychological health and their frustration being predictive of degradation and even psychopathology (Vansteenkiste & Ryan, 2013). In

other words, these needs are essential not only for enhancing growth, integrity, and wellness; they are also essential for staving off illness and dysfunction.

Recognition of this dual process is critical both metatheoretically and functionally. At the metatheoretical level, it implies that apart from our growth-based inclinations we also have a vulnerable nature, as this natural growth–oriented course of development can be disrupted by environments and events that thwart psychological needs (Ryan, Deci, & Vansteenkiste, 2016). Interests and curiosity can be crushed by controlling environments or even devastated by suppression and abuse. Chronic or severe frustrations of autonomy and relatedness can translate directly to compensatory defenses, and sometimes into psychopathology and antisocial attitudes and activities (e.g., Ryan & Moore, this volume; van der Kaap-Deeder, this volume). Understanding the social-contextual elements that nourish human psychological development and those that are toxic to our inherent growth and wellness capacities is thus an inherent feature of an organismic approach and a mission of SDT research (Vansteenkiste & Ryan, 2013).

**Full functioning.** This organismic approach also allows for a refreshing and well-delineated view of what psychological health and wellness involves. Unlike hedonic approaches, SDT's concept of full functioning implies more than the presence of positive affect and the absence of negative affect. Instead, awareness, subjective vitality, autonomy, and meaning are all critical indicators of maturation and psychological health. Autonomous persons are those who can be receptively and nondefensively aware of what is occurring, both internally and externally, can reflectively evaluate their choices, and can act in ways that are congruent with their needs and abiding values (Ryan et al., 2021; Shepard & O'Grady, 2017). Such full functioning is captured in the Aristotelian concept of *eudaimonia*, or the pursuit of activities comprising a good life (Martela, this volume; Ryan, Huta, & Deci, 2008).

## The Methods of SDT

SDT is an empirical approach to the questions of human flourishing, with an epistemology based on testing, refining, and integrating SDT's formulations using *convergent evidence*. Given its organismic philosophy, SDT's methodologies are varied and eclectic, drawing from biological, behavioral, phenomenological, and clinical inquiries. This methodological valuing of consilience is consistent with the holistic viewpoint in which behavior and experience can be examined at all levels of analysis, bringing more clarity to what is, after all, a single living process. SDT is thus concerned with how biological mechanisms, social influences, and experiential reports interconnect in describing and predicting behavior.

Rather than writing off human experience as irrelevant, trivial, or epiphenomenal, as reductionists do, or ignoring mechanisms and their implications, as some humanists do, SDT's organismic view posits that descriptions of human functioning at all levels of analysis can, and in principle should, be integrated. In this organismic perspective we

expect variations in experiences of autonomy, relatedness, and competence to be manifest in distinct brain and physiological processes, as well as different functional outcomes.

**Psychological focus and mechanism without reductionism.** This interest in integrative knowledge across levels of analysis in no way detracts from the central psychological focus of SDT. When it comes to intentional behavior, SDT argues that psychological processes are most often the *regnant level of analysis* because they are the level where behavior is often initiated and where intervention that changes the course of events can actually take place (Deci & Ryan, 2011). For such behaviors, reductionistic explanations are, in contrast, often the least relevant to a causal analysis. For the question "Why did that individual visit her mother?," the most meaningful answers lie in motives and reasons rather than the neurological processes supporting them. However, for other reactions and events, such as why that person flinched when startled, psychological explanations may be the least regnant or relevant level of analysis.

Neuroscience research based in SDT can therefore best be characterized as *mechanism without reductionism*. Neuroscience studies are helping to refine the theory's process models associated with variations in autonomy and organization (e.g., Di Domenico & Ryan, this volume; Lee, this volume). Thus, within the SDT perspective, neuroscience is being used to characterize and understand more deeply, rather than explain away, the motivational dynamics we study at the psychological level of analysis.

**Tapping diverse methods.** Much of the early work in SDT was experimental, a methodological tradition that continues today, as reviewed in many of these chapters. But SDT as a psychological theory also draws heavily on other methods, including observational studies, qualitative inquiries, and interventions as strategies of research.

As a theory that embraces the importance of psychological experiences, SDT research has also from its outset utilized self-report survey (Deci et al., 1981) and interview (e.g., Grolnick & Ryan, 1989) strategies. There is today a rather strong bias against self-report in behavioral science, often one that is not well thought through or empirically justified. In fact, self-report measures often have much greater construct validity than so-called hard variables such as regions of interest activations assessed with fMRI, biological assays, or external observers' ratings. People's internal experience is, in fact, quite predictive of many outcomes precisely for the reasons we stated: most intentional behaviors and often unintentional reactive ones are influenced or determined by their attributions, needs, reasons, and motives. For instance, perceiving a mentor as controlling in fields as divergent as music (Evans, this volume) and medicine (Kusurkar, this volume), no matter what one's culture or age, predicts diminished persistence and wellness. At the same time our methods of tapping perceptions and motives often rely on self-reports, which must themselves be understood as behaviors, with their own motivational and cultural dynamics. This is just a part of what must be interpretively considered in evaluating evidence.

SDT also uses methods that vary in time perspective, from experience sampling to long-term longitudinal research. For example, motivation and vitality can vary from

moment to moment in ways that are not random but are specifically tied to fluctuations of basic need satisfactions at a within-person level, as diary research within and across life domains has shown (e.g., Flunger et al., in press; Reis et al., 2000; Ryan, Bernstein, & Brown. 2010). But research can also target experiences over time or across a field of activity, with directional changes again predicted by fluctuations in need-supportive versus need-thwarting social conditions. Longitudinal research thus shows how general need supports enhance developmental outcomes over time (e.g., see Joussemet & Mageau, this volume), whereas controlling and need-thwarting environments present risk factors for maladjustment and behavioral problems (e.g., van der Kaap-Deeder, this volume).

## The Unfolding of SDT: A Brief History Connecting Theory to Current Research

SDT's broader theory evolved from an empirically driven approach allowing a "brick by brick" expansion of theory based on reliable and converging evidence (Ryan & Deci, 2019). As such, SDT represents a body of work that has gradually unfolded over time, resulting in the multifaceted framework of SDT today, represented by the highly varied chapters of this *Handbook*. Having described some of SDT's basic assumptions, we next provide a brief history of the theory's unfolding, itself reflecting an organic process of differentiation and integration of ideas. The purpose of this quasi-historical, bird's-eye view is not only to briefly introduce the framework, but also to connect the chapters within this volume with the various strands of SDT's inquiries.

**Cognitive evaluation theory.** The initial work in SDT began in the early 1970s with experiments by Deci (1971, 1972) focused on *intrinsic motivation*. Intrinsic motivation describes a class of behaviors energized by their inherent satisfactions, such as in activities one finds interesting or enjoyable. Intrinsic motivation is seen across the lifespan, from the play and curious exploration of early childhood to the avocations and interests of adults, supplying a major source of learning and of revitalization. But beyond this, intrinsically motivated behaviors are an expression of an active organism, actions not dependent on external reinforcements for their occurrence.

Deci's early studies (e.g., 1971, 1972) were provocative in showing that contingent extrinsic rewards could have negative effects on subsequent interest and persistence (see Ryan, Ryan, & Di Domenico, 2019). These "undermining" effects of rewards on intrinsic motivation did not occur invariantly but were conditional. As summarized in Deci and Ryan (1980a), rewards have negative effects on intrinsic motivation when used in *controlling* ways, that is, when applied in order to externally pressure or induce people to perform certain behaviors or meet certain standards. Such controlling reward contingencies can undermine the experience of autonomy essential to intrinsic motivation. In contrast, rewards can have more positive, or at least no negative, effects on intrinsic motivation when experienced as *informational*—when conveying a sense of progress, mastery, or competence. Ryan, Mims, and Koestner (1983) subsequently created and

experimentally tested a taxonomy of reward contingency types, specifying the extent to which each was likely to have controlling or informational significance, and thus differed in their effects on intrinsic motivation. This *cognitive evaluation theory* (CET) taxonomy was later refined, and its major predictions confirmed, in a well-known meta-analysis by Deci et al. (1999).

Beyond rewards, other events that were experienced as controlling, such as deadlines, surveillance, and forceful language, also showed negative effects on subsequent intrinsic motivation, whereas those positively impacting autonomy (e.g., provision of choice) and competence (e.g., positive feedback) enhanced motivation, with basic need satisfactions playing an explanatory (mediating) role (e.g., De Muynck et al., 2017; Peng et al., 2012). Also, in what became preliminary work on *introjection*, Ryan (1982) showed that when people were *ego-involved* (feeling self-esteem pressure to perform), their intrinsic motivation was diminished, extending the undermining effect to "internally controlling" states. These findings were summarized in CET (Deci & Ryan, 1985b), which became the first of SDT's formal mini-theories.

Reeve (this volume) provides a fresh review of CET, emphasizing its importance within SDT as a whole, and the idea that it seeded the five mini-theories that followed. He specifically highlights CET's formulations concerning the *functional significance* of events, or what they mean to the recipient in terms of affordances to get their basic needs for autonomy, competence, and relatedness met. Various authors in this volume discuss the central importance of intrinsic motivation in diverse life domains, including in school (Ryan, Reeve et al., this volume) music learning (Evans, this volume), sports (Standage, this volume), and physical education (Taylor & Lonsdale, this volume), among others.

**Organismic integration theory.** Having seen the importance of experiences of autonomy and competence experiences for maintained intrinsic motivation, the next step was to understand extrinsic motivation. Within SDT *extrinsic motivation* represents a broad category that encompasses all instrumental behaviors—all actions the goal of which is separable from or not inherent in the satisfactions of the activity itself. Recognizing that instrumental activities can be varied in their autonomy or perceived locus of causality (PLOC), Ryan, Connell, and Deci (1985) presented an early taxonomy of extrinsic motivations, organized along a continuum of autonomy. On the controlling end of that continuum was *external regulation,* being controlled by external rewards and punishments. Less controlling was *introjection*, when a person partially internalizes a goal or value and controls themselves using "shoulds" and "mustifications." Still more autonomous was *identification*, in which a person acts because they personally value the behavior or the outcomes achieved. Finally, *intrinsic motivation* represented another highly autonomous form of motivation. Testing their model, they found a "simplex" pattern consistent with this idea of a continuum of autonomy, which (after many rejections) was finally published (Ryan & Connell, 1989). However, by then the model was already well in use (e.g., Grolnick & Ryan, 1987; Vallerand et al., 1989). This simplex statistical pattern and

evidence for the underlying continuum of autonomy have since been found in hundreds of studies and confirmed in meta-analytic reviews (Howard, Gagné, & Bureau, 2017; Howard, this volume).

This taxonomy and continuum of motivations became the basis for SDT's second mini-theory, *organismic integration theory* (OIT; Ryan, Connell, & Deci, 1985). The differentiated viewpoint on extrinsic motivation within OIT is both necessary and illuminating, as not all subtypes yield similar correlates and effects. Whereas more internalized and thus autonomous motivations predict greater persistence, performance, and wellness, more controlled motives (i.e., introjection, external regulation) have less positive and sometimes even negative effects on outcomes. In light of these findings, OIT stresses that it is the type or source rather than the quantity of motivation that matters most (Vansteenkiste et al., 2018).

OIT further posits that people are most apt to internalize the practices or values of people with whom they feel (or wish to feel) related and are more apt to identify with values if they have had support for autonomy and are able to volitionally process, evaluate, and integrate the value or behavior. Pelletier and Rocchi (this volume) provide an overview of the basic tenets of this mini-theory, which is used as a basis for articulating the motivational dynamics that apply in various life domains.

Although the original model of the OIT continuum did not include *amotivation*, amotivation had been conceptualized within SDT as a state in which a person lacks either competence or reason to act (Deci & Ryan, 1985b). Vallerand and colleagues (e.g., 1989) began to measure this state alongside measures of intrinsic and extrinsic subtypes, confirming its largely negative relations with optimal outcomes in domains such as work or education. Subsequent research has further differentiated amotivational states and their varied consequences, (e.g., see Otis, Grouzet, & Pelletier, 2005) including the recognition that there are sometimes volitional amotivational states, where a person willingly abstains from acting (Vansteenkiste, Lens, et al., 2004), and more controlled amotivational states, as when a person feels pressured and unable to partake in an activity (Aelterman et al., 2016).

Clearly there are many angles and nuances to the dynamics of motivation as viewed through OIT. The postulation of varied types of motivation that differ in their sources and qualities, and which can co-occur, but that are nonetheless systematically arrayed along a continuum of autonomy poses many analytic possibilities. This complexity within OIT has also led to a diversity of statistical models and profiling approaches, and this continues to be a lively area of investigation and debate, as described by Howard (this volume). In addition, because OIT apples to all types of internalization, we see unique applications of this mini-theory to domains as diverse as police bias (Legate & Weinstein, this volume) and sustainability behaviors (Legault, this volume).

**Causality orientations theory.** Deci and Ryan (1985a) presented a third mini-theory, *causality orientations theory* (COT). Causality orientations attempt to characterize

individual differences in the global regulation of behavior by considering how a person orients to encountered opportunities, challenges, and obstacles and what they focus on and react to in new situations. In a *controlled orientation*, people focus on the rewards, punishments, and social pressures in a situation and are likely to react by complying or defying. In an *autonomy orientation* the person is focused on opportunities for value enactment and the pursuit of interests that might be afforded. Finally, an *impersonal orientation* (reflecting Heider's 1958 terminology) describes amotivation, in which the person focuses foremost on potential obstacles, threats, and competence concerns. The General Causality Orientation Scale (GCOS; Deci & Ryan, 1985a) was created as a preliminary instrument to test these hypotheses and has been used since, although causality orientations have been otherwise assessed or induced via priming procedures. Koestner and Levine (this volume) review the history and current status of COT, described as SDT's "forgotten" mini-theory, since this mini-theory has received, comparably speaking, less research attention over the past few years.

The three mini-theories of CET, OIT, and COT were part of Deci and Ryan's (1985b) first formal statement of SDT. Although SDT research was still in its infancy at that time, the book contained applied chapters in clinical, educational, sport, and organizational domains reflecting the efforts of a number of early contributors. Even in this early statement, the organismic perspective discussed above was at the heart of SDT, including the idea that healthy human functioning is dependent upon basic need satisfactions.

**Parent nurturance model.** The organismic approach leads directly to a series of developmental postulates, and in the 1980s SDT's developmental research began in earnest. To support children's development and growth, parents and other socializers optimally assume a nurturing and facilitating orientation instead of a shaping and controlling role. This insight led Grolnick and Ryan (1989) to begin assessing three dimensions of parenting that they saw as nurturing of self-development in children: *support for autonomy*, *structure*, and *involvement*. They reasoned that these three dimensions in conjunction help to provide a differentiated picture of parenting, capturing its different forms better than previous parent models. In particular they argued that in optimal parenting there is both support for autonomy but also scaffolding for development that allows a child to feel supported, confident, and agentic.

These parenting dimensions of SDT are revisited and reviewed by Grolnick and Lerner in this volume, and their critical role in diverse domains of children's functioning is further discussed by Mageau and Joussemet in this volume. These three dimensions matter across different life periods, as noted by Soenens and Vansteenkiste, with Joussemet and Mageau reviewing work in early childhood and Ratelle and Guay focusing on emerging adulthood (all in this volume). In addition, Kanat-Maymon, Assor, and Roth (this volume) review research on *conditional regard*, a variable which first emerged within SDT as a specific type of controlling parent behavior but which is now recognized as a dynamic aspect of close relationships across the lifespan.

These dimensions of structure and autonomy support also were relevant to educational environments, as early studies showed (e.g., Connell & Wellborn, 1991; Grolnick, Ryan, & Deci, 1991, Skinner & Belmont, 1993). The relation and interplay between dimensions of autonomy support and structure have been studied as critical dimensions of facilitating environments within SDT ever since (e.g., see Jang, Reeve, & Deci, 2010; Vansteenkiste et al., 2012), many of these findings summarized by Ryan, Reeve et al. (this volume) in their chapter on education. This interplay between autonomy support and structure is specifically assessed within the circumplex model described by Aelterman and Vansteenkiste (this volume), a model that provides a fine-grained insight in the way these two foundational dimensions of autonomy support and structure relate to each other.

SDT's early research in parenting also led us to an important conceptual differentiation between autonomy and independence that has become critical not only to the theory's developmental models but also to its cross-cultural theorizing. Autonomy is, in SDT, about volition and willingness, whereas independence describes self-reliance, or not relying on others for guidance or support. In a SDT perspective, within a nurturing parent-child relationship there can be *volitional dependence* on the parent, a willing acceptance of the parent's guidance or help, a healthy processes facilitated by autonomy support (Ryan & Lynch, 1989; Ryan et al., 2005). Yet at other times, autonomy-supportive parents offer their offspring the necessary room and freedom to explore, discover, and make their own decisions, thereby fostering *volitional independence*. What matters most is not whether parents promote independence or dependence, but how they do so. Both controlled dependence and controlled independence yield fewer socioemotional benefits compared to their autonomous equivalents (Soenens, Vansteenkiste, & Sierens, 2009).

**Basic psychological needs theory.** By the middle of the 1990s SDT researchers were already using a model of basic needs for autonomy, competence, and relatedness as an organizing principle, although *basic psychological needs theory* (BPNT) as a fourth mini-theory was not formally presented until Ryan and Deci (2002). The purpose of BPNT was to make explicit the propositions that were already inductively apparent, namely that there were specific psychological needs or essentials for psychological growth, wellness, and integrity (Vansteenkiste, Soenens, & Ryan, this volume).

Once making the claim that something is a basic psychological need, the need for cross-cultural validation becomes necessary. As basic needs are assumed to play an essential role in individuals' well-being, it logically follows that this dynamic applies universally. The cross-cultural validity of SDT's basic psychological needs was supported in early studies, including a project predicting Bulgarian and U.S. workers' well-being based on these need satisfactions (Deci et al., 2001). Since then, many studies have confirmed that basic needs assessments similarly predict well-being across culturally diverse populations. For example, Chen et al. (2015) found both need satisfactions and frustrations account for variations in Chinese, Belgian, Peruvian, and U.S. students' well-being and ill-being, and

Yu, Levesque-Bristol, and Maeda (2018) showed equivalent benefits of autonomy across East Asian and North American samples.

The very nature of SDT's assumptions make cross-cultural work particularly important to it. While cross-cultural work is often relativist in focus and searches for differences between cultures, SDT's focus is on fundamental and universal needs underlying human psychological thriving, which are seen as being variously expressed (Soenens, Vansteenkiste, & Van Petegem, 2015). In fact, SDT's embrace of an etic claim of common needs also allows for emic differences, insofar as these basic needs can be satisfied or undermined in ways that are differentially shaped and constrained by cultural norms (e.g., see Sayanagi & van Egmond, this volume). Lynch (this volume) reviews past cross-cultural work in BPNT and emphasizes that SDT can be applied to understand the specific ways in which cultures express and fulfill basic needs, as well as cultural variations in how they compensate for those needs that remain unfulfilled.

The criteria of being essential and being universally relevant are just two of the attributes that characterize basic psychological needs. Vansteenkiste, Soenens, and Ryan (this volume) list nine criteria and their corollary implications for research and practice in their review of the growing empirical work on BPNT. They note that need candidates such as morality, benevolence, security, and nature exposure have been proposed as potentially additional basic psychological needs. Yet, they maintain, autonomy, competence, and relatedness remain the most pervasive and robust predictors of thriving-related outcomes, whereas these other candidate needs may yield more contextualized and specific effects. For example, benevolence and nature seem to be important wellness enhancers (Martela & Ryan, 2020), whereas security and self-esteem appear to operate primarily as deficit motives (important particularly when lacking; Vermote et al., 2022; Sheldon et al., 2001). How fundamental any given candidate need will be to full functioning remains open to empirical investigation, but whether or not considered "basic" these additional need candidates have shown some importance in their own right.

**Subjective vitality.** SDT's notion of *subjective vitality* grew out of early investigations in sport and exercise by Frederick and Ryan (1993). They found many participants reported that physical activity brought them enhanced vitality and vigor, which seemed central to their overall feeling of wellness. Intrigued by this idea, Ryan and Frederick (1997) developed and validated a measure called the Subjective Vitality Scale (SVS). The SVS taps a sense of aliveness and of having energy and is a unique and core indicator of a fully functioning organism. Subjective vitality is affected by both physical (e.g., sleep) and psychological (e.g., need satisfactions/frustrations) factors and their interactions. In this volume, Frederick and Ryan report on the 25 years of research on the SVS since showing its variation with need satisfaction and individual autonomy, among other dynamics.

**The physical self.** Research in sport and physical activity has been a generative source of observations and theory within SDT from its very beginnings. In part this is because as an organismic perspective, SDT has a holistic view in which psychological needs affect

physical needs and vice versa. The dynamic interface between psychological and physical needs in relation to individuals' experienced vitality and fatigue is explored by Campbell and Vansteenkiste (this volume), who examine the reciprocal influences of sleep quality and quantity with basic need satisfactions and frustrations and energy level.

More generally SDT's rich tradition of studying the physical self is well reviewed in this volume in chapters by Wang and Hagger on *physical activity*, Taylor and Lonsdale on *physical education*, and Standage on *sport*. These chapters all speak to the active human nature assumed by SDT, in which people have an inherent propensity to exercise their skills and grow in their mastery.

**Mindfulness and motivation.** From its outset, SDT has argued that awareness is essential to exercising autonomy (Deci & Ryan, 1980b, 1985b). With awareness of both the internal and the external environment a person is better able to make adaptive choices in terms of actions and reactions. However, investigation of the role of awareness in both autonomy and need satisfaction really began with a series of studies by Brown and Ryan (2003) to validate a measure of mindfulness and study its relations with autonomy. They found that greater mindfulness predicted more autonomous motivation at both trait (between-person) and state (within-person) levels of analysis. This is important in showing how mindfulness is a resource in self-regulation (Rigby, Schultz, & Ryan, 2014), an idea supported in a meta-analysis by Donald et al. (2020). This meta-analysis showed that mindfulness was increasingly positively correlated with more autonomous motivations within SDT's taxonomy. Beloborodova and Brown (this volume) revisit this interface between mindfulness and behavioral regulation, reviewing mindfulness as an inner resource associated with greater autonomy.

**Goal contents theory.** During the 1990s SDT was developing in multiple directions, with continuing work on intrinsic motivation and internalization and with experiments and field studies looking at ego involvement, introjection, and other internal dynamics that interfere with autonomy. There was more work on parenting, looking at the positive developmental effects of parental autonomy support. There was also extension of applied studies beyond organizations, parents, and schools to healthcare and physical activity.

It was also at this time that research began that would eventually become *goals content theory* (GCT). It began with work by Kasser and Ryan (1993, 1996) on the "dark side of the American dream," showing that the more people focus on intrinsic goals such as close relationships, community, and personal growth, the happier they are, whereas a focus on extrinsic goals such as money, fame, and image yields less positive effects. These effects, though controversial, withstood numerous replications. Vansteenkiste, Simons, et al., (2004) extended this work to *goal framing*—that is, presenting learning tasks as instrumental for attaining intrinsic or extrinsic goals, finding that intrinsic goal framing fosters more sustained engagement and better learning.

GCT was initially presented as a subpart of BPNT (see Ryan & Deci, 2002), but because of the growing amount of research using this model it was subsequently

differentiated as GCT (Ryan, 2009; Vansteenkiste et al., 2010). Different goal-contents related differently not only to well-being—the central outcome within BPNT—but also to a variety of social, moral, and societal outcomes (e.g., prejudice; Duriez et al., 2007). Bradshaw (this volume) reevaluates both past evidence and future directions of this important area of work on human aspirations.

**SDT's eudaimonic orientation.** At the turn of the 21st century there was a surge of interest in well-being, one manifestation of which was the start of the *positive psychology* movement (Sheldon & Ryan, 2011). Yet some of the conceptions of well-being fielded by positive psychologists (e.g., Kahneman, Diener, & Schwarz, 1999), when considered from SDT's organismic point of view, were at best incomplete, as they primarily focused on hedonic outcomes such as happiness and pleasure. Responding to this trend, Ryan and Deci (2001) argued that the study of wellness required a less narrow conception of thriving, one that included eudaimonic perspectives. In eudaimonia a person is fully functioning, aware, authentic, and pursuing what really matters to them, and in the process finding basic need fulfillment (Ryan et al., 2008). Having a eudaimonic view broadens SDT's considerations of the conditions for and outcomes of human flourishing, because that requires nurturing our excellences and virtues as people. Martela (this volume) and Curren (this volume) take up the topic of eudaimonia, reviewing the latest conceptualizations within SDT, especially as they apply to societal wellness.

Among expressions of eudaimonia, the virtues of giving to and caring for other people loom large. But how does giving result in greater wellness in the giver? SDT research shows that the act of giving can itself engender basic need satisfactions because in such acts one is expressing values (autonomy) having an effect (competence) and connecting with others (relatedness). Martela's chapter also reviews this work on giving and benevolence and the prosocial focus of human nature under conditions of support.

**Emotion regulation.** Recently SDT's functional approach has been applied to emotion integration, and the regulation of experience at the "internal boundary" of the self (Ryan, Deci, & Vansteenkiste, 2016). Emotions can carry a charge which itself can be regulated in different ways, from direct suppression of emotional experiences to applying strategies to down-regulate and "manage" them. But theory and, more recently, research within SDT suggest that emotions are organismic phenomena that can be adaptively used when approached and processed as informational inputs (rather than being suppressed or down-regulated, as in some coping theories). Within SDT this process is called *integrative emotion regulation* (Roth, Vansteenkiste, & Ryan, 2019; Roth & Benita, this volume). Like intrinsic motivation and internalization, integrative emotion regulation is a way of assimilating emotion-laden experiences. Similar to other integrative processes, integrative emotion regulation is facilitated by basic need supports, both developmentally (Brenning et al., 2015) and situationally (Roth et al., 2017). This focus on the integrative processing of experiences rather than compartmentalization or suppression is also reflected in the memory research reviewed by Philippe (this volume).

Related to emotion regulation is increasing work within SDT on solitude. As it turns out, people have varied experiences when they are alone with themselves, and one's quality of experience is predicted by basic need satisfactions and motives for being alone. Given that time alone can for some be distressing and for others a time for reflection and growth, the chapter in this volume by Weinstein, Nguyen, and Hansen presents a clarifying model on solitude and its dynamics.

**Relationships motivation theory.** The most recently added formal mini-theory of SDT is *relationships motivation theory* (RMT; Ryan & Deci, 2017), which is reviewed in detail by Knee and Browne (this volume). At the core of RMT is the claim that essential to high-quality close relationships is support for autonomy. Whereas positive regard and warmth can come in many forms, when love or regard is contingent, or the giving of care controlling, the experience of both autonomy and relatedness is compromised. In contrast, autonomy-supportive partners facilitate authenticity, disclosure, emotional reliance, security, trust, and an array of well-being benefits associated with relatedness satisfaction.

**Other currents in SDT today**. SDT also is a framework from which many other phenomena can be studied and from which varied models can be constructed. Examples in this *Handbook* include the *dualistic passion model* (Vallerand & Paquette, this volume), which explores motivational dynamics and need satisfaction among people who are highly engaged in an activity. Sheldon and Goffredi (this volume) present the *self-concordance model*, which focuses on the congruence and authenticity of people's goals, as well as how they might self-regulate their own growth and integrity. The *inner compass model* (Assor, Benita, & Geifman, this volume) examines the internalized sources of people's value-driven behaviors and decisions and how we develop an identity and abiding values that can guide ongoing life decisions. Holding and Koestner (this volume) present their *goal life cycle model*, which addresses not only goal adoption and maintenance but also the process of relinquishing goals as circumstances, capacities, or demands change. Each of these models draws upon basic premises from SDT even while applying them in unique ways. They share with SDT the spirit and aims of enhancing motivational quality and wellness within individuals, using basic need satisfactions as key leverages.

## Positioning SDT within Psychology's Landscape

### SDT and Psychology's Subdisciplines

SDT aims to fulfill all the criteria for a broad theory of behavior, including explanations of processes underlying personality development, situational and individual variations in behavior, and differential outcomes in experience and adaptation. This means it must cross social, developmental, and clinical specialties within psychology.

**Social psychology.** Insofar as *social psychology* is the science of how social and interpersonal contexts impact human behavior, SDT is clearly a social psychology. From its beginnings, a strong suit for SDT has been its experimental approach, built on varying

external conditions associated with autonomy, competence, and relatedness needs and examining their impact on behavioral and experiential outcomes. This has included the study of *proximal social contexts,* especially how day-to-day social environments can support or thwart basic psychological needs, with robust effects on both behavioral and wellness-related outcomes. SDT has also expanded to consider broader or pervasive influences on both motivation and wellness such as political rights, economic resources, and cultural and religious proscriptions and regulations (e.g., Curren, this volume; Lynch, this volume; Ryan & DeHaan, this volume). These pervasive influences exert both direct and indirect effects on human flourishing in ways largely mediated by basic psychological needs.

**Developmental psychology**. These social effects and impacts vary in both their nature and meaning within age, as Soenens and Vansteenkiste (this volume) highlight. As a *developmental psychology*, SDT is concerned not merely with change over time but also with the unfolding of the individual in directions of greater differentiation and integrity. In SDT this unfolding is seen as palpably expressed in people's inherent propensities to learn, exercise their abilities, and find meaning within their worlds. These integrative propensities drive psychological development and are an inherent part of our living nature. But unlike structural theories that focus on the regularities in outcomes of development, SDT is more focused on what facilitates and undermines the unfolding process itself. This means that it takes an interest in changes in the outcomes of need supports, from early expressions of intrinsic motivation in exploration and play (Mageau & Joussemet, this volume) to the struggles to attain an authentic identity (Ratelle & Guay, this volume; Ryan & Moore, this volume) and all the way to the generativity and ego integrity found in older adults who have pursued intrinsic goals and values (Soenens & Vansteenkiste, this volume). It also explains SDT's always strong emphasis on parenting and child-care environments (Grolnick and Lerner, this volume), which provide the foundation for the integrative processes of intrinsic motivation, internalization, and emotion regulation.

SDT also subscribes to the *developmental psychopathology* perspective (Cicchetti, 2010) in which perturbations to needs impact subsequent functioning and integrity. Mental health represents an outcome of the dialectic interplay between that active unfolding core self of the individual with social contexts that are either more or less need-supportive. Frustration of basic psychological needs, for example, hinders the emergence of capacities for curiosity, empathy, awareness, and executive functioning, among others, thus harming full functioning. Severe or chronic frustration of needs is further implicated in the etiology of psychological disorders (Ryan et al., 2016), which, once emerging, themselves interfere with the need satisfactions needed to thrive (van der Kaap-Deeder, this volume).

**Clinical and health psychologies**. Beyond contributing to our understanding of flourishing versus ill health, SDT has importance in the delivery of both medical and psychological treatments. Autonomy support is critical wherever maintenance of outcomes (i.e., internalization) is a treatment goal (Ryan, Lynch, et al., 2011). However, this

requires an authentic attitude of facilitation: an orientation toward the client or patient that is open, nonjudgmental, and noncontrolling. These qualities play a significant role not only in creating therapeutic alliance but in facilitating openness, transparency, a sense of safety, and readiness for internalization of change.

We see support for autonomy as central to the effective implementation across strategies of behavior change, from psychodynamic to behavioral interventions. For example, recent innovations in "third wave" behaviorist approaches such as *acceptance and commitment therapy* (Hayes & Hofmann, 2021) and *motivational interviewing* (Markland et al., 2005; Vansteenkiste & Sheldon, 2006) involve a strong focus on autonomy support (see Ryan, 2021). Evidence for SDT's relevance across varied clinical settings and methods is presented in several chapters in this *Handbook*, including those by Ntoumanis and Moller on health interventions, Besel and Williams on medical practice, Halvari and Halvari on dental health, and Zuroff and Koestner on psychotherapy, counseling, and behavior change.

**Personality psychology**. Sheldon and Prentice (2019) argued that SDT provides a general framework for *personality psychology*, as it contains elements that potentially unify inquiries across many of the disparate models we see in the field. Their special issue in *Journal of Personality* was dedicated to this theme. Certainly, SDT does have explanations for variabilities in both trait and state behavior and experience and measures of individual differences that emerge within development in the form of causality orientations (Koestner & Levine, this volume). It also has a dynamic view of need fulfillment and the compensatory and defensive responses to need frustration. Indeed, it has the classic elements of a broad personality perspective, including philosophical anchoring, testable hypotheses, and capacity to organize findings across a wide range of phenomena.

**Applied fields**. As we stated earlier, a problem with many of the models and theories in psychology today is their lack of applied value or "practicality" (Berkman & Wilson, 2021). This is clearly not the case for SDT. For example, in the field of organizational psychology SDT has become an increasingly central perspective and is influencing leadership (Van den Broeck & Slemp, this volume), compensation (Gagné, Nordgren-Selar, & Sverke, this volume), and overall strategies (e.g., Forest et al., this volume) to enhance employee productivity and wellness. In education, SDT is being applied to general classroom learning at all ages (Ryan, Reeve et al., this volume) and to specific fields such as music education (Evans, this volume), medical education (Kusurkar, this volume), and second-language learning (Noels, this volume). It is also importantly central to creating a facilitating and empowering environment to those with special needs (see Wehmeyer, this volume). Perhaps especially timely are applications of SDT to media (Adachi & Rigby, this volume) and technology use (Peters & Calvo, this volume; Rigby, this volume), in which we can see the need satisfactions and frustrations presented by the virtual worlds in which we increasingly spend time. In fact, there seems to be no area of applied behavioral

science in which SDT is not potentially involved, as the diverse set of applied chapters in this *Handbook* attests.

### SDT and the Three "Forces" of 20th-Century Psychology

When SDT emerged there were famously "three forces" dominating the landscape of psychology: behaviorism/cognitive behaviorism, psychodynamic psychology, and humanistic psychology. SDT did not fit neatly within any of these dominant movements.

With behaviorist and cognitive behaviorist colleagues we shared an empirical approach and an emphasis on a reliable evidence base. However, the metapsychological assumptions of both operant behaviorism and social learning theory are contradictory to our organismic approach. For instance, Skinner (1953) and Bandura (1995) both explicitly deny the relevance of autonomy to understanding behavior. Moreover, as Ryan (2021) points out, even as new "third wave" behaviorisms embrace more recognition of agency, awareness, and inner motivation as important to treatment success, these concepts do not easily fit into their behaviorist foundations and would more easily find meaning within an organismic framework.

In contrast, within both psychodynamic and humanistic movements are theorists who have embraced the organismic tenets that SDT shares (see Ryan & Deci, 2017, Chapter 2). However, they differ in other regards. Psychodynamic theories have classically involved a motivational theory based in drives that is mismatched with SDT's focus on intrinsic motives and integrative tendencies as primary, although ego psychologists like White (1963) and Loevinger (1976) express some similar sentiments that influenced our own thinking.

SDT also shares sensibilities with many humanistic psychologists, and with Rogers (1963) in particular, as he explicitly embraced an organismic perspective. We also focus on basic needs, which was a central focus of Maslow (1954). But it is important to recognize that humanistic psychology is a movement under which many flags have flown rather than being a specific theory. That movement has at times veered away from the empirical grounding SDT's approach relies upon, and it includes under its umbrella some themes, theories, and issues that lie outside SDT's scope. That said, we do believe that SDT research is relevant to many of the central issues that occupy humanistic psychologists, especially by providing a specific and evidence-supported approach to issues surrounding self-actualization, personal development, and authenticity (e.g., DeRobertis & Bland, 2018; Ryan & Ryan, 2019; Sheldon & Kasser, 2001).

### Positive Psychology and SDT

In the 21st century another movement within psychology has been the emergence of *positive psychology* (Seligman & Csikszentmihalyi, 2000). SDT is often identified with positive psychology because of its emphasis on human flourishing (Deci & Vansteenkiste, 2004; Sheldon & Ryan, 2011), but there are a number of differentiators as well. First,

SDT precedes positive psychology by a couple of decades and so is neither derived from nor based in that idea. Second, we see positive psychology (like humanistic psychology) as a movement rather than a theory, and it is comprised of a number of models, not all of which are congruent with SDT's premises or propositions. Third, in SDT we are especially wary of techniques focused on cognitive or behavior change that is not well-integrated, and positive psychology techniques and ideas vary in this regard. Fourth, and perhaps most important, while SDT is focused on flourishing, it is equally focused on harms and hazards and thus has both "positive" and "negative" psychological processes and outcomes in its focus.

## SDT in the 21st Century

As a final thought on placing SDT within an intellectual landscape we note that all theories reflect their historical periods; they are outgrowths of their times and cultural origins. In this regard SDT is not exception. SDT has arisen within an age of rising individualism, spurred by escalating globalism (Franck, 2001), modern economic dynamics (Phelps, 2013), and unprecedented access to information from sources outside one's community (Cohen-Almagor, 2021). On the positive side, trends toward individualism have been associated with increased human rights and freedoms (Friedman, 1999), and individualistic societies appear to yield increased individual well-being (Welzel, 2013) and even altruism (Rhoads et al., 2021). On the other hand, individualism is often seen as a threat to traditional social structures and to some group values (Santos, Varnum, & Grossman, 2017). The fear is that individualistic pursuits and values will override and erode these traditional sources of societal organization.

These dynamic features of our current historical epoch give special relevance to a theory of human *autonomy*, because people everywhere are increasingly faced with the freedom, and the burdens, of choosing identities, lifestyles, and group affiliations rather than simply engaging in those transmitted to them via family or tradition. SDT, with its emphasis on the different qualities of internalization, is uniquely positioned to look at how individuals assimilate or reject the values and practices of their ambient groups, cultures, and institutions. In this regard it speaks to internalization dynamics within both individualistic and collectivistic cultures, as they to varying extents and in different ways meet or frustrate basic human needs.

This is not to say that the behavioral principles SDT details concerning the benefits of human autonomy and the harms of excessive control, or the relevance of basic psychological needs to wellness, are merely modern phenomena—they are not. Throughout history oppression, punitive external control, and heteronomy have harmed people, and people have ever sought freedom from controls and emancipatory opportunities. But the issues of autonomy, identity, and choice are particularly salient in modern times, as well as being issues that prior behavioral and cognitive theories have largely either skirted, ignored, or

denied. It thus is not surprising that the issues addressed by SDT have attracted the global attention that they have.

## Coda: The Text Ahead

If you have gotten this far in this chapter you will have learned *about* SDT but have not yet seen much of what this body of work actually *is*. That is the purpose of the rest of this *Handbook*. In what follows we begin with six chapters, each reviewing one of SDT's core mini-theories. We move from there to chapters on specialized topics within SDT from vitality to solitude, and mindfulness to memory. Included are models of development, parenting, and identity. From such substantive areas and models, we transition to applied work in areas including organizations, educational institutions, physical activity, clinical practice, and media. We end with a section addressing broader societal issues such as the influences of cultures, groups, governments, and economies on people's capacities to satisfy basic needs and realize a life worth living. Indeed, the 83 authors of these 57 chapters present a wide array of refinements, extensions, and applications of this organically developing organismic, psychological, person-centered, evidence-based theory.

## References

Aelterman, N., Vansteenkiste, M., Soenens, B., & Haerens, L. (2016). A dimensional and person-centered perspective on controlled reasons for non-participation in physical education. *Psychology of Sport and Exercise*, *23*, 142–154.

Angyal, A. (1965). *Neurosis and treatment: A holistic theory*. Wiley.

Bandura, A. (1995). *Self-efficacy in changing societies*. Cambridge University Press.

Berkman E. T., & Wilson, S. M. (2021). So useful as a good theory? The practicality crisis in (social) psychological theory. *Perspectives on Psychological Science, 16*(4), 864–874.

Brenning, K., Soenens, B., Van Petegem, S., & Vansteenkiste, M. (2015). Perceived maternal autonomy support and early adolescent emotion regulation: A longitudinal study. *Social Development*, *24*, 561–578.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., Van der Kaap-Deeder, J., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, *39*(2), 216–236. https://doi.org/10.1007/s11031-014-9450-1

Cicchetti, D. (2010). Developmental psychopathology. In M. E. Lamb, A. M. Freund, & R. M. Lerner (Eds.), *The handbook of life-span development, Vol. 2: Social and emotional development* (pp. 511–589). John Wiley & Sons. https://doi.org/10.1002/9780470880166.hlsd002014

Cohen-Almagor, R. (2021). The future of the internet. *Academia Letters,* article 1962. https://doi.org/10.20935/AL1962

Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Minnesota symposium on child psychology* (Vol. 22, pp. 43–77). Erlbaum.

de Charms, R. (1968). *Personal causation: The internal affective determinants of behavior*. Academic Press.

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, *18*(1), 105–115. https://doi.org/10.1037/h0030644

Deci, E. L. (1972). Intrinsic motivation, extrinsic reinforcement, and inequity. *Journal of Personality and Social Psychology*, *22*(1), 113–120. https://doi.org/10.1037/h0032355

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668. https://doi.org/10.1037/0033-2909.125.6.627

Deci, E. L., & Ryan, R. M. (1980a). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13, pp. 39–80). Academic Press.

Deci, E. L., & Ryan, R. M. (1980b). Self-determination theory: When mind mediates behavior. *Journal of Mind and Behavior*, *1*(1), 33–43. http://www.jstor.org/stable/43852807

Deci, E. L., & Ryan, R. M. (1985a). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*, *19*, 109–134. https://doi.org/10.1016/0092-6566(85)90023-6

Deci, E. L., & Ryan, R. M. (1985b). *Intrinsic motivation and self-determination in human behavior*. Plenum Publishing Co. https://doi.org/10.1007/978-1-4899-2271-7

Deci, E. L., & Ryan, R. M. (2011). Levels of analysis, regnant causes of behavior, and well-being: The role of psychological needs. *Psychological Inquiry*, *22*(1), 17–22. https://doi.org/10.1080/1047840X.2011.545978

Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern bloc country: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin*, *27*(8), 930–942. https://doi.org/10.1177/0146167201278002

Deci, E. L., Schwartz, A. J., Sheinman, L., & Ryan, R. M. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology*, *73*(5), 642–650. https://doi.org/10.1037/0022-0663.73.5.642

Deci, E. L., & Vansteenkiste, M. (2004). Self-determination theory and basic need satisfaction: Understanding human development in positive psychology. *Ricerche di Psichologia*, *27*, 17–34.

De Muynck, G.-J., Vansteenkiste, M., Delrue, J., Aelterman, N., Haerens, L., & Soenens, B. (2017). The effects of feedback valence and style on need satisfaction, self-talk, and perseverance among tennis players: An experimental study. *Journal of Sport & Exercise Psychology*, *39*, 67–80.

DeRobertis, E. M., & Bland, A. M. (2018). Tapping the humanistic potential of self-determination theory: Awakening to paradox. *The Humanistic Psychologist*, *46*(2), 105–128. https://doi.org/10.1037/hum0000087

Di Domenico, S. I., & Ryan, R. M. (2017). The emerging neuroscience of intrinsic motivation: A new frontier in self-determination research. *Frontiers in Human Neuroscience*, *11*, 145. https://doi.org/10.3389/fnhum.2017.00145

Donald, J. N., Bradshaw, E. L., Ryan, R. M., Basarkod, G., Ciarrochi, J., Duineveld, J. J., Guo, J., & Sahdra, B. K. (2020). Mindfulness and its association with varied types of motivation: A systematic review and meta-analysis using self-determination theory. *Personality and Social Psychology Bulletin*, *46*(7), 1121–1138. https://doi.org/10.1177/0146167219896136

Duriez, B., Vansteenkiste, M., Soenens, B., & De Witte, H. (2007). The social costs of extrinsic relative to intrinsic goal pursuits: Their relation with social dominance and racial and ethnic prejudice. *Journal of Personality*, *75*, 757–782.

Eronen, M. I., & Bringmann, L. F. (2021). The theory crisis in psychology: How to move forward. *Perspectives on Psychological Science*, *16*(4), 779–788.

Flunger, B., Hollmann, L., Hornstra, L., & Murayama, K. (In press). It's more about a lesson than a domain: Lesson-specific autonomy support, motivation, and engagement in math and a second language. *Learning and Instruction*. Advance online publication. https://doi.org/10.1016/j.learninstruc.2021.101500

Franck, T. (2001). *The empowered self: Law and society in the age of individualism*. Oxford University Press.

Frederick, C., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relations with participation and mental health. *Journal of Sport Behavior*, *16*, 124–146.

Friedman, L. M. (1999). *The horizontal society*. Yale University Press.

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, *52*(5), 890–898. https://doi.org/10.1037/0022-3514.52.5.890

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, *81*(2), 143–154. https://doi.org/10.1037/0022-0663.81.2.143

Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology*, *83*(4), 508–517. https://doi.org/10.1037/0022-0663.83.4.508

Hastings, J., Michie, S., & Johnston, M. (2020). Theory and ontology in behavioural science. *Nature Human Behavior*, *4*, 226. https://doi.org/10.1038/s41562-020-0826-9

Hayes, S. C., & Hofmann, S. G. (2021). "Third-wave" cognitive and behavioral therapies and the emergence of a process-based approach to intervention in psychiatry. *World Psychiatry*, *20*(3), 363–375.

Heider, F. (1958). *The psychology of interpersonal relations*. Wiley.

Howard, J. L., Gagné, M., & Bureau, J. S. (2017). Testing a continuum structure of self-determined motivation: A meta-analysis. *Psychological Bulletin*, *143*(12), 1346–1377. https://doi.org/10.1037/bul0000125

Jacob, F. (1973). *The logic of life*. Pantheon Books.

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure, but autonomy support and structure. *Journal of Educational Psychology*, *102*(3), 588–600. https://doi.org/10.1037/a0019682

Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, *65*(2), 410–422. https://doi.org/10.1037/0022-3514.65.2.410

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*(3), 280–287. https://doi.org/10.1177/0146167296223006

Kahneman, D., Diener, E., & Schwarz, N. (1999). *Well-being: Foundations of hedonic psychology*. Russell Sage Foundation.

Kuhn, T. S. (1970). *The structure of scientific revolutions* (2nd ed.). University of Chicago Press.

Loevinger, J. (1976). *Ego development*. Jossey-Bass.

Markland, D., Ryan, R. M., Tobin, V., & Rollnick, S. (2005). Motivational interviewing and self-determination theory. *Journal of Social and Clinical Psychology*, *24*(6), 811–831. https://doi.org/10.1521/jscp.2005.24.6.811

Martela, F., & Ryan, R. M. (2020). Distinguishing between basic psychological needs and basic wellness enhancers: The case of beneficence as a candidate psychological need. *Motivation and Emotion*, *44*(1), 116–133. https://doi.org/10.1007/s11031-019-09800-x

Maslow, A. H. (1954). *Motivation and personality*. Harper.

Mayer, E. (1982). *The growth of biological thought*. Belknap Press.

Muthukrishna, M., & Henrich, J. (2019). A problem in theory. *Nature Human Behaviour*, *3*, 221–229. https://doi.org/10.1038/s41562-018-0522-1

Otis, N., Grouzet, F. M. E., & Pelletier, L. G. (2005). Latent motivational change in an academic setting: A 3-year longitudinal study. *Journal of Educational Psychology*, *97*(2), 170–183.

Peng, W., Lin, J.-H., Pfeiffer, K. A., & Winn, B. (2012). Need satisfaction supportive game features as motivational determinants: An experimental study of a self-determination theory-guided exergame. *Media Psychology*, *15*(2), 175–196.

Phelps, E. S. (2013). *Mass flourishing*. Princeton University Press.

Polanyi, M. (1958). *Personal knowledge: Towards a post-critical philosophy*. University of Chicago Press.

Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin*, *26*, 419–435. https://doi.org/10.1177/0146167200266002

Rhoads, S. A., Gunter, D., Ryan, R. M., & Marsh, A. A. (2021). Global variation in subjective well-being predicts seven forms of optimism. *Psychological Science*, *32*(8), 1247–1261.

Rigby, C. S., Schultz, P. P., & Ryan, R. M. (2014). Mindfulness, interest-taking, and self-regulation: A self-determination theory perspective on the role of awareness in optimal functioning. In A. Ie, C. T. Ngnoumen, & E. J. Langer (Eds.), *Handbook of mindfulness* (pp. 216–235). Wiley.

Rogers, C. R. (1963). The actualizing tendency in relation to "motives" and to consciousness. In M. R. Jones (Ed.), *Nebraska symposium on motivation* (Vol. 11, pp. 1–24). University of Nebraska Press.

Roth, G., Shane, N., & Kanat-Maymon, Y. (2017). Empathising with the enemy: Emotion regulation and support for humanitarian aid in violent conflicts. *Cognition and Emotion*, *31*(8), 1511–1524. http://dx.doi.org/10.1080/02699931.2016.1237348

Roth, G., Vansteenkiste, M., & Ryan, R. M. (2019). Integrative emotion regulation: Process and development from a self-determination theory perspective. *Development and Psychopathology*, *31*(3), 945–956. https://doi.org/10.1017/S0954579419000403

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, *43*(3), 450–461. https://doi.org/10.1037/0022-3514.43.3.450

Ryan, R. M. (2009). Self-determination theory and well-being. *WeD Research Review*, *1*, 1–2.

Ryan, R. M. (2021). A question of continuity: A self-determination theory perspective on "third wave" behavioral theories and practices. *World Psychiatry, 20*(3), 376–377. https://doi.org/10.1002/wps.20885

Ryan, R. M., Bernstein, J. H., & Brown, K. W. (2010). Weekends, work, and wellbeing: Psychological need satisfactions and day of the week effects on mood, vitality, and physical symptoms. *Journal of Social and Clinical Psychology*, *29*(1), 95–122. https://doi.org/10.1521/jscp.2010.29.1.95

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*(5), 749–761. https://doi.org/10.1037/0022-3514.57.5.749

Ryan, R. M., Connell, J. P., & Deci, E. L. (1985). A motivational analysis of self-determination and self-regulation in education. In C. Ames & R. E. Ames (Eds.), *Research on motivation in education: The classroom milieu* (pp. 13–51). Academic Press.

Ryan, R. M., & Deci, E. L. (2001). To be happy or to be self-fulfilled: A review of research on hedonic and eudaimonic well-being. In S. Fiske (Ed.), *Annual review of psychology* (Vol. 52, pp. 141–166). Annual Reviews, Inc.

Ryan R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3–33). University of Rochester Press.

Ryan, R. M., & Deci, E. L. (2004). Autonomy is no illusion: Self-determination theory and the empirical study of authenticity, awareness, and will. In J. Greenberg, S. L. Koole, & T. Pyszcynski (Eds.), *Handbook of experimental existential psychology* (pp. 449–479). Guilford Press.

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality*, *74*(6), 1557–1585. https://doi.org/10.1111/j.1467-6494.2006.00420.x

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Publishing. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., & Deci, E. L. (2019). Brick by brick: The origins, development, and future of self-determination theory. In A. J. Elliot (Ed.), *Advances in motivation science* (Vol. 6, pp. 111–156). Elsevier. https://doi.org/10.1016/bs.adms.2019.01.001

Ryan, R. M., Deci, E. L., & Vansteenkiste, M. (2016). Autonomy and autonomy disturbances in self-development and psychopathology: Research on motivation, attachment, and clinical process. In D. Cicchetti (Ed.), *Developmental psychopathology, Vol. 1: Theory and method* (3rd ed., pp. 385–438). John Wiley & Sons. https://doi.org/10.1002/9781119125556.devpsy109

Ryan, R. M., Deci, E. L., Vansteenkiste, M., & Soenens, B. (2021). Building a science of motivated persons: Self-determination theory's empirical approach to human experience and the regulation of behavior. *Motivation Science*, *7*(2), 97–110. https://doi.org/10.1037/mot0000194

Ryan, R. M., & Frederick, C. M. (1997). On energy, personality and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*(3), 529–565. https://doi.org/10.1111/j.1467-6494.1997.tb00326.x

Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies*, *9*(1), 139–170. https://doi.org/10.1007/s10902-006-9023-4

Ryan, R. M., La Guardia, J. G., Solky-Butzel, J., Chirkov, V., & Kim, Y. (2005). On the interpersonal regulation of emotions: Emotional reliance across gender, relationships and cultures. *Personal Relationships*, *12*(1), 145–163. https://doi.org/10.1111/j.1350-4126.2005.00106.x

Ryan, R. M., & Lynch, J. (1989). Emotional autonomy versus detachment: Revisiting the vicissitudes of adolescence and young adulthood. *Child Development*, *60*(2), 340–356. https://doi.org/10.2307/1130981

Ryan, R. M., Lynch, M. F., Vansteenkiste, M., & Deci, E. L. (2011). Motivation and autonomy in counseling, psychotherapy and behavior change: A look at theory and practice. *Counseling Psychologist*, *39*(2), 193–260. https://doi.org/10.1177/0011000009359313

Ryan, R. M., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. *Journal of Personality and Social Psychology*, *45*(4), 736–750. https://doi.org/10.1037/0022-3514.45.4.736

Ryan, R. M., Ryan, W. S., & Di Domenico, S. I. (2019). Beyond reinforcement—Intrinsic and extrinsic motivation: Building on Deci (1971). In P. J. Corr (Ed.), *Personality and individual differences: Revisiting the classic studies*. Sage.

Ryan, W. S., & Ryan, R. M. (2019). Toward a social psychology of authenticity: Exploring within-person variation in autonomy, congruence, and genuineness using self-determination theory. *Review of General Psychology*, *23*(1), 99–112. https://doi.org/10.1037/gpr0000162

Santos, H. C., Varnum, M. E. W., & Grossman, I. (2017). Global increases in individualism. *Psychological Science*, *28*, 1228–1239. https://doi.org/10.1177/0956797617700622

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, *55*, 5–14.

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology*, *80*, 325–339. https://doi.org/10.1037/0022-3514.80.2.325

Sheldon, K. M., & Kasser, T. (2001). Goals, congruence, and positive well-being: New empirical validation for humanistic ideas. *Journal of Humanistic Psychology*, *41*, 30–50.

Sheldon, K. M., & Prentice, M. (2019). Self-determination theory as a foundation for personality researchers. *Journal of Personality*, *87*(1), 5–14.

Sheldon, K., & Ryan, R. M. (2011). Positive psychology and self-determination theory: A natural interface. In V. I. Chirkov, R. M. Ryan, & K. M. Sheldon (Eds.), *Human autonomy in cross-cultural context: Perspectives on the psychology of agency, freedom, and well-being* (pp. 33–44). Springer.

Shepard, J., & O'Grady, A. (2017). What kinds of alternative possibilities are required of the folk concept(s) of choice? *Consciousness and Cognition*, *48*, 138–148.

Skinner, B. F. (1953). *Science and human behavior*. Macmillan.

Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, *85*(4), 571–581.

Soenens, B., Vansteenkiste, M., & Sierens, E. (2009). How are parental psychological control and autonomy support related? A cluster-analytic approach. *Journal of Marriage and Family*, *71*, 187–202.

Soenens, B., Vansteenkiste, M., & Van Petegem, S. (2015). Let's not throw out the baby with the bathwater: Applying the principle of "universalism without uniformity" to autonomy-supportive and controlling parenting. *Child Development Perspectives*, *9*, 44–49.

Vallerand, R. J., Blais, M. R., Brière, N. M., & Pelletier, L. G. (1989). Construction and validation of the Motivation toward Education Scale. *Canadian Journal of Behavioural Science*, *21*(3), 323–349.

Vansteenkiste, M., Aelterman, A., De Muynck, G.-J., Haerens, L., Patall, E., & Reeve, J. (2018). Fostering personal meaning and self-relevance: A self-determination theory perspective on internalization. *Journal of Experimental Education*, *86*, 30–49.

Vansteenkiste, M., Lens, W., De Witte, S., De Witte, H., & Deci, E. L. (2004). The "why" and "why not" of job search behavior: Their relation to searching, unemployment experience and well-being. *European Journal of Social Psychology*, *34*, 345–363. https://doi.org/10.1002/ejsp.202

Vansteenkiste, M., Niemiec, C., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: An historical overview, emerging trends, and future directions. In T. Urdan & S. Karabenick (Eds.), *Advances in motivation and achievement, Vol. 16: The decade ahead* (pp. 105–166). Emerald Publishing.

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*(3), 263–280. https://doi.org/10.1037/a0032359

Vansteenkiste, M., & Sheldon, K. M. (2006). "There's nothing more practical than a good theory": Integrating motivational interviewing and self-determination theory. *British Journal of Clinical Psychology*, *45*, 63–82.

Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., Dochy, F., Mouratidis, A., Aelterman, N., Haerens, L., & Beyers, W. (2012). Identifying configurations of perceived teacher autonomy support and structure: Associations with self-regulated learning, motivation and problem behavior. *Learning and Instruction*, *22*(6), 431–439. https://doi.org/10.1016/j.learninstruc.2012.04.002

Vansteenkiste, M., Simons, J., Lens, W., Soenens, B., Matos, L., & Lacante, M. (2004). Less is sometimes more: Goal content matters. *Journal of Educational Psychology*, *96*(4), 755–764.

Vermote, B., Waterschoot, J., Morbée, S., Van der Kaap-Deeder, J., Schrooyen, C., Soenens, B., Ryan, R. M., & Vansteenkiste, M. (2022). Do psychological needs play a role in times of uncertainty? Associations

with well-being during the COVID-19 crisis. *Journal of Happiness Studies, 25,* 257–283. https://doi.org/10.1007/s10902-021-00398-x

Walsh, D. W. (2015). *Organisms, agency, and evolution*. Cambridge University Press.

Weinstein, N., DeHaan, C. R., & Ryan, R. M. (2010). Attributing autonomous versus introjected motivation to helpers and the recipient experience: Effects on gratitude, attitudes, and well-being. *Motivation and Emotion*, *34*(4), 418–431. doi:10.1007/s11031-010-9183-8

Welzel, C. (2013). *Freedom rising: Human empowerment and the quest for emancipation*. Cambridge University Press.

White, R. W. (1963). *Ego and reality in psychoanalytic theory: A proposal regarding independent ego energies*. International Universities Press.

Yu, S., Levesque-Bristol, C., & Maeda, Y. (2018). General need for autonomy and subjective well-being: A meta-analysis of studies in the US and East Asia. *Journal of Happiness Studies*, *19*(6), 1863–1882. https://doi.org/10.1007/s10902-017-9898-2

# Theoretical Foundations

## The Six Mini-Theories of SDT

# Cognitive Evaluation Theory: The Seedling That Keeps Self-Determination Theory Growing

Johnmarshall Reeve

## Abstract

Cognitive evaluation theory (CET) explains how environmental events (rewards), social contexts (classroom climates), and intrapersonal events (self-set goals) influence the ups and downs of intrinsic motivation. The theory's core insight is that the psychological meaning of these events can be informational, controlling, or amotivating, and it is the relative salience of these three aspects that explains the effect of each event on the recipient's intrinsic motivation. This core insight provided the basic building blocks for the now large literatures on interpersonal motivating styles and the dual-process model. Overall, CET arose as self-determination theory's first mini-theory to explain the controversy on the effect of extrinsic rewards on intrinsic motivation, and it now provides the contemporary insights self-determination theory needs to continue its theoretical growth and applied relevance.

**Key Words:** autonomy, autonomy support, dual-process model, functional significance, intrinsic motivation, rewards

Cognitive evaluation theory (CET; Deci & Ryan, 1980) was the first mini-theory in the self-determination theory (SDT) framework (Ryan & Deci, 2017). Its origins, assumptions, postulates, and initial empirical findings were discovered and published during the 1970s, and its original purpose was to explain how environmental events (e.g., rewards) influence the ups and downs of intrinsic motivation (Deci, 1975). Once formalized (Deci & Ryan, 1980; Ryan, Mims, & Koestner, 1983), the explanatory power and fruitfulness of its core insight became clear—namely, that all environmental events varied in how controlling, informational (autonomy-supportive), and amotivating people perceived them to be. Building on this core insight, CET provided the foundation for new understandings within the SDT framework, such as the motivational consequences of social contexts, the motivational consequences of intrapersonal events (e.g., self-set goals, self-talk), the motivational effects of interpersonal motivating styles, and discoveries and implications of the dual-process model. This chapter will present an overview of CET and then show how CET continues to catalyze frontier research in contemporary SDT.

## The Theory

CET is one of six mini-theories within the larger framework of SDT (Ryan & Deci, 2017). Every motivation theory starts with its assumptions, and CET proposes two key assumptions: (1) everyone is inherently prone to be intrinsically motivated and (2) to experience and maintain that intrinsic motivation, certain types of experiences are required. These required experiences are the satisfaction of the three basic psychological needs: autonomy (the need to experience personal ownership during one's behavior), competence (the need to experience effectance during environmental transactions), and relatedness (the need to experience acceptance and closeness in one's relationships).

Grounded in these assumptions, CET puts the spotlight on understanding how and why events (individual environmental events, social contexts, and intrapersonal events) sometimes support need satisfaction to enhance intrinsic motivation but at other times frustrate these psychological needs to undermine intrinsic motivation. The reason CET is such an exciting and important theory in the human motivation literature is because of the curious juxtaposition that intrinsic motivation is (1) inherent, spontaneous, and pervasive but also (2) fragile in the face of controlling and amotivating conditions. Researchers began to make sense of this curious juxtaposition when they discovered that all the environmental conditions that supported intrinsic motivation seemed to share something in common—they satisfied the recipient's psychological needs—just as all the environmental conditions that undermined intrinsic motivation also shared something in common: they frustrated the recipient's psychological needs.

CET can be stated in a set of five empirically testable propositions. Each of these propositions has been formally stated and explained in Ryan and Deci (2017, Chapters 6 and 7). Table 2.1 presents a paraphrased (simplified) version of each proposition. Propositions 1 through 3 represent CET circa 1980 to explain how individual environmental events (e.g., rewards, competition) affect intrinsic motivation. Propositions 4 and 5 were added to represent CET circa 1985 (Deci & Ryan, 1985; Ryan et al., 1983). Proposition 4 explains how the larger social context (e.g., classroom climate) affects intrinsic motivation. Proposition 5 explains how internal or intrapersonal events (self-set goals, self-talk) affect intrinsic motivation.

### Why Was CET Created in the First Place?

Each of SDT's six mini-theories came into existence for the same reason. In each case, there was a motivational phenomenon or a particular controversial research question that needed to be explained. The headline-grabbing controversial question that sparked the development of CET was this: What effect does an externally administered reward have on the recipient's intrinsic motivation? CET was then created to explain the multitude of factors that facilitate or undermine intrinsic motivation.

Like CET, each SDT mini-theory arose from a set of controversial and seemingly contradictory findings that needed to be organized into a coherent framework. In the

| Table 2.1 Cognitive Evaluation Theory: Its Purpose and Five Propositions |
|---|
| **Purpose** |
| Predict and explain how events—environmental events, social contexts, and intrapersonal events—will affect intrinsic motivation. |
| **Proposition 1** |
| **Environmental events vary in how autonomy-supportive or controlling they are**. The more controlling the event is perceived to be, the more likely it is to decrease autonomy and intrinsic motivation. The more noncontrolling and autonomy-supportive the event is perceived to be, the more likely it is to increase autonomy and maintain or enhance intrinsic motivation. |
| **Proposition 2** |
| **Environmental events vary in how informational they are**. The more the event communicates effectance information, the more likely it is to increase competence and intrinsic motivation. The more the event communicates ineffectance information, the more likely it is to decrease competence, decrease intrinsic motivation, and increase amotivation. |
| **Proposition 3** |
| Environmental events have three aspects, each of which has a functional significance: a controlling aspect, an informational aspect, and an amotivating aspect. **The relative salience of these three aspects determines the event's "functional significance" and hence its effects on psychological needs and intrinsic motivation**. Relatively controlling events decrease autonomy and intrinsic motivation; relatively informational events increase autonomy, competence, and intrinsic motivation; and relatively amotivating events decrease competence and intrinsic motivation. |
| **Proposition 4** |
| **Social contexts vary regarding how autonomy-supportive, controlling, and amotivating they are**. Autonomy-supportive contexts support autonomy, competence, and intrinsic motivation. Controlling and amotivating contexts diminish autonomy, competence, and intrinsic motivation. |
| **Proposition 5** |
| **Intrapersonal events vary regarding how autonomy-supportive, controlling, and amotivating they are**. Autonomy-supportive internal events support autonomy, competence, and intrinsic motivation. Controlling and amotivating internal events diminish autonomy, competence, and intrinsic motivation. |

case of CET, the controversy that most needed to be explained was the observation (and empirical finding) that people sometimes did but sometimes did not experience rewards, money, praise, feedback, rules, and so forth as controlling-undermining events (Deci, Koestner, & Ryan, 1999). Many of these external events were generally experienced as controlling and undermined intrinsic motivation, but some were generally experienced as informational and supported intrinsic motivation (e.g., praise). Still others were generally experienced as unrelated to intrinsic motivation (e.g., task-noncontingent rewards given for mere participation). The contribution of CET to the motivation literature was that it provided the needed organizing framework to predict and explain how any social event could be expected to facilitate, undermine, or have no effect on the recipient's intrinsic motivation.

*Motivation in CET*

CET highlights two motivational phenomena. The first is intrinsic motivation, which is treated as the outcome or dependent measure to be explained. Simply stated, intrinsic motivation is the motivation to engage in an activity out of interest and enjoyment. More formally, intrinsic motivation is the inherent desire to seek out novelty and challenge, to explore new environments, to take interest in activities, to learn, and to exercise and stretch one's skills and abilities (Ryan & Deci, 2017). While intrinsic motivation is typically treated as a dependent measure in empirical tests of CET, it is a growth motivation that underlies gains in many important developmental and behavioral outcomes, such as engagement, exploration, persistence, learning, skill development, creativity, performance, and well-being. This capacity of intrinsic motivation to fuel gains in these many important developmental and behavioral outcomes is what makes CET not only an important theory but also an important guide to effective practical application.

Intrinsic motivation is the centerpiece of CET, so it becomes a vital question to identify its origins. In SDT, intrinsic motivation is an innate organismic propensity to explore, to assimilate, and to exercise one's capacities. These intrinsic propensities toward growth are maintained and supported by satisfactions of autonomy, competence, and relatedness satisfaction. Thus, the second motivational phenomenon highlighted by CET is the psychological need. A psychological need is an inherent, universal psychological experience (i.e., autonomy, competence, or relatedness) that needs to be satisfied for an individual to thrive and be fully functioning in terms of personal growth, adjustment, and wellness (Ryan & Deci, 2017). Events affect intrinsic motivation because they first affect the person's psychological needs, especially those for autonomy and competence (Deci & Ryan, 1980). Overall, CET focuses on how external and internal events affect the satisfaction versus frustration of people's psychological needs, and in doing so, it focuses on how external and internal events affect the rise and fall of people's intrinsic motivation.

*Functional Significance*

"Functional significance" refers to the meaning or interpretation the person assigns to the environmental event, social context, or intrapersonal experience they are exposed to. Functional significance is the answer to the question: Why is someone offering me this event (e.g., praise, reward, feedback)? or What are the implications of the introduction of this event to my feelings of autonomy and competence? or What is the purpose behind this event being offered to me—Is it meant to control my behavior (to pressure me toward a specific outcome)? Is it meant to inform my competence (to communicate the message of a job well or poorly done)? Is it meant to support my autonomy (to promote choice)? The concept of functional significance is so central to CET that it

explains the mini-theory's name, as "cognitive evaluation" is synonymous with "functional significance."

The psychological meaning of an environmental or intrapersonal event can be informational, controlling, or amotivating. "Informational" means that the person experiences the event as a support to the experience of autonomy or competence (i.e., an event such as choice tends to inform autonomy, while an event such as positive feedback tends to inform competence). "Controlling" means that the person experiences the event as a means to pressure them toward a prescribed outcome, such that it tends to undermine autonomy. "Amotivating" means that the person experiences the event as something outside their personal control, such that it tends to diminish competence. All events actually have all three of these meanings (functions) associated with them, so what matters most in CET is which aspect of the event is most salient to the person: Is this event meant mostly to control my behavior, mostly to inform my autonomy and competence, or mostly to inform my incompetence?

A classic example of the functional significance of an event is an external reward (Deci et al., 1999; Ryan et al., 1983). Rewards can be presented to people in many different ways: expected (Greene & Lepper, 1974), tangible (Deci, 1971), expected and tangible (Wiechman & Gurland, 2009), unexpected (Lepper, Greene, & Nisbett, 1973), salient (Ross, 1975), verbal (Blank, Reis, & Jackson, 1984), self-administered (Dollinger & Thelen, 1978), task-contingent (Ryan et al., 1983), task-noncontingent (Deci, 1972), engagement-contingent or completion-contingent (Deci et al., 1999), performance-contingent (Ryan et al., 1983), competitively contingent (Vansteenkiste & Deci, 2003), or high-stakes/outcome-based (Ryan & Weinstein, 2009). When rewards are presented in these different ways, people tend to perceive the salience of their controlling, informational, and amotivating meanings in different ways. When experienced as controlling, the reward tends to diminish autonomy and hence intrinsic motivation. When experienced as a message of competence, the reward tends to enhance competence and hence intrinsic motivation. When experienced as a message of incompetence (e.g., a consolation prize; Daniel & Esser, 1980), the reward tends to diminish competence and hence intrinsic motivation. Finally, if the person experiences the reward as having little to do with their autonomy and competence (e.g., task-noncontingent reward), it tends to have little or no effect on intrinsic motivation. This means that it is not the environmental event per se that affects the person's intrinsic motivation but, rather, the psychological meaning ("functional significance") that the event has to the person.

By using CET, the effect an external event will have on the person's intrinsic motivation can be predicted in advance. This is an important theoretical point, but it is also an important practical point, because CET provides practitioners (e.g., teachers, parents, managers, coaches, healthcare professionals) with a means to forecast how the offering of any external event—a reward, goal, rule, grade, prize, choice, feedback, and so on—will likely affect the recipient's intrinsic motivation.
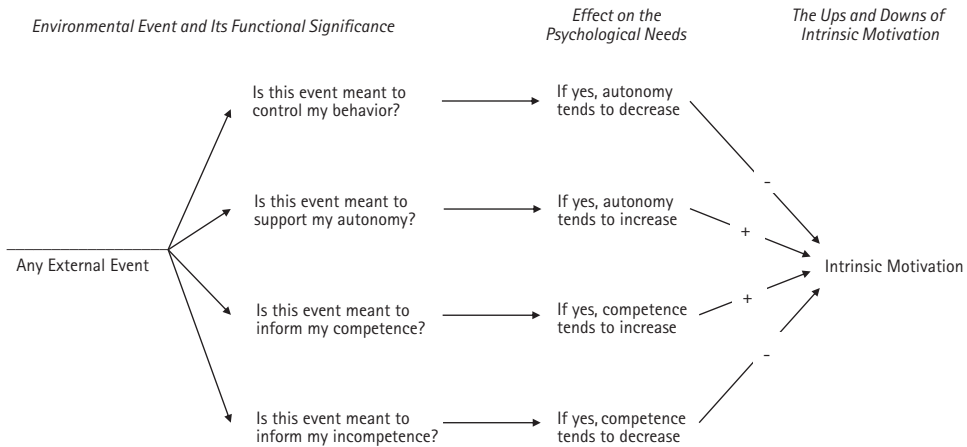
*Individual Environmental Events*

CET propositions 1 through 3 explain the effects of single environmental events on intrinsic motivation. The hypothesis-driven, predictive power of CET to explain the ups and downs of intrinsic motivation has been demonstrated across a wide range of discrete environmental (or external) events, including a reward (Deci et al., 1999), rule or limit setting (Koestner et al., 1984), choice (Patall, Cooper, & Robinson, 2008), praise (Henderlong & Lepper, 2002), optimal challenge (Danner & Lonky, 1981), interpersonal neglect (Anderson, Manoogian, & Reznick, 1976), external evaluation (Grolnick & Ryan, 1987), competition (Deci, Betley et al., 1981), positive feedback (Ryan, 1982), negative feedback (Carpentier & Mageau, 2013), corrective feedback (Mouratidis, Lens, & Vansteenkiste, 2010), surveillance (Plant & Ryan, 1985), deadline (Amabile, DeJong, & Lepper, 1976), verbal communication (Curran, Hill, & Niemiec, 2013), goal (Vansteenkiste et al., 2004), imposed goal (Mossholder, 1980), assessment criteria (Haerens et al., 2018), and a behavior change request (Vansteenkiste et al., 2018). Each of these events could be offered to a person in a way that decreased intrinsic motivation, increased intrinsic motivation, or left intrinsic motivation unchanged. This led to the core conclusion that the motivational effects of the socioenvironmental event were not so much a function of the event itself but, rather, in how it was presented to the person and, hence, how the person experienced that event: Was its effect informational? Controlling? Amotivating?

These findings raised several questions: What makes an event mostly controlling? Mostly informational? Mostly amotivating? The functional significance of the environmental event was originally determined by its effect on the psychological needs of autonomy and competence. This led to a series of studies that adopted a motivation mediation model in which the predictor variable was an environmental event, the hypothesized mediators were the psychological needs, and the outcome was a measure of intrinsic motivation. For instance, Reeve and Deci (1996) used an experimental research design that presented different ways of offering a competitive experience to participants (i.e., competitive set, pressure to win, competitive outcome), measured experiences of autonomy and competence as explanatory mediators, and assessed intrinsic motivation as the (self-reported and behaviorally measured) outcome. When offered in a controlling way (high pressure to win), competition decreased autonomy and hence intrinsic motivation; when offered in an informational way (winning), competition increased competence and hence intrinsic motivation; and when offered in an amotivating way (losing), competition decreased competence and hence intrinsic motivation.

To illustrate the key explanatory role played by the psychological needs of autonomy and competence within CET, Figure 2.1 presents a generic mediation model in which any social event can be examined as the predictor variable of interest, perceptions of autonomy and competence function as explanatory mediating variables, and measures of intrinsic motivation function as the outcome to be explained. To make sense of the model, the reader may enter an environmental event of interest into the blank space (e.g.,

*Environmental Event and Its Functional Significance*  *Effect on the Psychological Needs*  *The Ups and Downs of Intrinsic Motivation*

Is this event meant to control my behavior? → If yes, autonomy tends to decrease

Is this event meant to support my autonomy? → If yes, autonomy tends to increase

Any External Event

Is this event meant to inform my competence? → If yes, competence tends to increase

Is this event meant to inform my incompetence? → If yes, competence tends to decrease

Intrinsic Motivation

**Figure 2.1** Generic CET mediation model to explain how any external event can be expected to affect intrinsic motivation

an attendance policy, a token economy). The functional significance of that event then needs to be understood, and much of that interpretation derives from how the environmental event affects the person's experiences of autonomy and competence. Those events that inform and support autonomy and competence can be expected to increase intrinsic motivation, while those events that diminish and frustrate autonomy and competence can be expected to decrease intrinsic motivation.

This model leaves partly open the question of what precisely makes an environmental event autonomy-supportive, autonomy-suppressive, competence-informing, and incompetence-informing. For example, various forms of competitive structures, incentives, and feedback styles will have differing effects on intrinsic motivation as a function of these need-related dynamics. Even vocal tone can convey functional significance (e.g., Weinstein, Vansteenkiste, & Paulmann, 2020). These questions proved to be a catalyst to subsequent research to deeply understand what makes an event controlling, informational (especially autonomy-supportive), and amotivating, and they led to the research on interpersonal motivating styles (autonomy support, control, structure, chaos, involvement, rejection) that will be discussed later in the chapter.

*Social Contexts*

CET added proposition 4 to expand its scope to explain how the larger social context facilitates or undermines intrinsic motivation (Deci & Ryan, 1987; Ryan et al., 1983). Environmental events do sometimes occur in relative isolation, but they more often combine and co-occur in a constellation of intercorrelated socioenvironmental events that collectively create a social context (e.g., classroom climate) or an interpersonal context (e.g., coach-athlete relationship). Examples of a social context are classrooms, organizations, home environments, sport teams, a Montessori school, and a national culture. Examples

of an interpersonal context are a person's (usually a supervisor of some sort) communication style, disciplinary style, parenting style, coaching style, managerial style, and motivating style more generally. That is, just as people experience individual environmental events as relatively controlling, relatively autonomy-supportive/informational, or relatively amotivating, people similarly experience the larger social contexts and the motivating styles of supervisors as relatively controlling, relatively autonomy-supportive/informational, or relatively amotivating (Bartholomew et al., 2011). Proposition 4 parallels propositions 1 through 3 to such an extent that the reader can insert "This social context" or "This person's motivating style" into the "Any environmental event" blank line in Figure 2.1 and make the same predictions as to how that social context will affect the ups and downs of the recipient's intrinsic motivation.

*Intrapersonal Events*

CET added proposition 5 to expand its scope to explain how internal (or intrapersonal) events facilitate or undermine intrinsic motivation (Deci & Ryan, 1987; Ryan, 1982). While CET's original focus was on the motivational impact of environmental and socio-environmental events, researchers soon recognized that anything the environment could do to the person, the person could do to themselves. Rewards, praise, goals, communications, feedback, deadlines, and so forth can be given interpersonally from one person to another, but these same motivationally relevant events can be given intrapersonally to oneself as well. For instance, a teacher might say to a student, "Good job, Mary, you are making excellent progress!," but the student can similarly self-administer this same praise: "Good job, Self, you are making excellent progress!" Self-administered (internal, intrapersonal) events were found to have the same, parallel motivational effects on intrinsic motivation as environmentally administered events (i.e., they too were experienced as relatively controlling, relatively informational, or relatively amotivating). In the words of Ryan and Deci (2017, p. 170), "It seems that people can be as dictatorial to themselves as others can be to them."

A prototypical illustration of a controlling intrapersonal event is ego involvement in which the person's self-esteem is made contingent on attaining a specific outcome (e.g., "I *have to* do well"; Ryan, 1982). Ego involvement occurs when people put a lot of pressure on themselves to perform to the standards of a valued reference group to which they would like to belong (e.g., elite performers, intelligent people). Ego involvement undermines intrinsic motivation as the person shifts away from the interesting characteristics of the task toward pressure-packed feelings that they must perform well to maintain a sense of self-worth and social worth (Plant & Ryan, 1985). Overall, proposition 5 parallels propositions 1 through 3 to such an extent that the reader can insert "Any intrapersonal event" (e.g., ego involvement, contingent self-esteem, self-critical perfectionism, public self-consciousness) into the "Any environmental event" blank line in Figure 2.1 and make the same predictions as to how that self-administered internal event will affect the ups and downs of their intrinsic motivation.

**CET as a Seedling Mini-Theory to Grow SDT**

The core insight embedded within CET is that practically any event can be offered in a way that its recipient will experience it as controlling and undermining, as autonomy-supportive and enriching, or as amotivating and dispiriting. This seedling insight about the motivational consequences of environmental events was found to hold true both for the larger social context and for intrapersonal events. This seedling-to-sapling growth continued to produce its fruits by providing the basic building blocks for the now large literatures on interpersonal motivating styles and the dual-process model. This section illustrates how CET provides the catalyst to grow and strengthen the larger SDT framework.

*Motivating Style*

When individual external events combine into a constellation of co-occurring socioenvironmental influences, they are studied in the motivating style literature as "communication style" (Ntoumanis et al., 2018), "teaching style" (Aelterman et al., 2019), "parenting style" (Assor, Roth, & Deci, 2004), "managerial style" (Hardre & Reeve, 2009), or, simply, "motivating style" (Reeve, 2009). While each individual external event produces its own important motivational effects (as per CET), external events often coalesce into an overall coherent motivating style, and what supervisees mostly perceive, respond to, and benefit or suffer from is this larger, gestalt motivating style. For instance, when supervisors try to motivate others, they offer a multitude of socioenvironmental events to get the job done, as they communicate expectations, offer encouragement, provide explanatory rationales, provide guidance and feedback, use a particular tone of voice, offer or constrain choice, and more or less take the perspective of the other—all at the same time (or in close sequence). The gravitational forces that pull these individual socioenvironmental events together to positively intercorrelate and coalesce into an overall style are (1) interpersonal tone and (2) shared purpose.

Motivating style is the interpersonal tone and face-to-face behavior supervisors rely on when they try to motivate and engage others. SDT is concerned with multiple motivating styles, but the most frequently studied is autonomy support (Aelterman et al., 2019; Assor, Kaplan, & Roth, 2002; Deci, Schwartz, et al., 1981; Reeve & Cheon, 2021).

**Autonomy support and interpersonal control**. Autonomy support is the adoption of a supervisee-focused attitude and an understanding interpersonal tone that enables the skillful enactment of a collection of autonomy-supportive behaviors that serve two purposes: to support intrinsic motivation and to support internalization of external regulations (Reeve & Cheon, 2021). A controlling motivating style, on the other hand, is the adoption of a supervisor-focused attitude and a pressuring interpersonal tone in which the supervisor prescribes what the supervisee is to think, feel, and do, irrespective of what the supervisee prefers (Aelterman et al., 2019; Assor et al., 2005; Reeve, 2009; Soenens et al., 2012). To show how the autonomy-supportive and controlling motivating styles are constellations of intercorrelated socioenvironmental events, Table 2.2 lists some prototypical

socioenvironmental events that are closely associated with the two styles (based on Reeve & Cheon, 2021). While such lists will vary from one research team to the next, these specific socioenvironmental events have been heavily researched, empirically validated, and positively intercorrelated to the point that they reflect and represent these two motivating styles rather well.

In one way, the motivating styles literature has capitalized on and extended CET research, but in another way, it has overlooked a key contribution from CET research. The motivating styles literature capitalized on and extended CET research by conceptually and operationally defining what it means to be autonomy-supportive and what it means to be controlling, as per Table 2.2. Building off CET research, the motivating style research began with correlational findings (Deci et al., 1982), advanced to experimental (i.e., causal) findings (Grolnick & Ryan, 1987; Koestner et al., 1984), and matured with intervention-based randomized controlled trials (Reeve & Cheon, 2021). Collectively, these intervention studies show that (1) supervisors can learn how to become more autonomy-supportive and less controlling and (2) intervention-enabled gains in an autonomy-supportive motivating style (and declines in a controlling style) produce a wide range of important benefits (Reeve & Cheon, 2021). Where the motivating style literature has not capitalized on and extended CET research is on the third aspect that all events have—namely, the amotivating aspect.

**Amotivating style**. While a great deal of research has been conducted on the autonomy-supportive and controlling styles, little research has been conducted on the amotivating style. This is probably because no practitioner would endorse putting an amotivating style into practice. Still, it is worth researchers' attention because the amotivating

| **Table 2.2** Prototypical External Events That Aggregate into the Autonomy-Supportive and Controlling Motivating Styles ||||
|---|---|---|
| | Autonomy-Supportive (i.e., Informational) External Event | Pressuring (i.e., Controlling) External Event |
| | SUPERVISEE-FOCUSED ATTITUDE | SUPERVISOR-FOCUSED ATTITUDE |
| 1. | Take the supervisee's perspective | 1. Take only the supervisor's perspective |
| | SUPPORT INTRINSIC MOTIVATION | CREATE EXTRINSIC MOTIVATION |
| 2. | Invite the supervisee to pursue their personal interests | 2. Offer environmental sources of motivation (e.g., incentives, rewards, consequences, threats of punishment) |
| 3. | Present learning activities in need-satisfying ways | |
| | SUPPORT INTERNALIZATION | PRESSURE FOR COMPLICANCE |
| 4. | Provide explanatory rationales | 3. Directives without explanations |
| 5. | Rely on invitational communications | 4. Rely on pressuring communications |
| 6. | Acknowledge negative feelings | 5. Counter/try to change negative feelings |
| 7. | Display patience | 6. Push for immediate behavior change |

style is, more or less, a naturally occurring aspect of any supervisor's motivating style (Aelterman et al., 2019).

To gain an understanding of what constellations of behaviors constitute an amotivating style (in the same fashion as seen in Table 2.2), one group of researchers asked students to report eight aspects of their classroom teachers' motivating styles and then to self-report the level of amotivation experienced during that teacher's instruction (Aelterman et al., 2019). These results appear in Figure 2.2, which shows on the *x* axis how a classroom experience of amotivation is associated with each of the eight different motivating styles (expressed as a correlation coefficient, *r*). What stands out in the figure is that an experience of amotivation mostly arises out of a teacher's tone and purpose of "abandoning," when the "teacher gives up on students. The teacher allows students to just do their own thing, because eventually students have to learn to take responsibility for their own behavior" (Aelterman et al., 2019, p. 498). Though more research on the amotivating style is needed, these data suggest that an experience of being abandoned by the supervisor is a central experience that leads to amotivation.

Autonomy support relates mostly to autonomy satisfaction, while interpersonal control relates mostly to autonomy frustration. Structure (discussed in the next section) relates mostly to competence need satisfaction. So, how an abandoning style relates to people's psychological needs is that it is most connected to competence need frustration. The essence of an abandoning motivating style, which might also be referred to as a "chaotic" style (Aelterman et al., 2019), is to leave the person being supervised on their own and to their own devices (i.e., give up on the student as a lost cause), while what is actually called for is help, assistance, and step-by-step guidance.
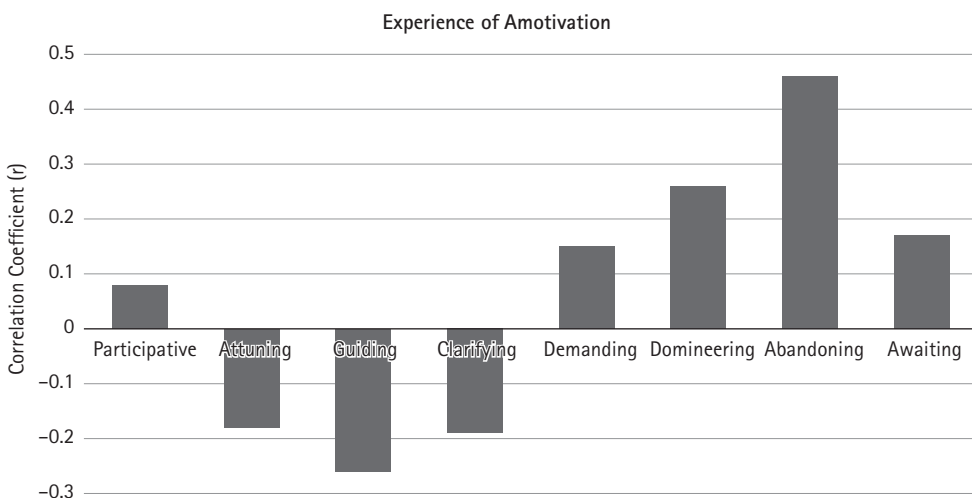


**Figure 2.2** Students' experiences of amotivation as a function of eight different motivating styles from their teachers

Data from Aelterman et al., 2019

*Autonomy Support, Structure, and Involvement*

An autonomy-supportive motivating style enriches all three psychological needs (Cheon, Reeve, & Moon, 2012; Cheon & Reeve, 2013; Zhang et al., 2020). Nevertheless, because SDT emphasizes that people have three psychological needs, not just one, it makes sense to consider expanding the core concept of motivating style beyond "autonomy support" to a more inclusive "needs support." Reflecting this sentiment, theoretical models have been proposed (Skinner & Belmont, 1993) and intervention programs have been designed and implemented to help supervisors learn not only autonomy support to satisfy autonomy but also structure to satisfy competence and involvement to satisfy relatedness (Edmunds, Ntoumanis, & Duda, 2008; Franco & Coteron, 2017; Guay et al., 2020; Sanchez-Oliva et al., 2017; Tessier, Sarrazin, & Ntoumanis, 2008, 2010). These studies often produced significant benefits, but many null results were also reported. The range of benefits experienced by those supervised in these multicomponent (i.e., needs-supportive) interventions was also more limited than was the range of benefits observed in the single-component autonomy-supportive interventions. The observed effect sizes were also consistently lower. These findings seem paradoxical (why wouldn't a comprehensive needs-supportive intervention be more beneficial than an autonomy-supportive only intervention?), so they need to be explained.

By itself, autonomy support produces numerous benefits. This is not the same for structure (i.e., competence support), or even for involvement (i.e., relatedness support). When providing structure, the supervisor communicates clear expectations, provides guidance for how to meet those expectations and attain desired outcomes, and provides constructive feedback. But, as explained by CET, all of these aspects of structure can be provided either in an autonomy-supportive way (e.g., with perspective taking, choice, and an understanding tone) or in a controlling way (e.g., with pressure, demands, and a harsh tone). While structure presented in an autonomy-supportive way consistently generates numerous benefits, structure presented in a controlling way actually undermines motivation and generates few benefits (Carpentier & Mageau, 2013, 2016; Curran et al., 2013; Eckes, Großmann, & Wilde, 2018; Haerens et al., 2018; Koestner et al., 1984; Mouratidis et al., 2010; Trouilloud et al., 2006).

The parallel literature on the provision of involvement by itself is not as developed, but there are suggestions that even involvement has this dualistic track record. Autonomy support and involvement often and typically co-occur and mutually support one another (Deci et al., 2006), but involvement can be provided in a controlling way (Assor et al., 2004; Pan, Gauvain, & Schwartz, 2013; Roth et al., 2009). When involvement is presented in a controlling way (i.e., conditional regard), it tends to generate controlling types of motivation (i.e., guilt-inducing introjection) and therefore only modest or no benefits. Such findings suggest that involvement as a motivating style is also conditional on its being presented in an autonomy-supportive way. If this conclusion sounds too extreme to accept, it is worth reading the *Handbook*'s Chapter 7 on relationship motivation theory, as

the core postulate of this mini-theory is that a relationship (or a motivating style) cannot be close and relatedness-satisfying without the mutuality of autonomy support.

Collectively, these findings suggest that what people motivationally benefit from is not structure per se and not even involvement per se but, instead, structure and involvement provided in an autonomy-supportive way. This suggests that an autonomy-supportive motivating style has a primary role in research and practice related to motivating style. To explain the primacy of the autonomy-supportive motivating style, Figure 2.3 contrasts the classic theoretical approach to relate the tripartite motivating styles of autonomy support, structure, and involvement to the three psychological needs versus a revised theoretical

(a) Classic View of the Relation of Motivating Style to the Psychological Needs
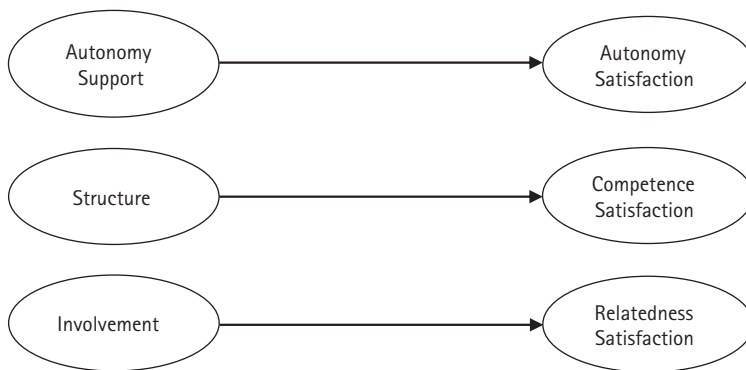
(b) Revised View of the Relation of Motivating Style to the Psychological Needs
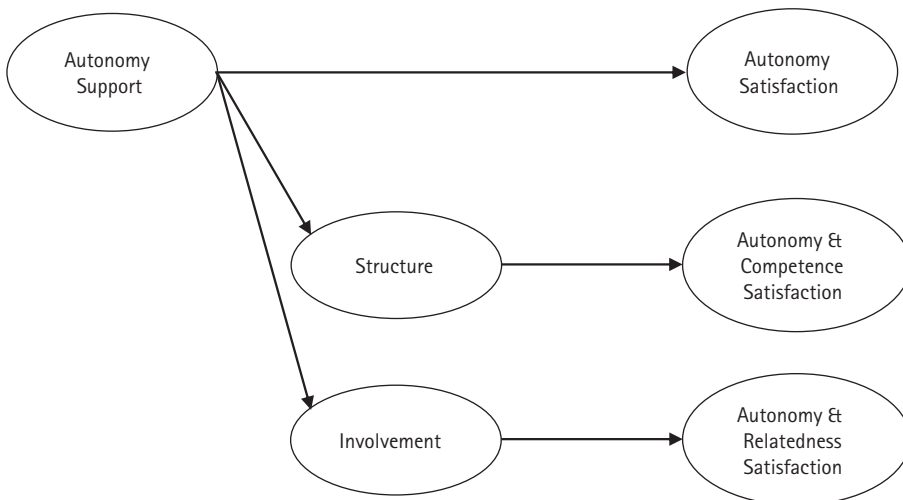
**Figure 2.3** A CET-informed upgrade on the optimal theoretical model to represent the relation of motivating style to the psychological needs

approach that is rooted partly in CET and partly in recent findings from intervention research on motivating styles.

The upper part of Figure 2.3 illustrates the classical view of how the three different motivating styles support the three psychological needs: autonomy support facilitates autonomy satisfaction; structure (or competence support) facilitates competence satisfaction; and involvement (or relatedness support) facilitates relatedness satisfaction. For the reasons cited above, this model does not represent the best-fitting explanatory model. The lower part of Figure 2.3 illustrates a revised view of how the three motivating styles support the psychological needs. What is most important in the lower figure is the primacy given to the autonomy-supportive motivating style. As shown in several teacher-based intervention studies (Cheon, Reeve, & Song, 2019; Cheon, Reeve, & Vansteenkiste, 2020; Meng & Wang, 2016) and research on the relationships motivation mini-theory (Deci & Ryan, 2014), what produces the most need satisfaction and the widest range of positive outcomes is for teachers (i.e., relationship partners) to first learn how to be autonomy-supportive and then learn how to provide structure and involvement in an autonomy-supportive way. The difference between the upper and lower figures is the claim that structure by itself cannot necessarily be expected to facilitate competence satisfaction and that involvement by itself cannot necessarily be expected to facilitate relatedness satisfaction. Contrariwise, structure provided in an autonomy-supportive way can be expected to facilitate both competence and autonomy satisfaction, just as involvement provided in an autonomy-supportive way can be expected to facilitate both relatedness and autonomy satisfaction.

### Dual-Process Model

CET is the seedling theory—the theoretical ancestor—not only to motivating styles but also to the dual-process model. The dual-process model is essentially an integration of the CET and motivating styles literatures.

The dual-process model mostly focuses on the autonomy-supportive and controlling motivating styles, and it suggests that interpersonal control is not the opposite of autonomy support (Bartholomew et al., 2011). Just as CET argues that any socioenvironmental event has distinct autonomy-supportive and controlling aspects, the dual-process model argues that any motivating style has distinct autonomy-supportive and controlling aspects.

Instead of thinking that interpersonal control is the opposite of autonomy support (as might be implied in Figure 2.3), the dual-process model proposes that autonomy support and interpersonal control exist as two separate dimensions (Bartholomew et al., 2011, 2018; Haerens et al., 2015). This insight to treat autonomy support and interpersonal control as largely independent (rather than opposite) dimensions emerged from the following four empirical findings (Bartholomew et al., 2011, 2018; Cheon, Reeve,

& Ntoumanis, 2019; Cheon, Reeve, & Song, 2016; Gunnell et al., 2013; Haerens et al., 2015):

1. The two styles are only modestly negatively correlated.
2. A low level in one style does not imply a high level in the other.
3. Autonomy support strongly predicts high autonomy satisfaction and adaptive functioning but only weakly predicts low autonomy frustration and maladaptive functioning.
4. Interpersonal control strongly predicts high autonomy frustration and maladaptive functioning but only weakly predicts low autonomy satisfaction and adaptive functioning.

What the dual-process model contributes to the larger SDT framework is the theorical and practical proposition that an autonomy-supportive motivating style galvanizes the "brighter" side of people's motivation (e.g., autonomy satisfaction, intrinsic motivation) and functioning (e.g., engagement, learning, well-being), while a controlling motivating style galvanizes the "darker" side of people's motivation (e.g., autonomy frustration, amotivation) and functioning (e.g., defiance, antisocial behavior, ill-being; Bartholomew et al., 2011, 2018; Cheon, Reeve, & Song, 2019; Haerens et al., 2015; Jang, Kim, & Reeve, 2016; Vansteenkiste & Ryan, 2013). Thus, to explain *both* adaptive and maladaptive motivation and functioning, a supervisor's autonomy-supportive versus controlling motivating style needs to be differentiated. Further, from an applied perspective, to enhance people's need satisfaction and effective functioning, supervisors need to focus mostly on how autonomy-supportive they are, but to diminish people's need frustration and maladaptive functioning, supervisors need to focus mostly on how controlling they are (Bartholomew et al., 2011; Cheon et al., 2016; Gunnell et al., 2013; Haerens et al., 2015).

## Looking Back, Looking Forward

In retrospect, CET has always been both a controversial and a highly needed theory in the motivation literature. Prior to CET, the negative effects of extrinsic rewards went largely unnoticed (Ryan & Deci, 2017). By focusing on intrinsic motivation, CET was able to explain when rewards and other environmental events produced enhancing or undermining effects. Similarly, the negative effects of a "take charge" motivating style or "go-go" (pressuring) self-talk went largely unnoticed—or at least were considered minor in their harm relative to their potential benefits. Today the benefits of autonomy support and the costs of interpersonal and intrapersonal control are much better understood and appreciated, and most of this greater understanding and improved practical application can trace their roots to CET. Equipped with CET, researchers and practitioners alike now possess the evidence-based insights they need to understand the ups and downs of intrinsic

motivation and how to design and implement highly autonomy-supportive (and not at all controlling) social and intrapersonal environments.

## References

Aelterman, N., Vansteenkiste, M., Soenens, B., Fontaine, J., Haerens, L., Delrue, J., & Reeve, J. (2019). Toward a fine-grained understanding of the components of need-supportive and need-thwarting teaching: The merits of a gradual approach. *Journal of Educational Psychology*, *111*(3), 497–521. http://dx.doi.org/10.1037/edu0000293

Amabile, T. M., DeJong, W., & Lepper, M. R. (1976). Effects of externally imposed deadlines on subsequent intrinsic motivation. *Journal of Personality and Social Psychology*, *34*(1), 92–98. https://doi.org/10.1037/0022-3514.34.1.92

Anderson, R., Manoogian, S. T., & Reznick, S. J. (1976). The undermining and enhancing of intrinsic motivation in preschool children. *Journal of Personality and Social Psychology*, *34*(5), 915–922. https://doi.org/10.1037/0022-3514.34.5.915

Assor, A., Kaplan, H., Kanat-Maymon, Y., & Roth, G. (2005). Directly controlling teacher behaviors as predictors of poor motivation and engagement in girls and boys: The role of anger and anxiety. *Learning and Instruction*, *15*, 397–413. https://doi.org/10.1016/j.learninstruc.2005.07.008

Assor, A., Kaplan, H., & Roth, G. (2002). Choice is good, but relevance is excellent: Autonomy-enhancing and suppressing teaching behaviors predicting students' engagement in schoolwork. *British Journal of Educational Psychology*, *27*, 261–278. https://doi.org/10.1348/000709902158883

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of perceived parental conditional regard: A self-determination theory analysis. *Journal of Personality*, *72*, 47–87. doi:10.1111/j.0022-3506.2004.00256.x

Bartholomew, K. J., Ntoumanis, N., Mouratidis, A., & Katartzi, E. (2018). Beware of your teaching style: A school-year long investigation of controlling teaching and student motivational experiences. *Learning and Instruction*, *53*, 50–63. https://doi.org/10.1016/j.learninstruc.2017.07.006

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology*, *37*, 1459–1473. https://doi.org/10.1177/0146167211413125

Blank, P. D., Reis, H. T., & Jackson, L. (1984). The effect of verbal reinforcement of intrinsic motivation for sex linked tasks. *Sex Roles*, *10*, 369–386. https://doi.org/10.1007/BF00287554

Carpentier, J., & Mageau, G. A. (2013). When change-oriented feedback enhances motivation, well-being, and performance: A look at autonomy-supportive feedback in sport. *Psychology of Sport and Exercise*, *14*, 423–435. https://doi.org/10.1016/j.psychsport.2013.01.003

Carpentier, J., & Mageau, G. A. (2016). Predicting sport experience during training: The role of change-oriented feedback in athletes' motivation, self-confidence, and needs satisfaction fluctuations. *Journal of Sport and Exercise Psychology*, *38*, 45–58. doi:10.1123/jsep.2015-0210

Cheon, S. H., & Reeve, J. (2013). Do the benefits from autonomy-supportive PE teacher training programs endure? A one-year follow-up investigation. *Psychology of Sport & Exercise*, *14*, 508–518. https://doi.org/10.1016/j.psychsport.2013.02.002

Cheon, S. H., Reeve, J., & Moon, I. S. (2012). Experimentally-based, longitudinally designed, teacher-focused intervention to help physical education teachers be more autonomy supportive toward their students. *Journal of Sport & Exercise Psychology*, *34*, 365–396. doi:10.1123/jsep.34.3.365

Cheon, S. H., Reeve, J., & Ntoumanis, N. (2019). An intervention to help teachers establish a prosocial peer climate in physical education. *Learning and Instruction*. December, article 101223. doi:10.1016/j.learninstruc.2019.101223.

Cheon, S. H., Reeve, J., & Song, Y.-G. (2016). A teacher-focused intervention to decrease PE students' amotivation by increasing need satisfaction and decreasing need frustration. *Journal of Sport and Exercise Psychology*, *38*, 217–235. doi:10.1123/jsep.2015-0236

Cheon, S. H., Reeve, J., & Song, Y.-G. (2019). Recommending goals and supporting needs: An intervention to help physical education teachers communicate their expectations while supporting students' psychological needs. *Psychology of Sport and Exercise*, *41*, 107–118. https://doi.org/10.1016/j.psychsport.2018.12.008

Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2020). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. *Teaching and Teacher Education*, *90*(4), Article 103004. doi:10.1016/j.tate.2019.103004

Curran, T., Hill, A., & Niemiec, C. (2013). A conditional process model of children's behavioral engagement and behavioral disaffection in sport based on self-determination theory. *Journal of Sport & Exercise Psychology*, *35*, 30–43. doi:10.1123/jsep.35.1.30

Daniel, T. L., & Esser, J. K. (1980). Intrinsic motivation as influenced by rewards, task interest, and task structure. *Journal of Applied Psychology*, *65*(5), 566–573. https://doi.org/10.1037/0021-9010.65.5.566

Danner, F. W., & Lonky, E. (1981). A cognitive-developmental approach to the effects of rewards on intrinsic motivation. *Child Development*, *52*(3), 1043–1052. https://doi.org/10.2307/1129110

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, *18*(1), 105–115. https://doi.org/10.1037/h0030644

Deci, E. L. (1972). The effects of contingent and non-contingent rewards and controls on intrinsic motivation. *Organizational Behavior and Human Performance*, *8*(2), 217–229. https://doi.org/10.1016/0030-5073(72)90047-5

Deci, E. L. (1975). *Intrinsic motivation*. Plenum Press. https://doi.org/10.1007/978-1-4613-4446-9

Deci, E. L., Betley, G., Kahle, J., Abrams, L., & Porac, J. (1981). When trying to win: Competition and intrinsic motivation. *Personality and Social Psychology Bulletin*, *7*(1), 79–83. https://doi.org/10.1177/014616728171012

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effect of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668. doi:10.1037/0033-2909.125.6.627

Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the benefits of giving as well as receiving autonomy support: Mutuality in close friendships. *Personality and Social Psychology Bulletin*, *32*, 313–327. doi:10.1177/0146167205282148

Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13, pp. 39–80). Academic Press. https://doi.org/10.1016/S0065-2601(08)60130-6

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press. http://dx.doi.org/10.1007/978-1-4899-2271-7

Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, *53*(6), 1024–1037. https://doi.org/10.1037/0022-3514.53.6.1024

Deci, E. L., & Ryan, R. M. (2014). Autonomy and need satisfaction in close relationships: Relationships motivation theory. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships: Theory, research and applications* (pp. 53–73). Springer. https://doi.org/10.1037/0022-3514.53.6.1024

Deci, E. L., Schwartz, A., Sheinman, L., & Ryan, R. M. (1981). An instrument to assess adult's orientations toward control versus autonomy in children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology*, *73*, 642–650. https://doi.org/10.1037/0022-0663.73.5.642

Deci, E. L., Spiegel, N. H., Ryan, R. M., Koestner, R., & Kauffman, M. (1982). The effects of performance standards on teaching styles: The behavior of controlling teachers. *Journal of Educational Psychology*, *74*, 852–859. https://doi.org/10.1037/0022-0663.74.6.852

Dollinger, S. J., & Thelen, M. H. (1978). Overjustification and children's intrinsic motivation: Comparative effects of four rewards. *Journal of Personality and Social Psychology*, *36*(11), 1259–1269. https://doi.org/10.1037/0022-3514.36.11.1259

Eckes, A., Großmann, N., & Wilde, M. (2018). Studies on the effects of structure in the context of autonomy-supportive or controlling teacher behavior on students' intrinsic motivation. *Learning and Individual Differences*, *62*, 69–78. https://doi.org/10.1016/j.lindif.2018.01.011

Edmunds, J., Ntoumanis, N., & Duda, J. (2008). Testing a self-determination theory-based teaching style intervention in the exercise domain. *European Journal of Social Psychology*, *38*(2), 375–388. https://doi.org/10.1002/ejsp.463

Franco, E., & Coteron, J. (2017). The effects of a physical education intervention to support the satisfaction of basic psychological needs on the motivation and intentions to be physically active. *Journal of Human Kinetics*, *59*, 5–15. doi:10.1515/hukin-2017-0143

Greene, D., & Lepper, M. R. (1974). Effects of extrinsic rewards on children's subsequent intrinsic interest. *Child Development*, *45*(4), 1141–1145. https://doi.org/10.2307/1128110

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual differences investigation. *Journal of Personality and Social Psychology*, *52*(5), 890–898. doi:10.1037//0022-3514.52.5.890

Guay, F., Gilbert, W., Falardeau, É., Bradet, R., & Boulet, J. (2020). Fostering the use of pedagogical practices among teachers to support elementary students' motivation to write. *Contemporary Educational Psychology*, *63*, article 101922. https://doi.org/10.1016/j.cedpsych.2020.101922

Gunnell, K., Crocker, P. R. E., Wilson, P. M., Mack, D. E., & Zumbo, B. D. (2013). Psychological need satisfaction and thwarting: A test of basic psychological needs theory in physical activity contexts. *Psychology of Sport and Exercise*, *14*, 599–607. https://doi.org/10.1016/j.psychsport.2013.03.007

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise*, *16*, 26–36. https://doi.org/10.1016/j.psychsport.2014.08.013

Haerens, L., Krijgsman, C., Mouratidis, A., Borghouts, L., Cardon, G., & Aelterman, N. (2018). How does knowledge about the criteria for an upcoming test relate to adolescents' situational motivation in physical education? A self-determination theory approach. *European Physical Education Review*. Advance online publication. https://doi.org/10.1177/1356336X18783983

Hardre, P. L., & Reeve, J. (2009). Training corporate managers to adopt a more autonomy-supportive motivating style toward employees: An intervention study. *International Journal of Training Development*, *13*, 165–184. https://doi.org/10.1111/j.1468-2419.2009.00325.x

Henderlong, J., & Lepper, M. R. (2002). The effects of praise on children's intrinsic motivation: A review and synthesis. *Psychological Bulletin*, *128*(5), 774–795. doi:10.1037/0033-2909.128.5.774

Jang, H., Kim, E.-J., & Reeve, J. (2016). Why students become more engaged or more disengaged during the semester: A self-determination theory dual-process model. *Learning and Instruction*, *43*, 27–38. https://doi.org/10.1016/j.learninstruc.2016.01.002

Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling versus informational styles on children's intrinsic motivation and creativity. *Journal of Personality*, *54*, 233–248. https://doi.org/10.1111/j.1467-6494.1984.tb00879.x

Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic reward: A test of the "overjustification" hypothesis. *Journal of Personality and Social Psychology*, *28*(1), 129–137. https://doi.org/10.1037/h0035519

Meng, H. Y., & Wang, J. W. C. (2016). The effectiveness of an autonomy-supportive teaching structure in physical education. *RICYDE: Revista Internacional de Ciencias del Deporte*, *43*(12), 5–28. http://dx.doi.org/10.5232/ricyde2016.04301

Mossholder, K. W. (1980). Effects of externally mediated goal setting on intrinsic motivation: A laboratory experiment. *Journal of Applied Psychology*, *65*(2), 202–210. https://doi.org/10.1037/0021-9010.65.2.202

Mouratidis, A., Lens, W., & Vansteenkiste, M. (2010). How you provide corrective feedback makes a difference: The motivating role of communicating in an autonomy-supportive way. *Journal of Sport and Exercise Psychology*, *32*, 619–637. doi:10.1123/jsep.32.5.619

Ntoumanis, N., Quested, E., Reeve, J., & Cheon, S. H. (2018). Need-supportive communication: Implications for motivation in sport, exercise, and physical activity. In B. Jackson, J. A. Dimmock, & J. Compton (Eds.), *Persuasion and communication in sport, exercise, and physical activity* (pp. 155–169). Routledge. doi:10.4324/9781315624365-10

Pan, Y., Gauvain, M., & Schwartz, S. J. (2013). Do parents' collectivistic tendency and attitudes toward filial piety facilitate autonomous motivation among young Chinese adolescents? *Motivation and Emotion*, *37*, 701–711. https://doi.org/10.1007/s11031-012-9337-y

Patall, E. A., Cooper, H., & Robinson, J. C. (2008). The effects of choice on intrinsic motivation and related outcomes: A meta-analysis of research findings. *Psychological Bulletin*, *134*(2), 270–300. doi:10.1037/0033-2909.134.2.270

Plant, R. W., & Ryan, R. M. (1985). Intrinsic motivation and the effects of self-consciousness, self-awareness, and ego-involvement: An investigation of internally-controlling styles. *Journal of Personality*, *53*, 435–449. doi:10.1111/j.1467-6494.1985.tb00375.x

Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, *44*, 159–178. https://doi.org/10.1080/00461520903028990

Reeve, J., & Cheon, S. H. (2021). Autonomy-supportive teaching: Its malleability, benefits, and potential to improve educational practice. *Educational Psychologist*, *56*(1), 54–77. https://doi.org/10.1080/00461 520.2020.1862657

Reeve, J., & Deci, E. L. (1996). Elements of the competitive situation that affect intrinsic motivation. *Personality and Social Psychology Bulletin*, *22*, 24–33. https://doi.org/10.1177/0146167296221003

Ross, M. (1975). Salience of reward and intrinsic motivation. *Journal of Personality and Social Psychology*, *32*(2), 245–254. https://doi.org/10.1037/0022-3514.32.2.245

Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and academic consequences of parental conditional regard: Comparing conditional positive regard, conditional negative regard, and autonomy support as parenting practices. *Developmental Psychology*, *45*, 1119–1142. https://doi.org/10.1037/a0015272

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, *43*(3), 450-461. https://doi.org/10.1037/0022-3514.43.3.450

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. *Journal of Personality and Social Psychology*, *45*(4), 736–750. doi:10.1037/0022-3514.45.4.736

Ryan, R. M., & Weinstein, N. (2009). Undermining quality teaching and learning: A self-determination theory perspective on high-stakes testing. *Theory and Research in Education*, *7*(2), 224–233. https://doi.org/10.1177/1477878509104327

Sanchez-Oliva, D., Pulido-Gonzalez, J. J., Leo, F. M., Gonzalez-Ponce, I., & Garcia-Calvo, T. (2017). Effects of an intervention with teachers in the physical education context: A self-determination theory approach. *PLoS ONE*, *12*(12): e0189986. doi:10.1371/journal.pone.0189986

Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, *85*(4), 571–581. https://doi.org/10.1037/0022-0663.85.4.571

Soenens, B., Sierens, E., Vansteenkiste, M., Goossens, L., & Dochy, F. (2012). Psychologically controlling teaching: Examining outcomes, antecedents, and mediators. *Journal of Educational Psychology*, *104*(1), 108–120. https://doi.org/10.1037/a0025742

Tessier, D., Sarrazin, P., & Ntoumanis, N. (2008). The effects of an experimental programme to support students' autonomy on the overt behaviours of physical education teachers. *European Journal of Psychology of Education*, *23*, 239–253. https://doi.org/10.1007/BF03172998

Tessier, D., Sarrazin, P., & Ntoumanis, N. (2010). The effect of an intervention to improve newly qualified teachers' interpersonal style, students' motivation and psychological need satisfaction in sport-based physical education. *Contemporary Educational Psychology*, *35*, 242–253. https://doi.org/10.1016/j.cedpsych.2010.05.005

Trouilloud, D., Sarrazin, P., Bressoux, P., & Bois, J. (2006). Relations between teachers' early expectations and students' later perceived competence in physical education classes: Autonomy-supportive climate as a moderator. *Journal of Educational Psychology*, *98*, 75–86. https://doi.org/10.1037/0022-0663.98.1.75

Vansteenkiste, M., Aelterman, N., De Muynck, G.-J., Haerens, L., Patall, E., & Reeve, J. (2018). Fostering personal meaning and self-relevance: A self-determination theory perspective on internalization. *Journal of Experimental Education*, *86*, 30–49. https://doi.org/10.1080/00220973.2017.1381067

Vansteenkiste, M., & Deci, E. L. (2003). Competitively contingent rewards and intrinsic motivation: Can losers remain motivated? *Motivation and Emotion*, *27*(4), 273–299. https://doi.org/10.1023/A:1026259005264

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*(3), 263–280. doi:10.1037/a0032359

Vansteenkiste, M., Simons, J., Soenens, B., & Lens, W. (2004). How to become a persevering exerciser? Providing a clear, future intrinsic goal in an autonomy-supportive way. *Journal of Sport and Exercise Psychology*, *26*(2), 232–249.

Weinstein, N., Vansteenkiste, M., & Paulmann, S. (2020). Don't you say it that way! Experimental evidence that controlling voices elicit defiance. *Journal of Experimental Social Psychology*, *88*, article 103949. https://doi.org/10.1016/j.jesp.2019.103949

Wiechman, B. M., & Gurland, S. T. (2009). What happens during the free-choice period? Evidence of a polarizing effect of extrinsic rewards on intrinsic motivation. *Journal of Research in Personality*, *43*(4), 716–719. https://doi.org/10.1016/j.jrp.2009.03.008

Zhang, D., Bobis, J., Wu, X., & Cui, Y. (2020). The effects of an autonomy-supportive teaching intervention on Chinese physics students and their teacher. *Research in Science Education*, *50*, 645–671. doi:10.1017/s11165-018-9706-y

# Organismic Integration Theory: A Theory of Regulatory Styles, Internalization, Integration, and Human Functioning in Society

Luc G. Pelletier *and* Meredith Rocchi

## Abstract

This chapter reviews the five propositions that constitute organismic integration theory (OIT). The five propositions address (1) the process of internalization; (2) the distinctions between intrinsic motivation, the different types of extrinsic motivation, and amotivation, and how they relate to each other; (3) the conditions that facilitate internalization of values and behaviors; (4) how behavior that is regulated through more internalized forms of regulation relates to better functioning; and (5) how internalization relates to psychological health and well-being. Also examined are aspects of the theory that have received less attention or that represent emerging trends, such as the contribution of the constructs of integrated regulation and amotivation to SDT's model of motivation. The chapter argues that OIT provides a framework to explain how society and social contexts affect people's motivation, as well as what people do in actively adapting to their social worlds. It also sees potential for OIT to expand from the examination of individual human functioning and wellness to understanding how people's prosocial behaviors and willingness to contribute to others develops and how societies can support this.

**Key Words:** extrinsic motivation, internalization, external regulation, introjection, identification, integration, amotivation, autonomous motivation, controlled motivation

Why do we do what we do? Behaviors like attending a lecture, recycling, engaging in physical activity, and relating to others can all be done for a variety of reasons. By "reasons" we mean the conscious or unconscious motives that drive behavior. Such reasons can take many forms, including incentives (e.g., obtaining rewards or avoiding punishments), desires for social approval, compulsions, personal values, or simply enjoyment of the activity. The inner states that result from either one or the interaction of these motives are what energize, activate, and regulate our behavior.

Although historically theories of motivation tended to see it as a quantity of directed energy or arousal, self-determination theory (SDT) is unique in that it defines motivation in terms of not only quantity but also the different qualities associated with different

motives for engaging in behavior. The theory posits that these motives differ with regard to their sources but also their functional characteristics, impacting the quality and dynamics of behavior.

At its broadest conceptual level, SDT proposes that motivational orientations can be placed into three general categories: intrinsic motivation, extrinsic motivation, and amotivation (Ryan & Deci, 2017). *Intrinsic motivation* characterizes motives where people experience pleasure while they engage in an activity or behavior. Since these intrinsically motivated behaviors are pursued for the enjoyment of the behavior itself, they are autonomous, enjoyable, and more likely to be maintained and to promote positive experiences. *Extrinsic motivation* includes all instrumental behaviors, or those that are pursued for other reasons beyond simply enjoying the activity itself. These can include classic types such as doing something to achieve an external reward or to avoid punishment. A key characteristic of such "externally regulated" extrinsically motivated behaviors is that when the "reason" for pursuing the behavior (the reward or punishment) is not present or maintained, the motivation tends to disappear. But extrinsic behaviors can also be volitional, as when one works to attain something that is personally valued, in which case SDT suggests the behavior will be maintained over time. *Amotivation*, as the name implies, represents an orientation where people are doing a behavior, but they do not feel they have a good reason to do it. This state is generally defined as the absence of motivation, and it occurs when individuals do not have a clear understanding of the reasons why they are doing the behavior, they have no interest in it, or they do not have a sense of competency (Legault, Green-Demers, & Pelletier, 2006; Pelletier et al., 1999). Individuals who experience amotivation do not generally experience positive outcomes when they engage in a given behavior.

Although these three broad categories of motivation have been useful in defining qualitatively different ways to engage in an activity, with organismic integration theory (OIT), Deci and Ryan (1985; Ryan & Deci, 2017) proposed further refining the conceptualization of extrinsic motivation to reflect the extent to which the regulation of behavior is externally driven versus internalized and volitional. When one's reasons for acting are more internalized and autonomous (i.e., are self-endorsed), OIT posits that higher quality motivation is the result. Thus with OIT, SDT distinguished itself from other theories of motivation by suggesting that extrinsic motivation does not always lead to negative consequences such as ill-being, underachievement, or lack of persistence. By recognizing both controlled and autonomous types of extrinsic regulations, OIT differentiates instances when someone engages in behaviors because they are valued or desired versus acting only because of external demands or contingencies. As we will see, these distinctions are important for explaining differences in people's behavioral frequency and performance as well as their quality of experience.

In presenting OIT, Ryan and Deci (2017) articulated a set of five comprehensive propositions that define how intrinsic motivation, various types of extrinsic motivation,

and amotivation relate to each other and qualitatively impact the ways people engage in different activities. These propositions also concern how social and interpersonal contexts impact internalization, primarily through the support or thwarting of three basic needs (autonomy, competence, and relatedness). In this chapter, our first goal is to review the five propositions that define OIT, discuss how the different propositions fit together to form a comprehensive theory within SDT, and present some of the critical research that supports these propositions. Afterward we examine some aspects of the theory that have received less attention, present some areas that have been sources of debate, and propose some directions for future research.

## The Five Propositions of OIT

OIT emerged progressively as a mini-theory within SDT following the publication of Deci and Ryan's (1985) book, *Intrinsic Motivation and Self-Determination in Human Behavior* and some pivotal early studies on the assessment of intrinsic and extrinsic motivation and internalization in different life domains (Grolnick & Ryan, 1987; Ryan & Connell, 1989; Ryan, Koestner, & Deci, 1991; Vallerand et al., 1989, 1992). In the following years, several programs of research helped further refine the assessment of the different types of motivation proposed by Deci and Ryan (1985) and began to examine both the determinants of motivation and internalization as well as the consequences associated with the different types of motivations.

The cumulative impact of this research is summarized in Ryan and Deci (2017) in the form of five propositions that constitute OIT. Briefly, the five propositions address (1) the process of internalization; (2) the distinctions between intrinsic motivation, the different types of extrinsic motivation, and amotivation, and how they relate to each other on the continuum of self-determination; (3) the conditions that facilitate the internalization and the integration of values and extrinsic motivations; (4) how behavior that is regulated through more integrated forms of internalization relate to better functioning; and (5) how better internalization and integration relate to psychological health and well-being. These five propositions are presented in Table 3.1 and they are reviewed in more detail in the sections that follow.

### The Process of Internalization

The first OIT proposition refers to the *process* of internalization to explain, more specifically, the different types of extrinsic motivation. In their description of the internalization process Ryan and Deci (2017) outline three key components: (1) humans are naturally inclined to internalize values/behaviors that are endorsed by significant others or are ambient within one's culture, (2) people internalize values/behaviors from sources that are more or less proximal and more or less context specific, and (3) the process of internalization can be more or less effective depending on the ways values/behaviors are communicated to a person. This last aspect of the process is especially critical as it explains the different ways individuals may regulate an external motive.

| **Table 3.1** Organismic Integration Theory Five Propositions |
|---|
| **OIT Proposition I:** *The process of organismic integration inclines humans naturally to internalize extrinsic motivations that are endorsed by significant others. However, the process of internalization can function more versus less effectively, resulting in different degrees of internalization that are the basis for regulations that differ in perceived locus of causality and thus the extent to which they are autonomous.* |
| **OIT Proposition II**: *Internalization of extrinsic motivation can be described in terms of a continuum that spans from relatively heteronomous or controlled regulation to relatively autonomous self-regulation. External regulation describes extrinsic motivation that remains dependent on external controls; introjected regulation describes extrinsic motivation that is based on internal controls involving affective and self-esteem contingencies; regulation through identification describes extrinsic motivation that has been accepted as personally valued and important; and integrated regulation describes extrinsic motivation that is fully self-endorsed and has been well assimilated with other identifications, values, and needs. Regulations that lie further along this continuum from external toward integrated are more fully internalized, and the resulting behaviors are more autonomous.* |
| **OIT Proposition III**: *Supports for the basic needs for competence, relatedness, and autonomy facilitate the internalization and integration of non-intrinsically motivated behaviors. To the extent that the context is controlling and/or relatedness or competence needs are thwarted, internalization, and particularly identification or integrated regulation, will be less likely.* |
| **OIT Proposition IV**: *To the degree that people's behavior is regulated through more autonomous or integrated forms of internalization, they will display greater behavioral persistence at activities, a higher quality of behavior, and more effective performance, especially for more difficult or complex actions.* |
| **OIT Proposition V**: *To the degree that people's behavior is regulated through more integrated forms of internalization, they will have more positive experiences and greater psychological health and well-being.* |

According to OIT, people have an inherent tendency to assimilate social practices into self-regulation; that is, they learn from others about how to regulate their behavior. Through socialization, society transmits values such as cultural norms, desired behaviors, ideal activities, and appropriate social practices (Ryan & Deci, 2011). Through institutions, social groups, and authorities we are encouraged to adopt behaviors consistent with social values and norms. These behaviors may not necessarily be interesting, but they may be instrumental in achieving society's desired values. Successful socialization occurs when individuals have internalized the social regulations and practices their society, culture, or groups values (e.g., help others), and they can regulate their behavior without having to be pressured by others (e.g., help others even when their parents are not around to watch).

The process of internalization is influenced through different channels of social interaction. Some of these are proximal. Individuals are inclined to adopt behaviors, norms, or values that are transmitted to them by people who are close or intimate (Deci & Ryan, 2014). such as their parents or their peers (Koestner et al., 2020; Mageau et al., 2015). They can also internalize behaviors that are transmitted by people associated with institutions, like teachers (Ahn, Chiu, & Patrick, 2021; Cheon, Reeve, & Vansteenkiste, 2020; Ryan & Deci, 2020), coworkers (Jungert et al., 2021; Moreau & Mageau, 2012), and employers (Slemp et al., 2018), who serve as instrumental supports for achieving the goals and activities that are valued by their society. Additionally, people can internalize

information that is transmitted by even more distal or impersonal means, such as government policies (Lavergne et al., 2010; Moller, Ryan, & Deci, 2006), educational programs (Legault & Pelletier, 2000), or information campaigns that target behaviors that are valued by society (Pelletier & Sharp, 2008; Pelletier, Guertin, & Rocchi, 2017; Pope, Pelletier, & Guertin, 2018).

Once the social regulations and practices have been internalized by an individual, that person is in turn more likely to retransmit the same social regulations to other people they interact with in different contexts (e.g., their children, friends, coworkers). In this way internalization processes contribute both to the maintenance of cultural practices and societal norms as well as to the individual's sense of identity and social belongness. In sum, individuals internalize social regulations and practices not only from people with whom they have an already established attachment but also from more distal sources such as leaders, celebrities, and social influencers.

Yet a third component of OIT is recognition that not all socializing contexts are equally good at fostering internalization. Those environments that support people's autonomy, competence, and relatedness are those that tend to foster greater well-being as emphasized in basic psychological needs theory (Vansteenkiste, Soenens, & Ryan, this volume), but also greater internalization. That is, SDT proposes that needs play a role in supporting the process of internalization and, because more internalized actions are more need-satisfying, in sustaining internalized behavior. Internalization represents a specific motivated process that corresponds to "needs-as-requirements," as described by Sheldon (2011), that is, a process whereby need satisfaction is a necessary condition required for a human to experience growth and internalization. With "needs-as-motives," individuals pursue behaviors that satisfy their basic psychological needs of autonomy, competence, and relatedness. Thus, psychological needs represent evolved tendencies to seek out certain psychosocial experiences and provide an opportunity to feel good and thrive when those experiences are done. Satisfaction of the three needs can be dependent upon the social or contextual conditions around us, or people also have an inherent capacity to satisfy their needs by engaging in different behaviors or activities (Ryan et al., 2012; Sheldon, 2011).

OIT proposes that all three basic psychological needs enhance the internalization process. First, *relatedness* plays an essential role. Out of necessity, people cannot pay attention to all the information around them. Instead, they pay more attention to the information that comes from the institutions, groups, or people that are important or meaningful to them. In interacting with significant others, people eventually internalize extrinsic motivations coming from these people (e.g., parents, peers, partners, or educators) because doing so elicits a positive response from them and promotes cohesiveness or intimacy. That, in turn, leads them to develop a sense of relatedness with these people (Moller, Deci, & Elliot, 2010; Weinstein & Ryan, 2010). By actively and selectively relating to the people who matter to them, individuals internalize familial, educational, and cultural values that are instrumental to regulating the achievement of the goals and outcomes that

are transmitted by others. This results in a connection with the people important to them and promotes relatedness satisfaction.

The process of internalization is also relevant for the satisfaction of the need for *competence*. As individuals master new skills, this can serve to increase their competence in a behavior. This, in turn, can foster internalization as individuals are then acting on the world in ways that result in progress toward goals, which leads to further competence satisfaction and internalization (Weinstein & Ryan, 2010). Although, to the best of our knowledge, this has not been examined, we can expect people to gravitate toward internalization of extrinsic motivations in domains where they feel more competent or where they have assimilated or adopted goals that are more meaningful to them. As for the need for relatedness, we are much more likely to approach and internalize regulations in domains where we are engaged and feel competent than otherwise. Also, we are less likely to orient to regulations in domains where we are incompetent or lack understanding. Therefore, individuals should show signs that the process of socialization has been successful when they have internalized the social regulations and practices that their social context values (e.g., school, family, work) and they feel effective in pursuing the goals associated with these contexts (Skhirtladze et al., 2019).

As a considerable amount of research grounded in SDT has shown, actions that are done freely and represent expressions of firmly internalized values provide opportunities to experience autonomy satisfaction and the positive benefits that follow (Ryan & Deci, 2017). When effective, internalization of extrinsic motivation should serve relatedness and competence satisfaction and should especially serve autonomy satisfaction because individuals are self-regulating their own behavior.

Although people experience satisfactions of their needs for relatedness, competence, and autonomy when acting from autonomous extrinsic motivations, nonetheless internalization often fails. For example, some people may partially internalize the goal of doing something to protect the environment and recycle when it is easy, but their lack of personal value shows up when protecting the environment requires more effort. Such examples illustrate to OIT's first proposition, namely that the process of taking in values and behavioral regulations from external sources and transforming them into one's own may function more versus less effectively and lead to variations in the ways people have internalized the regulation of behavior.

Such differences in internalization are often linked to how external others have attempted to create compliance or behavior regulations. For instance, when taxes or sanctions are proposed as strategies to motivate pro-environmental behaviors, individuals may engage in the behaviors only because of external pressures or controls. Children may end up feeling an internal pressure to do homework when their parents provide positive feedback only when their children do as they are told (Roth, 2008). Students may become more engaged at school when they are provided with a convincing rationale for pursuing their education (Reeve & Jang, 2006; Vansteenkiste et al., 2019). People may actively

engage in an activity they find boring if their feelings are acknowledged, they are provided with a rational for doing the task, and they are given a choice with regard to how to do the task (Deci et al., 1994). They may also completely disengage from an activity they once valued because the feedback they receive leads them to believe that they are incompetent or do not have the ability to succeed (Legault et al., 2006). Alternatively, they may become more interested in an activity if they are afforded the opportunity to do appropriately challenging tasks (Grolnick & Ryan, 1987). In sum, specific types of regulation can be instigated through exposure to different contexts, social environments, or interpersonal behaviors resulting in different degrees of internalization and psychological need satisfaction. These differences are the basis for variations in the motives for doing a behavior, in the extent to which motives are experienced as being autonomous, and, in turn, in the quality of individuals' experiences.

### Intrinsic Motivation, Different Types of Extrinsic Motivation, and Amotivation

In a typical day, we engage in many behaviors that are interesting and challenging as well as behaviors that are less interesting, such as household chores, work, family obligations, or hygiene rituals. As we described above, we often adopt such behaviors and practices because agents in our social environment expect, promote, or even compel us to do them. According to OIT's second proposition (Ryan & Deci, 2017), there are six behavior regulation types that result from the interaction between our innate inclination to be active and the different social environments that either support or thwart this inclination. OIT highlights the importance of basic psychological needs in fostering motivation that is more autonomous, where the reason for engaging in a behavior comes from within, compared to a motivation that is controlled by other forces or to the absence of motivation (also called amotivation). The degree to which goals and behaviors in a particular life domain are initiated and regulated through autonomous choice instead of through internal or external forces that compel us to act will have a substantial and measurable impact on the quality of behaviors, cognitions, and experiences in that domain.

According to OIT, these six types of behavior regulations vary in the extent to which they are autonomous and internalized and thus can be placed along a continuum of self-determination (Deci & Ryan, 1985; Ryan & Deci, 2017). From the least to the most self-determined these six regulatory styles are nonregulation (amotivation); external regulation, introjected regulation, identified regulation, and integrated regulation (four forms of extrinsic motivation); and intrinsic regulation (intrinsic motivation). When measures of these regulations are correlated, they form a quasi-simplex pattern wherein the regulation types that are closely situated along the continuum are more strongly related than the ones further away (Ryan & Connell, 1989). A brief description of each behavior regulation follows. These have been defined in detail by Ryan and Deci (2017).

*Nonregulation* is positioned at the lowest end of the internalization continuum and falls under the amotivation orientation. Nonregulation refers typically to behaviors that

lack intention or purpose (Deci & Ryan, 1985). It represents a state in which individuals do not perceive a relationship between their behavior and that behavior's subsequent outcome, where people are still doing a behavior but they do not feel motivated to do it. This lack of motivation may reflect low intention to act because someone either does not have the ability or capacity to do a behavior, or they simply lack interest (Legault et al., 2006; Pelletier et al., 1999). Since nonregulated behaviors are not internalized, nonregulation and amotivation are considered the lowest quality of behavior regulation. Amotivation represents an absence of regulation of behavior by the self; as such, it may seem contradictory to consider it as a motivation orientation since it does not represent a form of internally or externally controlled behavior. It is essential, however, for understanding and examining the many behaviors people engage in every single day when they simply go through the motions without any specific goals or values attached to those behaviors. Measuring nonregulation and amotivation is also essential for understanding the internalization process if we wish to distinguish behaviors people engage in without goals, direction, or purpose from behaviors people simply do not engage in. We will come back to the concept of engagement and nonengagement.

*External regulation* is the least internalized form of extrinsic motivation and refers to behavior that is engaged in for reasons that are purely instrumental and external to the self. That is, behaviors are performed to obtain rewards, to avoid negative consequences, or to comply with other people's requests. These behaviors serve external or social demands first and foremost, and they feel forced and controlling since the force driving the behaviors is fully external. These external sources of regulation can be very effective at compelling or inducing people to do things if they allow people to invest a minimal amount of effort in order to obtain a reward or avoid a punishment and if the external sources are maintained over time (Deci, Koestner, & Ryan, 1999). For this reason, external regulation does not lead to maintenance of behaviors since they are not continued when the external source is removed.

Within introjected regulation, internalization has occurred, and behavior regulation is no longer completely external but is regulated through internal pressures and constraints. This internal pressure is based on affective and evaluative contingencies in which a sense of worth is conditional (Roth & Assor, 2012). Introjected behaviors can also be described as "ego-involved" and are done to avoid guilt or to enhance self-worth (Ryan, 1982). Internal pressure is salient, and action is based more on "should" than on true self-endorsement. For this reason, this form of regulation is not considered self-determined or autonomous. Thus, this type of regulation feels constrictive since a person feels compelled to engage in behaviors based on the perceived or projected standards of others. Through introjection people can end up hinging their sense of worth on items they believe they must possess (e.g., physical objects, money), images they must display (e.g., physical appearance, status), or things they must do better than others (e.g., social comparison, competition) and other extrinsic outcomes (Hurst et al., 2017). Similar to external regulation, introjected

sources of regulation can be powerful sources of motivation, but they require a sustained display of characteristics and behaviors to feel that one is worth something.

In contrast, identified regulation refers to behaviors that are engaged in because they are valued or seen as personally important. The individual recognizes the relevance or significance and has begun to internalize the behavior, value, or standard. Identified regulation represents the beginning of autonomous behavior since people are no longer complying with an external demand; they are now performing behavior because they value the activity or understand its importance. Interestingly, people may see the importance of an action and that it will lead to the achievement of something they value, but this could be limited to a specific dimension of the self or the life domain. For instance, somebody may be physically active and fully endorse the value of physical activity as a means for being healthy (Guertin et al., 2015, 2017). This does not mean, however, that they have endorsed other behaviors such as healthy eating or good sleep hygiene that are also important for one's health. In other words, while significant to the individual, behaviors pursued with identified regulations may not yet be fully harmonized with the individual's overarching value system (Ryan & Deci, 2013).

*Integrated regulation* is the most autonomous and internalized form of extrinsic motivation and occurs when personally endorsed behaviors become coherent with other dimensions of the self. The behaviors with which one identifies become integrated and align with other needs and values which are part of an overarching value system. When an individual has integrated reasons for engaging in behavior, internalization of regulation is complete as there are no conflicts with other behaviors, and they are performed because they are construed as natural extensions of identity. The more fully integrated a behavior or a goal is, the more a person is effective in changing a behavior to reduce the dissonance between conflictual aspects of the self and restore self-integrity (Lavergne & Pelletier, 2015, 2016). In a study on physical activity, Miquelon and Castonguay (2017) reported that integrated regulation, when compared to identified and internal regulations, was the only form of regulation related to behavior consistency and maintenance over a three-month period. Similar results were observed by Kadhim, Amiot, and Louis (2020) when examining the regulation of eating behaviors over time. Integrated regulation shares similarities with intrinsic motivation since feelings of choice and autonomy are salient. It is still considered extrinsic, however, because behavior is performed in order to obtain personally valued outcomes rather than out of pure enjoyment of the behavior itself.

*Intrinsic regulation,* the only type of regulation to fall under the intrinsic motivation orientation, describes activities that are pursued freely and out of enjoyment, generating a sense of satisfaction and competence. Individuals engage in intrinsically motivated behaviors because they want to. When intrinsic motivation is robust, the individual seeks new challenges, adopts wider frames of experience, is curious, and is open to the assimilation of new knowledge. These behaviors can be maintained in the absence of external incentives and often despite external barriers (Deci & Ryan, 1985).
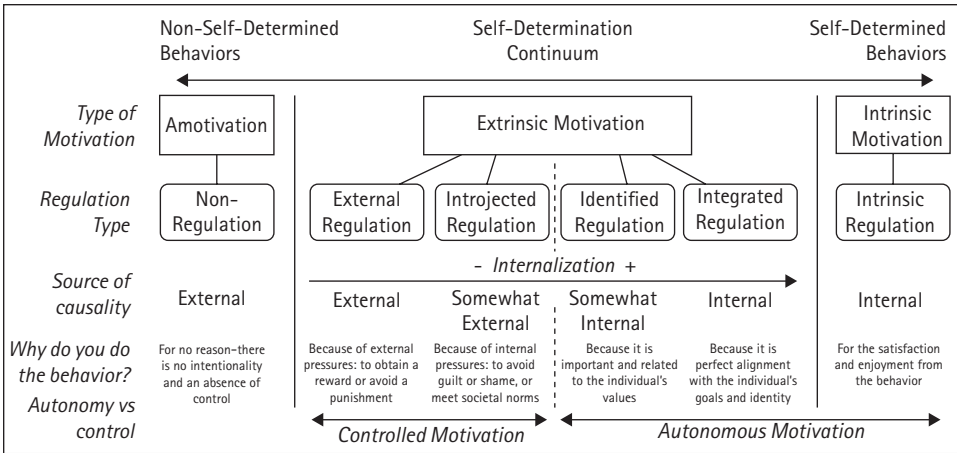
**Figure 3.1** The schematic representation of organismic integration theory

Adapted from Sarrazin et al., (2011)

These different forms of behavioral regulation are depicted schematically in Figure 3.1. The three motivation orientations (intrinsic motivation, extrinsic motivation, amotivation) appear across the top, with the six types of regulation underneath. From left to right, the types of regulation are placed in order of relative autonomy or self-determination. The four regulation types of extrinsic motivation (external, introjected, identified, and integrated) are represented in increasing order of internalization. The dotted vertical line in the middle marks the clear divide in the internalization process where behaviors switch from being controlled (originated from others) to being autonomous (originating from within). The two solid vertical lines between nonregulation and external regulation and between integrated and intrinsic regulation illustrate that although the different types of regulation may be close with regard to their level of relative autonomy, they still represent motivation orientations. The figure also includes a brief description of reasons for doing a behavior that correspond to the different types of behavioral regulations. At the bottom of the figure, two broad motivational orientations, autonomous and controlled, are identified; the autonomous orientation includes intrinsic, integrated, and identified regulations, while the controlled orientation includes introjected and external regulations. Amotivation does not represent a form of controlled motivation as it is not controlled by forces internal or external to the self.

**Assessment and validity of the autonomy continuum**. Over the past 35 years, a considerable amount of research has tested the proposition that the various behavioral regulations represent unique reasons to pursue behavior, that the regulations differ in their relative degree of autonomy, and that since relative autonomy is associated with better functioning, each type of regulation impacts the quality of experience and well-being differently (OIT Proposition III).

Since 1985, several measurement scales have been designed to assess the different types of regulation in various life domains. Several of these domains—education, work,

interpersonal relationships, sport and physical activity, and the environment—are covered in other chapters in this book. These scales typically ask participants why they do a specific behavior (e.g., homework, practice a sport) or a group of behaviors associated with a broader life domain (e.g., eating behaviors, environmental behaviors, health behaviors), or why they engage in a broader activity (e.g., going to school, working, doing physical activity). In the beginning, several of the scales did not include questions that corresponded to integrated regulation because it was believed that this type of regulation would occur only with people who were older or more mature. Furthermore, the assessment was considered methodologically challenging to do through self-report since it requires the capacity to nondefensively gauge how aligned an activity is with other needs and values or is congruent and in keeping with other behaviors or values that have been internalized.

One of the basic questions that research within OIT has examined is whether the six regulatory types were not only distinct constructs but were forming a quasi-simplex pattern. Evidence of a quasi-simplex pattern is obtained when the types of regulation that are theoretically closer on the continuum are highly and positively correlated to each other, while the ones that are further apart either have weaker correlations or are even negatively related to each other. Support for a quasi-simplex pattern is important as this would mean that the motivational types proposed by OIT are qualitatively distinct but at the same time relate to each other with one common factor: their relative level of autonomy or self-determination.

In a large-scale meta-analysis Howard, Gagné, and Bureau (2017) examined the proposed simplex-like pattern across five major domains and 486 independent samples. They observed that, overall, the simplex structure provided a valid and accurate representation of the one-dimensional continuum of relative autonomy for the different types of regulation proposed by OIT. Although the authors observed that their results did not support the inclusion of integrated regulation due to the high intercorrelations with intrinsic motivation or identified regulation in some samples (an issue we will discuss in more detail later), they concluded that the varied types of behavioral regulations identified in OIT were distinct and could be ordered along a continuum reflecting their degree of internalization and relative autonomy.

Over the years, researchers have also examined whether the reasons for engaging in the behaviors underlying each of the different types of regulation proposed by OIT constituted systematically reliable factors through exploratory and confirmatory factor analysis. The interpretation of the factors and their representation as either six relatively independent factors corresponding to the six behavior regulatory styles, a bidimensional structure corresponding to autonomous and controlled motivation, or a global self-determination factor (the Relative Autonomy Index: RAI), has led to debates on the structure of motivation as defined by SDT, and more specifically by OIT (for different views on this debate, see Howard, Gagné, & Morin, 2020; Sheldon et al., 2017; Howard, this volume). In a review of the different statistical and analytical methods

for representing the motivational types, Howard, Gagné, Van den Broeck, et al. (2020) concluded that multidimensional methods (such as a bifactorial exploratory structural equation modeling and confirmatory factor analysis) that allow the representation of autonomous versus controlled motivation as well as the specific regulation types more accurately represented motivation and explained more variance in the outcomes. In contrast, Ryan and Deci (2017) suggested that the variables derived from bifactor models when applied to SDT's motivational taxonomy have yet to show construct validity, and their interpretive meaning remains unclear.

The preferred use of one methodology over another to create variables and examine how the regulations relate to different outcomes depends on the research questions being examined (Howard, Gagné, & Morin, 2020; Pelletier & Sarrazin, 2007). For example, the RAI has utility in research that examines the effect of self-determination on different outcomes (Sheldon et al., 2017). It could be used as an individual difference measure by selecting participants who have a high or a low score or used as a mediating variable to better explain how specific determinants (e.g., teachers' interpersonal behaviors) could relate to different outcomes (e.g., school attendance, persistence, or performance). The use of autonomous and controlled motivational orientations could be useful in isolating their unique variance in an outcome such as how they relate to the quality versus the quantity of eating behavior (Guertin & Pelletier, 2021) or how they relate to an increase in the consumption of healthy food and a decrease in the consumption of unhealthy food (Guertin, Pelletier, and Pope, 2020). One could also examine each of the six regulation types separately to identify the best predictor of a behavior or how the different types of regulation relate to a specific outcome, such as persistence in sport (Pelletier et al., 2001).

### The Effects of Need Support on Internalization

According to the third OIT proposition, factors in the social environment that support people's psychological needs for relatedness, competence, and autonomy with respect to a relevant behavior or domain should facilitate greater internalization. Considerable research has supported this proposition in different life domains. (This research is reviewed in detail in several chapters of this book.) In this section we briefly consider the general proposition that when interpersonal contexts foster a sense of relatedness, and it is supportive of competence and autonomy, internalization and integration are facilitated. In contrast, when these needs are thwarted or in conflict with one another, internalization is undermined or does not occur. When considering how others support or thwart psychological needs, SDT research has primarily examined supervisory or hierarchical relationships such as parent-child, teacher-student, supervisor-employee, or physician-patient. It should be noted, however, that all social interactions, including interactions with friends, peers, siblings, and coworkers, can impact psychological need satisfaction and frustration. Need satisfaction and frustration occur through interpersonal and communication behaviors that either support or thwart needs.

Overall, autonomy-supportive behaviors have received the most empirical attention by far (e.g., Gagné, 2003; Pelletier et al., 2001; Standage, Duda, & Ntoumanis, 2005). Autonomy support includes several categories of interpersonal behaviors, such as providing choice, devoting time and attention to people, providing clear guidelines and expectations, expressing value and support for autonomy, acknowledging others' perspectives, and giving opportunities for initiative (Cheon et al., 2020; Aelterman et al., 2019). These interpersonal behaviors allow individuals to be more proactive and lead not only to more internalization but to more engagement and skill development. More recently, research has started to focus on the positive benefits of competence- and relatedness-supportive behaviors when it comes to promoting internalization. Competence-supportive behaviors include using positive expectancies, encouraging learning, providing positive feedback, acknowledging improvements, believing others can meet their goals, and encouraging others to improve their skills (Sheldon & Filak, 2008; Taylor, Ntoumanis, & Standage, 2008). Someone engages in relatedness-supportive behavior when they understand, support, and care for those around them. They do this by being warm, showing they are interested, findings ways to relate to them, and showing that they genuinely like them (Jones, Armour, & Potrac, 2004). In a recent metasynthesis of techniques for promoting motivation for health behavior change, Gillison et al. (2019) found support for the role of autonomy-, competence-, and relatedness-supportive behaviors in supporting internalization.

Although the benefits of need-supportive behaviors are well understood, the effects of social environments and social agents that actively thwart needs have not received the same level of attention. Autonomy-thwarting interpersonal behaviors include using rewards or punishments to control behavior, providing intimidating feedback, making demands without providing a rationale, using conditional regard, and other controlling strategies (Bartholomew, Ntoumanis, & Thogersen-Ntoumani, 2009). Autonomy-thwarting (controlling) behaviors have been examined in a variety of social settings and life domains, and their negative impact on internalization and motivation quality has been well established. The impact of competence- and relatedness-thwarting behaviors, however, is less explored. Preliminary evidence suggests that competence-thwarting behaviors such as emphasizing others' faults, discouraging people from trying difficult tasks, focusing on what others do wrong, sending the message that others are inadequate, and doubting their capacity to improve, and relatedness-thwarting behaviors such as being distant, not connecting, excluding people, not listening, and not being available also can directly impact internalization (e.g., Sheldon & Filak, 2008).

As a field, there is a need to better understand the dark side of human behavior and the mechanism through which internalization fails or de-internalization occurs. Until recently, one reason for the lack of empirical evidence examining the role of need-thwarting behavior and internalization was that there were no validated tools for examining the impact of social agents on the internalization process through all six types of need-supportive and need-thwarting behaviors. In a series of studies, Rocchi et al. (2017)

validated a measure to assess all six types of need-supportive and need-thwarting behaviors, the Interpersonal Behaviors Questionnaire (IBQ). It is noteworthy that this scale assesses both perceptions of the interpersonal behaviors of others and the individual's own report of the same interpersonal behaviors.

That the IBQ assesses both perceptions of the interpersonal behaviors of others and the individual's own report of the same interpersonal behaviors has a few interesting implications. First, the IBQ can be used to explore the role of all six types of need-supportive and need-thwarting interpersonal behaviors in relation to how they impact individuals' psychological need satisfaction and frustration. This could help extend the existing research to move beyond the influential role of Autonomy Support and Autonomy Thwarting and focus on Competence Support, Competence Thwarting, Relatedness Support, and Relatedness Thwarting interpersonal behaviors as well. Second, the IBQ-Self could be used to identify and understand the antecedents of all six types of interpersonal behaviors according to SDT. Specifically, the scale could be used to explore the factors that influence the behaviors of persons in a supervising role (e.g., coaches) with their subordinates (e.g., athletes; Rocchi & Pelletier, 2017). Third, it could allow researchers to examine how self-reports of people in a role of authority regarding their interpersonal behavior align with their subordinates' perceptions of the same interpersonal behavior, and whether this level of alignment has an impact on the dynamics of the relationship between the persons in a role of authority and the subordinates. For example, Rocchi and Pelletier (2018) observed that only about one-third of coaches and athletes were in agreement about their relationship. In the remaining relationships, coaches tended to be split evenly between those who reported more supportive behaviors and less thwarting behaviors than their athletes perceived and those who reported less supportive and more thwarting behavior than their athletes perceived. Interestingly, the authors found that coaches' autonomous motivation was also shown to *reduce* their likelihood of overreporting, while coaches' controlled motivation was shown to *increase* their likelihood of overreporting. The same results were found in the context of trainer-exerciser relationships (Rodrigues et al., 2021). Rocchi and Pelletier (2018) concluded that coaches who were autonomously motivated toward their coaching were nondefensive and more humble, and they did not need to exaggerate or positively inflate their coaching behaviors because they did not need approval from others in order to feel successful or competent. In sum, these results suggest that an autonomous motivation toward coaching may make coaches more in tune with their behaviors, thus promoting the likelihood that there is congruence between what coaches say they do in their interactions and what athletes perceive their coaches do.

*Relationships between Motivation Types and Different Outcomes*
As mentioned, in the more than 35 years of research under the SDT framework, several measurement scales have been developed to assess the degree of internalization in different life domains. The development of these measures has allowed researchers to examine

the relationship between individuals' reported internalization in a specific domain and the subsequent positive and negative outcomes.

A considerable number of systematic reviews and meta-analyses in the life domains of education (Vasconcellos et al., 2020), sport and physical activity (Standage & Ryan, 2020), health (Ntoumanis et al., 2021), parenting (Soenens, Deci, & Vansteenkiste, 2017), development (Ryan, Deci, & Vansteenkiste, 2016), environmental behaviors (Pelletier & Aitken, 2014), and work (Slemp et al., 2018; Van den Broeck et al., 2021) have found evidence for the role of internalization in predicting positive outcomes such as increased goal attainment, pro-environmental behavior, learning, mastery, job satisfaction, persistence, performance, and civic activism. Another stream of research has attempted to determine the outcomes of low internalization for a given behavior. This research has used a variety of different approaches, including the RAI (Grolnick & Ryan, 1987), the bifactorial representation of autonomous and controlled motivation (Pelletier & Dion, 2007), the different motivational types taken individually (Pelletier et al., 2001), and more recently the use of cluster analysis to identify profiles that represent configurations of the different motivation types (Howard, Gagné, & Morin, 2020; Litalien et al., 2019) to isolate the relationship between low-quality behavior regulations and outcomes. This research has found that external and introjected regulations are associated with negative outcomes such as dropout, nonretention of material, and a lack of enjoyment of activities. In these cases, as soon as the externalized source of motivation (i.e., reward or guilt) is removed, the behavior stops or is continued without purpose (nonregulation).

Overall, this research supports the proposition that the distinct types of motivation and behavior regulation proposed by OIT are phenomenologically different, relate differently to need-supportive and need-thwarting contexts, and predict consequences that vary greatly from one life domain to another. More specifically, the more people have internalized regulations and are autonomously motivated for an activity, the more they engage in the activity, which ultimately improves the quality of their performance and experience. In contrast, the more internalization and controlled motivation they experience, the less they engage in activities, and their performance declines or stops.

*Relationships between Motivation Types and Well-Being*
According to the fifth OIT proposition, internalization of behavioral regulations requires a need-supportive context. As internalization occurs, individuals experience self-concordance, whereby they are increasingly engaging in activities that are consistent with their true self instead of engaging in behavior to appease others. This consistency between behaviors and goals reduces internal conflict and, as such, promotes increased well-being and health outcomes.

Therefore, several studies have examined how autonomous and controlled regulations relate to well-being. For example, Chirkov and Ryan (2001) compared high school students in Russia and the United States and found that perceived teacher and parent

autonomy support was associated with less controlled and more autonomous forms of motivation, as well as with greater well-being in both samples. In a study with young children, Soenens and Vansteenkiste (2005) demonstrated that autonomy-supportive parenting leads to greater well-being and social adjustment. Several other studies with teens confirm the enhancing effects of high autonomy contexts on internalized motivation and wellness (Grolnick et al., 2014; Sierens et al., 2009). Also, substantial evidence has shown that caregiving environments facilitate healthy self-development in children (Ryan et al., 2016), whereas neglect or thwarting of these supports prevents children from developing capacities for autonomous behavior regulation and can even contribute to maladjustment and psychopathology.

In a study with young adults, Milyavskaya and Koestner (2011) examined the universality of the relationships between need satisfaction, motivation, and well-being in multiple life domains. Ratings of 800 domains showed that need satisfaction was strongly related to both autonomous motivation and well-being, and the authors demonstrated that autonomous motivation was a significant mediator of the path between need satisfaction and well-being. In a study with teachers, Cuevas et al. (2018) examined the extent to which the perceived pressure experienced by teachers when they were evaluated based on their students' academic performance affected their level of ill-being. The authors observed that perceived pressure negatively predicted teachers' autonomous motivation and led to increased exhaustion and less vitality. In a study with elite young athletes on the longitudinal associations between controlled motivation, ill-being, and perceptions of coaches' controlling behaviors, Stenling et al. (2017) reported that increases in perceptions of coaches' autonomy-thwarting behaviors positively predicted controlled motivation at the end of the season, and controlled motivation at the beginning of the season predicted increased ill-being at the end of the season.

This brief review demonstrates that as people's behavior is more internalized, they will have more positive experiences and greater psychological health and well-being. This relationship holds for children, adolescents, and adults across different life domains.

## Summary

The evidence supporting the five OIT propositions outlined by Ryan and Deci (2017) is substantial. There is significant evidence for the concept of organismic integration and the idea that humans are naturally inclined to internalize extrinsic motivations that are endorsed by significant others. As we have seen, this process can result in different types of extrinsic motivation regulations that differ qualitatively in the extent to which they are internalized and autonomous (external, introjected, identified, and integrated). In combination with intrinsic motivation (internal) and amotivation, these types of behavioral regulations correlate in a quasi-simplex pattern that supports the underlying continuum of self-determination. Research shows that autonomy-, competence-, and relatedness-support facilitate the internalization of nonintrinsically motivated behaviors, while

thwarting these needs interferes with this process. In turn, the more people's behavior is internalized and regulated autonomously, the more people display behavioral persistence, higher-quality behavior, more effective performances, and greater psychological health and well-being.

## From the Context to the Self and Back: Future Directions and Implications

While the five OIT propositions link research on the three motivational orientations and their associated behavioral regulations, some underlying principles of the propositions have received less attention than others. Additionally, we believe there are some questions that remain unanswered that can be investigated within the OIT framework. Due to limited space, we will address four areas that we believe could help direct future OIT research.

### The Process of Internalization and the "Needs-as-Motives" Process

Psychological need satisfaction and frustration play a critical role in the internalization of behaviors and in people's well-being and ill-being. According to Ryan and Deci (2017), they do so in at least three ways. First, as we reviewed above, socializing contexts that support basic needs facilitate internalization and assimilation. But it is further postulated that through internalization, people better fulfill their psychological needs. Thus as people internalize social norms, they increase their sense of relatedness, and as they integrate new practices, they feel enhanced autonomy and competence. Activities and practices that are need-fulfilling are easier to fully internalize. When our actions don't conflict with needs and when they actually fulfill needs, people are more drawn to them. Thus although need satisfactions are rarely the person's aim or motive for internalizing regulations, they are common outcomes of the process.

Some preliminary results suggest people select intrinsic rather than extrinsic goals, adapt more autonomous goals, and intentionally seek out relationships with people who are need-supportive in order to satisfy their basic psychological needs and increase well-being (Baker, Watlington, & Knee, 2020; Hadden et al., 2016; Hope et al., 2019; Reis et al., 2000; Sheldon, 2011; Sheldon & Gunz, 2009; Sheldon, Abad, & Hinsch, 2011). There are also some limited findings that show when the need for autonomy is thwarted, people will seek opportunities to restore this need (Sheldon & Gunz, 2009), sometimes immediately (Radel et al., 2011), and that people are more likely to act in ways to restore their autonomy for a task where their autonomy was thwarted and their competence in the task was high (Radel, Pelletier, & Sarrazin, 2013). This research, however, falls short in providing empirical evidence that people actively engage in activities to satisfy their needs and that this leads to goal-directed behavior aimed at satisfying the needs, which ultimately promotes internalization. In this process, an individual could seek to internalize and regulate behaviors that are autonomous and functional, but they could also

internalize and endorse regulations that are dysfunctional and controlling because they believe that these forms of regulation represent means to satisfy their needs.

In other words, we know little about whether individuals with different motivational orientations, and more specifically individuals with a controlled orientation, seek out interactions with need-supportive versus need-thwarting supervisors or teachers. Do individuals generally demonstrate a preference for need-supportive behaviors overall, and does this, in turn, lead to increased need satisfaction and more internalization? Does that apply as well to individuals with a controlled motivation orientation? Or do these individuals demonstrate a preference for need-thwarting behavior, that is, social contexts more familiar and more in line with their motivational orientation despite the fact that they do not fare better in controlled environments or need-thwarting contexts? The answers to these questions could explain the social contexts that lead people, despite their desire to satisfy their basic needs, to create their own circumstances that are either positive and supportive or pervasive and frustrating.

## Social Contexts: Top-Down and Bottom-Up Effects

In the description of the internalization process there is an implicit assumption that both distal social contexts (e.g., the culture, the religion, political structures, the economic system) and proximal social contexts (e.g., the education system, work organizations, teams, peers, and families) have an influence on the content of what people may internalize and the types of regulation that people will internalize to deal with this content. Although it makes sense to believe that the two levels of social contexts are imbedded in each other and that both levels can have an impact on people's motivation, one's motivation could also have an effect on social contexts. These relationships refer to top-down and bottom-up effects.

Although it is not entirely clear how the different levels (i.e., the distal and the proximal) can lead to one type of extrinsic regulation proposed in OIT in one specific life domain, research in education (Pelletier & Rocchi, 2016; Pelletier & Sharp, 2009) and sport (Rocchi & Pelletier, 2017) on the determinants of interpersonal behaviors may elucidate some of the effects. For example, as the education system and school boards increasingly hold teachers accountable for students' performances, and given the role that teachers play in students' motivation, a growing body of research has examined how the educational context could affect teachers' motivation for teaching and their teaching behaviors. Like other research on OIT, this research has shown that when the school administration imposes restrictions, makes teachers responsible for their students' performance, and pressures or rewards teachers to produce good student performance, these factors undermine teachers' own motivation for teaching (Eyal & Roth, 2011). This, in turn, leads teachers to be more controlling with their students. When the education context is supportive of teachers' initiatives, the opposite effect occurs; that is, teachers' autonomous motivation is higher and they are more autonomy-supportive with their students (Pelletier & Rocchi,

2016; Pelletier & Sharp, 2009; Roth et al., 2007). Interestingly, the same relationships have been observed with regard to coaches' motivation and their interpersonal behaviors with their athletes (Rocchi & Pelletier, 2017; Rocchi, Pelletier, & Capstick, 2013).

This research has also identified an element of reciprocity between teachers' (or coaches') interpersonal behaviors and students' (or athletes') motivation. For example, because teachers and students are part of a common social context (i.e., the classroom) and are part of each other's social context, they have reciprocal effects on each other. Thus, as autonomy-supportive teachers positively affect students' autonomous motivation, the teachers' motivation is also positively affected by the students' autonomous motivation and behavior. Inversely, as controlling teachers negatively affect students' autonomous motivation, the teachers' motivation is also affected by the students' motivation and behavior (Pelletier, Séguin-Lévesque, & Legault, 2002).

In other words, alongside top-down effects of context on individuals, there is also the possibility that a bottom-up effect exists. Interestingly, the bottom-up effect is basically at the heart of the body of work that represents SDT, that is, the possibility that people through their actions can become autonomously engaged in a social context and that they could become engaged in something even bigger than themselves. For example, research has shown that individuals with an autonomous orientation (compared to those with a controlled orientation) can lead individuals in a supervising role to become more autonomy-supportive (Pelletier & Vallerand, 1996), engage in environmental activism targeting environmental policies (Séguin, Pelletier, & Hunsley, 1998; Tagkaloglou & Kasser, 2018; Sheldon et al., 2016), engage in the design of green buildings (Olanipekun et al., 2018), promote policies fostering more sustainable food choices (Schösler, de Boer, & Boersema, 2014), and, as stakeholders in corporations, can increase corporate social responsibility by making their organizations accountable for the treatment of groups or the adoption of policies that could have an impact on the environment (Pelletier & Aitken, 2014; Rupp, Williams, & Aguilera, 2011).

In sum, although strong evidence exists to support a top-down process, as proposed by OIT, we must also consider how OIT could contribute to a bottom-up process. The top-down process underlines the possibility that individuals' motivation could be affected by distal and proximal contexts. However, when individuals' motivation becomes more autonomous, a bottom-up process could happen. That is, individuals could become active agents in proximal contexts (i.e., teaching environment or coaching environment) and a source of political and social changes in distal contexts that could improve (hopefully, not undermine) the conditions of others.

### Importance of Integrated Regulation

In the previous two sections we made reference to the role of individuals as active agents within the internalization process and a potential source of societal change. In this section we address the contribution of integrated regulation, the most internalized type of

extrinsic motivation. Integrated regulation represents a very special type of behavior regulation that is prominent in the description of OIT but that has been relatively neglected in the research in this theory. Integrated regulation requires that internalized activities become congruent with others. When this is successful, an individual fully endorses a behavior, and regulation of that behavior is done without conflicts between other behaviors. The more fully integrated a goal or a behavior is, the more a person is effective in self-regulation.

The description of integrated regulation is usually presented in the context of one activity or behavior at a time. The reality is that our day-to-day activities require the regulation of several interdependent activities at different moments during the day or over time. For example, we often study individuals' motivation for work, exercise, healthy eating, and relationships independently. We should, however, examine the regulation of these activities together, that is, how a person generally regulates different activities in their life. In our opinion, this is where integrated regulation would become a distinct form of regulation. The purpose of integrated regulation is not simply to internalize the activities we pursue separately but to harmoniously regulate several activities so that they fit and flow together, thrive, and do not conflict with each other.

Indeed, Ryan and Deci (2017) argued that one reason for retaining the construct of integrated regulation is because it can be differentiated from *compartmentalized identifications*. They defined compartmentalized regulations as behaviors people rate as personally important but that may be inconsistent with their other values and practices. They then need to defensively maintain these identifications, often at the cost of critical reflection.

As mentioned previously, in a large meta-analysis Howard and colleagues (2017) did not recommend the inclusion of integrated regulation in the assessment of the different motivational types due to the high correlations with internal and identified regulation in some samples. We think that the recommendation to exclude integrated regulation may be premature. We should, instead, find better ways to assess this very specific type of extrinsic motivation and better articulate how its role should be examined within the research on OIT. Otherwise, excluding it will make it difficult, if not impossible, to examine its role moving forward.

Since the late 1990s, researchers have successfully included items that were designed to represent integrated regulation in different life domains because it was hypothesized that it could occur within that domain and could explain outcomes above and beyond what was explained by identified regulation and intrinsic regulation. Examples include the Sport Motivation Scale II (Pelletier et al., 2013), Motivation for Therapy Scale (Pelletier, Tuson, & Haddad, 1997), Motivation toward the Environment Scale (Pelletier et al., 1998), Behavioral Regulation in Exercise Questionnaire (Wilson et al., 2006), Regulation of Eating Behavior Scale (Pelletier et al., 2004), and Sexual Motivation Scale (Gravel, Pelletier, & Reissing, 2016). In each of these contexts or domains, research has shown that

integrated regulation contributed to the assessment of autonomous motivation and had a unique relationship with outcomes.

For example, in the context of the motivation for pro-environmental behaviors (PEB), studies in various locations (North and South America, United Kingdom, Europe, Asia, Tunisia and Sri Lanka, Australia) found that autonomous motivation, and more specifically integrated regulation, had the strongest relationship with several PEB categories (e.g., recycling, composting, and waste disposal; reusing; environmental purchasing; informing or encouraging others; activism; conserving water/energy; protecting habitats; avoiding harmful behaviors; Gough & Pelletier, 2020). Additionally, the relationship strength increases with PEB difficulty (Aitken, Pelletier, & Baxter, 2016; Gough & Pelletier, 2020; Green-Demers, Pelletier, & Ménard, 1997). In the context of exercise, integrated regulation, not intrinsic or identified, predicted maintenance of physical activity over time (Miquelon & Castonguay, 2017).

Lavergne and Pelletier (2015, 2016) proposed a model to explain the conditions that lead people to change their behavior in order to make it consistent with their values and other behaviors following a state of cognitive dissonance that results from their awareness of an attitude-behavior discrepancy. Given that integrated regulation requires coherence and consistency of behaviors across different life domains or activities, resolving conflicts and making necessary changes to behaviors that are not in line with one's values form a necessary and natural process as individuals move toward integrated regulation. The authors proposed two types of motivation involved in the dissonance process when individuals are confronted with a behavioral discrepancy: a distal motivation and a proximal motivation. The distal motivation is related to dominant motivational orientations implicated in the life domain where the cognitive dissonance occurs, that is, the motivation orientation and internalization in a particular life domain that energizes individuals to adopt specific behaviors or to reach specific goals (Lavergne & Pelletier, 2015, 2016; Harmon-Jones, Amodio, & Harmon-Jones, 2009). The proximal motivation refers to the motivation associated with the goal of reducing or eliminating the dissonance. Lavergne and Pelletier (2015, 2016) observed that people's motivational orientations (i.e., autonomous motivation compared to controlled motivation) in a specific life domain influenced their reactions to the psychological discomfort when confronted with dissonance.

For example, individuals with an autonomous motivation orientation toward the environment relied on the use of behavior modifications (i.e., changing a PEB) and the avoidance of cognitive restructuring (i.e., trivializing pro-environmental attitudes) as dissonance-reducing strategies to deal with their discomfort when they were made aware that they were doing a harmful environmental behavior although they considered protecting the environment important. On the other hand, individuals with a controlled orientation used mainly cognitive restructuring to deal with psychological discomfort (Lavergne & Pelletier, 2015).

In the context of three other studies Lavergne and Pelletier (2016) examined more specifically the roles of both the distal and proximal motivations (i.e., the reasons for reducing the dissonance) for reducing the cognitive dissonance. The authors observed that people with an autonomous motivation orientation in a given domain were motivated to compensate for a counter-attitudinal action because the action threatened authentic self-integrity. In turn, the perceived self-integrity threat motivated people to compensate for the counter-attitudinal action in a way that restored self-integrity, that is, by changing their behavior because revising their attitude would presumably exacerbate the threat. By contrast, people with a controlled motivation orientation were motivated to compensate for a counter-attitudinal action because the action threatened ego-invested self-structures, such as feelings of self-worth contingent on wealth and status. The perceived ego-invested self-threat motivated people to compensate for the counter-attitudinal action in a way that minimized the threat. Interestingly, if the inconsistent action occurred in public, the people indicated that they would be motivated to change their behavior to minimize the threat because this was the only strategy that had the potential to minimize the threat under these conditions; however, if the inconsistent action occurred in private, they would not be motivated to change their behavior because there would be nothing to gain from the effort required to implement it.

In other words, individuals with an autonomous motivation who genuinely believed in the welfare of the environment modified their behavior when faced with dissonance in that domain because it was important to behave in a way that was consistent with their overall value system and core principles. Individuals with a controlled motivation who were more concerned about ego-invested self-structure (e.g., prestige or image) or external regulations (e.g., rewards or punishments) modified their behavior only when those ego-invested structures were threatened (e.g., by observers such as friends or bylaw officers) or when external regulation was contingent. In the absence of threats or external regulation, individuals with controlled motivation reported trivializing environmental attitudes such as the importance of climate change to manage attitude-behavior inconsistencies.

We believe that integrated regulation plays an important role in understanding some of the most distinctive OIT propositions. These include explaining how one completes difficult or challenging behaviors, engages in several behaviors required to achieve one global goal or be consistent with a lifestyle, brings a value or regulation into congruence with other aspects of oneself, endorses wholeheartedly a behavior in absence of conflict with other priorities, and not only engages in behaviors deemed valuable by groups or societies but refrains from behaviors deemed problematic. Also, as we mentioned earlier, integration is important to distinguish this form of regulation from compartmentalized identifications that represent the instances where people fully endorse some behaviors because they are personally important but may be inconsistent with their other values and practices in other life domains. They may then defensively maintain these identifications,

often at the cost of showing verbal and nonverbal signs of incongruence and incoherence (Weinstein et al., 2012). For these reasons, we believe that more effort should be invested in the assessment of integrated regulation as, over time, we could examine other ways of getting at this theoretical construct.

*Toward an Understanding of Amotivation and Nonengagement in Behaviors*

The evidence of OIT and the process of internalization is well-supported when it comes to behaviors people actively engage in. Currently, however, SDT does not provide a framework for examining why people do not engage in a particular behavior. Even someone who is amotivated in a given life domain, where they lack interest in their activity and do not regulate their behavior, still—at a fundamental level—must engage in the behavior in order to experience nonregulation and amotivation. For example, an individual experiencing amotivation or nonregulation in the context of physical activity would be doing the activity but would not have any goals or reasons for doing it. From a methodological standpoint, someone who does not do any physical activity would either be excluded from a study, wrongly classified as amotivated toward an activity they do not engage in, or, worse, accidentally grouped in with other regulation types given their endorsement of the value of physical activity despite not doing any. Our existing tools and framework are centered around the question: Why do you do what you do? However, asking someone why they do *not* do something provides essential insight into what may happen if they were to engage and would also help us devise better strategies for behavior change so that the internalization process can occur. As such, we need a framework and the necessary tools to study behaviors people do not engage in and how the reasons for not doing a behavior relate to the internalization process. We propose five reasons for behavioral nonengagement that follow from the previous work of amotivation (Legault et al., 2006; Pelletier et al., 1999; Vansteenkiste et al., 2004) and discuss their potential relationship with internalization. The first three correspond to behaviors that have never been engaged in regularly (or at all) by the individual.

**No interest nonengagement**. This refers to individuals who do not engage in a particular behavior because they simply do not want to (Legault et al., 2006; Vansteenkiste et al., 2004). For example, Vansteenkiste and colleagues found that autonomous motivation not to search for work was positively related to the experience of being unemployed and well-being, whereas controlled motivation not to search for work was negatively related to being unemployed. An individual with no interest has no goals related to the activity, no reasons to engage in it, and no external pressures to do it; therefore, they simply do not do it. In these instances, even if the behavior itself could lead to increased health or well-being through the direct benefits of, say, physical activity or connecting with a significant other, the positive outcome of exercising their autonomy not to engage in the behavior outweighs any missed benefits from the behavior itself. These individuals have effectively internalized their nonengagement in the behavior, and behavior-change interventions

would not be appropriate or effective for these individuals as they would be inherently need-thwarting.

**External or introjected nonengagement.** From a health-behavior change perspective, the benefits of healthy behavior are well-understood. Many people, however, who do not engage in healthy eating or physical activity have external pressures put on them by society, doctors, family, and friends to engage in these types of behaviors. As such, if and when these individuals start to engage in a given health behavior, it will be through the activation of external sources, and it will be challenging to internalize these behaviors because these individuals do not inherently find the behaviors interesting or important (Legault et al., 2006; Pelletier et al., 1999). This type of behavior activation is well understood from an SDT perspective: in the absence of external pressures, people will not engage in the behavior. For those individuals who experience internal pressure, there is a conflict between their desire not to engage in a behavior and the external pressures. For individuals with external or introjected nonregulation, the traditional strategies of supporting psychological needs in order to promote internalization would be effective to help them engage in the behaviors and start the internalization process.

**Identified goals nonengagement**. This refers to individuals who understand and know the importance of a given activity or behavior but do not know where to start or what to do. The person may see the value of the behavior but feel incompetent to do the behavior or to maintain it (Hommelhoff et al., 2020). These individuals would benefit from competence support in order to begin. Given that these individuals already understand and value the behavior, it is possible that once given the required competence support and after they start engaging, they will already be further along in the internalization process and not struggle to maintain the behavior once it is started.

These last two regulations refer to behaviors that were previously engaged in but currently are not.

**Loss nonengagement**. This refers to individuals who previously experienced some degree of internalization for an activity, but it is not there anymore. This could happen when, for instance, the external source that was once there disappeared (Deci et al., 1999), a goal that was pursued may have been achieved and there is no instrumental goal motivating the behavior anymore (Carver & Scheier, 2001), or a goal may be in conflict with another goal (Baxter & Pelletier, 2020). In these instances, the conflict between two goals may lead to a decrease in motivation for one behavior because it interferes with the other. If an individual were to resume the behavior, it would likely be in response to the reintroduction of an external source of regulation or a new goal, and the behavior would likely not be internalized upon reengagement. Given that these behaviors likely never achieved internalization, they are susceptible to losses. Common examples include physical activity participation and dieting behaviors where an individual fluctuates between performing the behaviors (for external reasons) and not engaging in the behaviors. The fluctuations and failures associated with this behavior do not promote internalization, and

the individual would be susceptible to experiencing negative outcomes associated with low internalization.

**Barrier nonengagement**. Some people cannot engage in a behavior because of barriers and circumstances outside of their control (Legault et al., 2006; Pelletier et al., 1999). Perhaps an athlete who previously internalized training for their sport is sidelined by a serious injury or they do not have the financial support to continue training. They could want to eat healthfully but not have the financial resources to make that possible. They could want desperately to engage in physical activity but be forbidden due to health complications. These individuals likely experience negative outcomes as a result of their lack of control over their situation; they are essentially not able to participate in a behavior or activity due to external or controlled reasons. If the barriers were removed, they would reengage instantly and likely experience some degree of internalization right away. In some cases, the reality is that the barrier will simply not go away, and interventions and need-support strategies will have to target this loss.

Overall, although SDT has an extensive and empirically supported framework for understanding why people do the things they do, there is an opportunity to highlight why people do not do things. Further, by understanding why things are done or not, there is an opportunity to better target behavior change intervention to promote internalization.

## Concluding Comments

OIT provides a rich and complex description of the relations between motivation orientations and the characteristics of the environment within SDT. Although the mini-theory is concerned mainly with various forms of extrinsic motivation, their causes, and their consequences, it offers a much broader perspective on the role of socializing agents in the internalization and integration of behavior, and the implications that these processes have for one's functioning in society. As we have seen in this chapter, some conditions may explain why some people fail at regulating their behavior and why they are unhappy because of it; others may be more successful at behavior regulation and benefit from it. We think, however, that this theory has the potential to explain not only what society does to people but also what people do in relation to the social world as they progressively internalize and integrate the regulation of their behavior for different activities. As a result, this potential could also expand from promoting individual human functioning to functioning that includes a contribution to society in the form of support of other people's needs and societal changes that can positively impact others.

## References

Aelterman, N., Vansteenkiste, M., Haerens, L., & Soenens, B. (2019). Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. *Journal of Educational Psychology*, *111*, 497–521.

Ahn, I., Chiu, M. M., & Patrick, H. (2021). Connecting teacher and student motivation: Student-perceived teacher need-supportive practices and student need satisfaction. *Contemporary Educational Psychology*, *64*, 101950.

Aitken, N. M., Pelletier, L. G., & Baxter, D.E. (2016). Doing the difficult stuff: Influence of self-determined motivation toward the environment on transportation pro-environmental behaviour. *Ecopsychology*, *8*, 153–162.

Baker, Z. G., Wallington, E. M., & Knee, C. R. (2020). The role of rapport in satisfying one's basic psychological needs. *Motivation and Emotion*, *44*, 329–343.

Bartholomew, K., Ntoumanis, N., & Thogersen-Ntoumani, C. (2009). A review of controlling motivational strategies from a self-determination theory perspective: Implications for sports coaches. *International Review of Sport and Exercise Psychology*, *2*, 215–233.

Baxter, D., & Pelletier, L. G. (2020). The roles of motivation and goals on sustainable behaviour in a resource dilemma: A self-determination theory perspective. *Journal of Environmental Psychology*, *69*, 101437.

Carver, C. S., & Scheier, M. F. (2001). *On the self-regulation of behavior*. Cambridge University Press.

Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2020). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. *Teaching and Teacher Education*, *90*, 103004.

Chirkov, V., & Ryan, R. M. (2001). Parent and teacher autonomy-support in Russian and U.S. adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology*, *32*, 618–635.

Cuevas, R., Ntoumanis, N., Fernandez-Bustos, J. G., & Bartholomew, K. (2018). Does teacher evaluation based on student performance predict motivation, well-being, and ill-being? *Journal of School Psychology*, *68*, 154–162.

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, *62*, 119–142.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*, 627–668.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.

Deci, E. L., & Ryan, R. M. (2014). Autonomy and need satisfaction in close relationships: Relationships motivation theory. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships: Theory, research, and applications* (pp. 53–73). Springer.

Eyal, O., & Roth, G. (2011). Principals' leadership and teachers' motivation: Self-determination theory analysis. *Journal of Educational Administration*, *49*, 256–275.

Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion*, *27*, 199–223.

Gillison, F., Rouse, P., Standage, M., Sebire, S., & Ryan, R. M. (2019). A meta-analysis of techniques to promote motivation for health behaviour change from a self-determination theory perspective. *Health Psychology Review*, *13*, 110–130.

Gough, C., & Pelletier, L. G. (2020). *Contribution of the Motivation toward the Environment Scale to the environmental psychology research: A scoping review*. Manuscript under review.

Gravel, E. E., Pelletier, L., & Reissing E. D. (2016). Doing it for the right reasons: Validation of a measurement of intrinsic motivation, extrinsic motivation, and amotivation for sexual relationships. *Personality and Individual Differences*, *92*, 164–173.

Green-Demers, I., Pelletier, L. G., & Menard, S. (1997). The impact of behavioural difficulty on the saliency of the association between self-determined motivation and environmental behaviours. *Canadian Journal of Behavioural Science*, *29*, 157–166.

Grolnick, W. S., Raftery-Helmer, J. N., Marbell, K. N., Flamm, E. S., Cardemil, E. V., & Sanchez, M. (2014). Parental provision of structure: Implementation and correlates in three domains. *Merrill-Palmer Quarterly*, *60*, 355–384.

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, *52*, 890–898.

Guertin, C., & Pelletier, L. G. (2021). Planning and self-monitoring the quality and quantity of eating: How different styles of self-regulation strategies relate to healthy and unhealthy eating behaviors, bulimic symptoms, and BMI. *Appetite*, 156, 104839.

Guertin, C., Pelletier, L. G., Émond, C., & Lalande, G. (2017). Change in physical and psychological health over time in patients with cardiovascular disease: On the benefits of being self-determined, physically active, and eating well. *Motivation and Emotion*, 43, 294–307.

Guertin, C., Pelletier, L., & Pope, P. (2020). The validation of the Healthy and Unhealthy Eating Behavior Scale (HUEBS): Examining the interplay between stages of change and motivation and their association with healthy and unhealthy eating behaviors and physical health. *Appetite*, 144, 104487.

Guertin, C., Rocchi, M., Pelletier, L. G., Émond, C., & Lalande, G. (2015). The role of motivation and eating regulation on the physical and psychological health of cardiovascular disease patients. *Journal of Health Psychology*, 20, 543–555.

Hadden, B. W., Rodriguez, L. M., Knee, C. R., DiBello, A. M., & Baker, Z. G. (2016). An actor-partner interdependence model of attachment and need fulfillment in romantic dyads. *Social Psychological and Personality Science*, 7, 349–357.

Harmon-Jones, E., Amodio, D. M., & Harmon-Jones, C. (2009). Action-based model of dissonance: A review, integration, and expansion of conceptions of cognitive conflict. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 41, pp. 119–166). Academic Press.

Hommelhoff, S., Richter, D., Niessen, C., Gerstorf, D., & Heckhausen, J. (2020). Being unengaged at work but still dedicating time and energy: A longitudinal study. *Motivation Science*, 6, 368–373.

Hope, N. H., Holding, A. C., Verner-Filion, J., Sheldon, K. M., & Koestner, R. (2019). The path from intrinsic aspirations to subjective well-being is mediated by changes in basic psychological need satisfaction and autonomous motivation: A large prospective test. *Motivation and Emotion*, 43, 232–241.

Howard, J., Gagné, M., & Bureau, J. (2017). Testing a continuum structure of self-determined motivation: A meta-analysis. *Psychological Bulletin*, 143, 1346–1377.

Howard, J., Gagné, M, & Morin, A. J. S. (2020). Putting the pieces together: Reviewing the structural conceptualization of motivation with SDT. *Motivation and Emotion*, 44, 846–861.

Howard, J. L., Gagné, M., Van den Broeck, A., Guay, F., Chatzisarantis, N. L., Ntoumanis, N., & Pelletier, L. G. (2020). A review and empirical comparison of motivation scoring methods: An application to self-determination theory. *Motivation and Emotion*, 44, 534–548.

Hurst, M., Dittmar, H., Banerjee, R., & Bond, R. (2017). "I just feel so guilty": The role of introjected regulation in linking appearance goals for exercise with women's body image. *Body Image*, 20, 120–129.

Jones, R., Armour, K., & Potrac, P. (2004). *Sports coaching cultures: From practice to theory*. Routledge.

Jungert, T., Schattke, K., Proulx, F. A., & Taylor, G. (2021). Whose autonomy support is more effective? Managers' or co-workers'? An experimental comparison of source and occupational context on intrinsic motivation. *Canadian Journal of Administrative Sciences*, 38, 209–223.

Kadhim, N., Amiot, C. E., & Louis, W. R. (2020). Applying the self-determination theory continuum to unhealthy eating: Consequences on well-being and behavioral frequency. *Journal of Applied Social Psychology*, 50, 381–393.

Koestner, R., Powers, T. A., Holding, A., Hope, N., & Milyavskaya, M. (2020). The relation of parental support of emerging adults' goals to well-being over time: The mediating roles of goal progress and autonomy need satisfaction. *Motivation Science*, 6, 374–385.

Lavergne, K., & Pelletier, L. G. (2015). Predicting individual differences in the choice of strategy to compensate for attitude-behaviour inconsistencies in the environmental domain. *Journal of Environmental Psychology*, 44, 135–148.

Lavergne, K., & Pelletier, L. G. (2016). Why are attitude-behavior inconsistencies uncomfortable? Using motivational theories to explore individual differences in dissonance arousal and motivation to compensate. *Motivation and Emotion*, 40, 842–861.

Lavergne, K. J., Sharp, E. C., Pelletier, L. G., & Holtby, A. (2010). The role of perceived government style in the facilitation of self-determined and non-self-determined pro-environmental behavior. *Journal of Environmental Psychology*, 30, 169–177.

Legault, L., Green-Demers, I., & Pelletier, L. G. (2006). Why do high school students lack motivation in the classroom? Toward an understanding of academic amotivation and social support. *Journal of Educational Psychology*, 98, 567–582.

Legault, L., & Pelletier, L. G. (2000). Impact of an environmental education program on students' and parents' attitudes, motivation, and behaviours. *Canadian Journal of Behavioural Science Revue*, 32, 243–250.

Litalien, D., Gillet, N., Gagné, M., Ratelle, C. F., & Morin, A. J. S. (2019). Self-determined motivation profiles among undergraduate students: A robust test of profile similarity as a function of gender and age. *Learning and Individual Differences*, *70*, 39–52.

Mageau, G. A., Ranger, F., Joussemet, M., Koestner, R., Moreau, E., & Forest, J. (2015). Validation of the Perceived Parental Autonomy Support Scale (P-PASS). *Canadian Journal of Behavioural Science*, *47*, 251–262.

Milyavskaya, M., & Koestner, R. (2011). Psychological needs, motivation, and well-being: A test of self-determination theory across multiple domains. *Personality and Individual Differences*, *50*, 387–391.

Miquelon, P., & Castonguay, A. (2017). Integrated regulation, behavior consistency, and physical activity maintenance. *Motivation Science*, *3*, 76–90.

Moller, A. C., Deci, E. L., & Elliot, A. J. (2010). Person-level relatedness and the incremental value of relating. *Personality and Social Psychology Bulletin,36*, 754–767.

Moller, A. C., Ryan, R. M., & Deci, E. L. (2006). Self-determination theory and public policy: Improving the quality of consumer decisions without using coercion. *Journal of Public Policy & Marketing*, *25*, 104–116.

Moreau, E., & Mageau, G. A. (2012). The importance of perceived autonomy support for the psychological health and work satisfaction of health professionals: Not only supervisors count, colleagues too! *Motivation and Emotion*, *36*, 268–286.

Ntoumanis, N., Williams, G. C., Ng, J. Y. Y., Prestwich, A., Quested, E., Hancox, J. E., Thogersen-Ntoumani, C., Deci, E. L., Ryan, R. M., & Lonsdale, C. (2021). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health Psychology Review,* 15, 214–244, doi:10.1080/17437199.2020.1718529

Olanipekun, A. O., Chan, A. P. C., Xia, B., & Adedokun, O. A. (2018). Applying the self-determination theory (SDT) to explain the levels of motivation for adopting green building. *International Journal of Construction Management*, *18*, 120–131.

Pelletier, L. G., & Aitken, N. (2014). Encouraging environmental actions in employees and in the working environment: A self-determination theory perspective. In M. Gagné (Ed.), *The Oxford handbook of work engagement, motivation, and self-determination theory* (pp. 314–334). Oxford University Press.

Pelletier, L. G., & Dion, S. (2007). An examination of general and specific motivational mechanisms for the relationships between body dissatisfaction and eating behaviors. *Journal of Social and Clinical Psychology*, *26*, 303–333.

Pelletier, L. G., Dion, S. C., Slovenic-D'Angelo, M., & Reid, R. (2004). Why do you regulate what you eat? Relationship between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment. *Motivation and Emotion*, *28*, 245–277.

Pelletier, L. G., Dion, S., Tuson, K. M., & Green-Demers, I. (1999). Why do people fail to adopt environmental behaviors? Towards a taxonomy of environmental amotivation. *Journal of Applied Social Psychology*, *29*, 2481–2504.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., & Brière, N. M. (2001). Associations among perceived autonomy support, forms of self-regulation, and persistence: A prospective study. *Motivation and Emotion*, *25*, 279–306.

Pelletier, L. G., Guertin, C., & Rocchi, M. (2017). The distinctive roles of perceptions of health risks and benefits, self-efficacy, and motivation in the awareness, initiation, and maintenance of healthy behaviors. In F. Guay, H. W. Marsh, R. G. Craven, & D. M. McInerney (Eds.), *SELF—Driving positive psychology and wellbeing, Vol. 6: International advances in self research* (pp. 135–166). Information Age Publishing.

Pelletier, L. G., & Rocchi, M. (2016). Teachers' motivation in the classroom. In W. C. Liu, J. C. K. Wang, & R. M. Ryan (Eds.), *Building autonomous learners—Research and practical perspectives using self-determination theory* (pp. 107–127). Springer.

Pelletier, L. G., Rocchi, M. A., Vallerand, R. J., Deci, E. L., & Ryan, R. M. (2013). Validation of the revised Sport Motivation Scale (SMS-II). *Psychology of Sport and Exercise*, *14*, 329–341.

Pelletier, L. G., & Sarrazin, P. (2007). Measurement issues in self-determination theory and sport. In M. S. Hagger & N. L. D. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 143–152). Human Kinetics.

Pelletier, L. G., Séguin-Lévesque, C., & Legault, L. (2002). Pressure from above and pressure from below as determinants of teachers' motivation and teaching behaviors. *Journal of Educational Psychology*, *94*, 186–196.

Pelletier, L. G., & Sharp, E. (2008). Persuasive communication and pro-environmental behaviours: How message tailoring and message framing can improve integration of behaviors through self-determined motivation. *Canadian Psychology*, *49*, 210–217.

Pelletier, L. G., & Sharp, E. C. (2009). Administrative pressures and teachers' interpersonal behaviour in the classroom. *Theory and Research in Education*, *7*, 174–183.

Pelletier, L. G., Tuson, K., Green-Demers, I., Noels, K., & Beaton, A. (1998). Why are you doing things for the environment? The Motivation toward the Environment Scale (MTES). *Journal of Applied Social Psychology*, *28*, 437–468.

Pelletier, L. G., Tuson, K. M., & Haddad, N. K. (1997). Client Motivation for Therapy Scale: A measure of intrinsic motivation, extrinsic motivation, and amotivation for therapy. *Journal of Personality Assessment*, *68*, 414–435.

Pelletier, L. G., & Vallerand, R. J. (1996). Supervisors' beliefs and subordinates' intrinsic motivation: A behavioral confirmation analysis. *Journal of Personality and Social Psychology*, *71*, 331–340.

Pope, P., Pelletier, L. G., & Guertin, C. (2018). Starting off on the best foot: A review of message framing and message tailoring, and recommendations for the comprehensive messaging strategy for sustained behavior change. *Health Communication*, *33*, 1068–1077.

Radel, R., Pelletier, L. G., & Sarrazin, P. (2013). Restoration processes after need thwarting: When autonomy depends on competence. *Motivation and Emotion*, *37*, 234–244.

Radel, R., Pelletier, L. G., Sarrazin, P., & Milyavskaya, M. (2011). Restoration process of the need for autonomy: The early alarm stage. *Journal of Personality and Social Psychology*, *101*, 919–934.

Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology*, *98*, 209–218.

Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin*, *26*, 419–435.

Rocchi, M., & Pelletier, L. G. (2017). The antecedents of coaches' interpersonal behaviours: The role of the coaching context, coaches' psychological needs, and coaches' motivation. *Journal of Sport and Exercise Psychology*, *39*, 366–378.

Rocchi, M., & Pelletier, L. G. (2018). How does coaches' reported behavior align with athletes' perceptions? The role of coaches' motivation and the consequences for female athletes' psychological needs in sport. *Sport, Exercise, and Performance Psychology*, *7*, 141–154.

Rocchi, M., Pelletier, L. G., & Capstick, L. (2013). Determinants of coach motivation and autonomy supportive coaching behaviours. *Psychology of Sport and Exercise*, *14*, 852–859.

Rocchi, M., Pelletier, L. G., Cheung, S., Baxter, D., & Beaudry, S. (2017). Assessing need-supportive and need-thwarting interpersonal behaviors: The Interpersonal Behaviors Questionnaire (IBQ). *Personality and Individual Differences*, *104*, 423–433.

Rodrigues, F., Pelletier, L. Rocchi, M., Neiva, H. P., Teixeira, D. S., Cid, L., Siva, L., & Monteiro, D. (2021). Trainer-exerciser relationship: The congruency effect on exerciser psychological needs using response surface analysis. *Scandinavian Journal of Medicine & Science in Sports*, *31,* 226–241.

Roth, G. (2008). Perceived parental conditional regard and autonomy support as predictors of young adults' self- versus other-oriented prosocial tendencies. *Journal of Personality*, *76*, 513–533.

Roth, G., & Assor, A. (2012). The cost of parental pressure to express emotions: Conditional regard and autonomy support as predictors of emotion regulation and intimacy. *Journal of Adolescence*, *35*, 799–808.

Roth, G., Assor, A., Kanat-Maymon, Y., & Kaplan, H. (2007). Autonomous motivation for teaching: How self-determined teaching may lead to self-determined learning. *Journal of Educational Psychology*, *99*, 761–774.

Rupp, D. E., Williams, C. A., & Aguilera, R. V. (2011). Increasing corporate social responsibility through stakeholder value internalization (and the catalyzing effect of new governance): An application of organizational justice, self-determination, and social influence theories. In M. Schminke (Ed.), *Managerial ethics: The psychology of morality* (pp. 69–88). Routledge/Psychology Press.

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of Cognitive Evaluation Theory. *Journal of Personality and Social Psychology*, *43*, 450–461.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*, 749–761.

Ryan, R. M., & Deci, E. L. (2011). A self-determination theory perspective on social, institutional, cultural, and economic supports for autonomy and their importance for well-being. In V. I. Chirkov, R. M. Ryan,

& K. M. Sheldon (Eds.), *Human autonomy in cross-cultural context: Perspectives on the psychology of agency, freedom, and well-being* (pp. 45–64). Springer.

Ryan, R. M., & Deci, E. L. (2013). Toward a social psychology of assimilation: Self-determination theory in cognitive development and education. In B. W. Sokol, F. M. E. Grouzet, & U. Muller (Eds.), *Self-regulation and autonomy: Social and developmental dimensions of human conduct* (pp. 191–207). Cambridge University Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, *61*, 101860.

Ryan, R. M., Deci, E. L., & Vansteenkiste, M. (2016). Autonomy and autonomy disturbances in self-development and psychopathology: Research on motivation, attachment, and clinical process. In D. Cicchetti (Ed.), *Developmental psychopathology* (Vol. 1, pp. 385–438). John Wiley & Sons.

Ryan, R. M., Koestner, R., & Deci, E. L. (1991). Ego-involved persistence: When free-choice behavior is not intrinsically motivated. *Motivation and Emotion*, *15*, 185–205.

Ryan, R. M., Legate, N., Niemiec, C. P., & Deci, E. L. (2012). Beyond illusions and defense: Exploring the possibilities and limits of human autonomy and responsibility through self-determination theory. In P. R. Shaver & M. Mikulincer (Eds.), *Meaning, mortality, and choice: The social psychology of existential concerns* (pp. 215–233). American Psychological Association.

Sarrazin, P, Pelletier, L. G., Deci, E., & Ryan, R. (2011). Nourrir une motivation autonome, la santé mentale et l'eudaimonia dans différents milieux de vie: Les apports de la théorie de l'autodétermination. In C. Martin-Krumm & C. Tarquinio (Eds.), *Traité de psychologie positive* (pp. 273–312). De Boeck.

Schösler, H., de Boer, J., & Boersema, J. J. (2014). Fostering more sustainable food choices: Can self-determination theory help? *Food Quality and Preference*, *35*, 59–69.

Séguin, C., Pelletier, L. G., & Hunsley, J. (1998). Toward a model of environmental activism. *Environment and Behavior*, *30*, 628–652.

Sheldon, K. M. (2011). Integrating behavioral-motive and experiential-requirement perspectives on psychological needs: A two-process model. *Psychological Review*, *118*, 552–569.

Sheldon, K. M., Abad, N., & Hinsch, C. (2011). A two-process view of Facebook use and relatedness need-satisfaction: Disconnection drives use, and connection rewards it. *Psychology of Popular Media Culture*, *1*, 2–15.

Sheldon, K. M., & Filak, V. (2008). Manipulating autonomy, competence and relatedness support in a game-learning context: New evidence that all three needs matter. *British Journal of Social Psychology*, *47*, 267–283.

Sheldon, K. M., & Gunz, A. (2009). Psychological needs as basic motives, not just experiential requirements. *Journal of Personality*, *77*, 1467–1492.

Sheldon, K. M., Osin, E. N., Gordeeva, T. O., Suchkov, D. D., & Sychev, O. A. (2017). Evaluating the dimensionality of self-determination theory's relative autonomy continuum. *Personality and Social Psychology Bulletin*, *43*, 1215–1238.

Sheldon, K. M., Wineland, A., Venhoeven, L., & Osin, E. (2016). Understanding the motivation of environmental activists: A comparison of self-determination theory and functional motives theory. *Ecopsychology*, *8*, 228–238.

Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B., & Dochy, R. (2009). The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology*, *79*, 57–68.

Skhirtladze, N., Van Petegem, S., Javakhishvili, N., Schwartz, S. J., & Luyckx, K. (2019). Motivation and psychological need fulfillment on the pathway to identity resolution. *Motivation and Emotion*, *43*, 894–905.

Slemp, G. R., Kern, M. L., Patrick, K. J., & Ryan, R. M. (2018). Leader autonomy support in the workplace: A meta-analytic review. *Motivation and Emotion*, *42*, 706–724.

Soenens, B., Deci, E. L., & Vansteenkiste, M. (2017). How parents contribute to children's psychological health: The critical role of psychological need support. In L. Wehmeyer, T. D. Little, S. J. Lopez, K. A. Shogren, & R. Ryan (Eds.), *Development of self-determination through the life-course* (pp. 171–187). Springer.

Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence*, *34*, 589–604.

Standage, M., Duda, J. L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology*, *75*, 411–433.

Standage, M., & Ryan, R. M. (2020). Self-determination theory in sport and exercise. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (Vol. 1, pp. 37–56). John Wiley & Sons.

Stenling, A., Ivarsson, A., Hassmén, P., & Lindwall, M. (2017). Longitudinal associations between athletes' controlled motivation, ill-being, and perceptions of controlling coach behaviors: A Bayesian latent growth curve approach. *Psychology of Sport and Exercise*, *30*, 205–214.

Tagkaloglou, S., & Kasser, T. (2018). Increasing collaborative, pro-environmental activism: The roles of motivational interviewing, self-determined motivation, and self-efficacy. *Journal of Environmental Psychology*, *58*, 86–92.

Taylor, I., Ntoumanis, N., & Standage, M. (2008). A self-determination theory approach to understanding antecedents of teachers' motivational strategies in physical education. *Journal of Sport and Exercise Psychology*, *30*, 75–94.

Vallerand, R. J., Blais, M. R., Briere, N. M., & Pelletier, L. G. (1989). Construction and validation of the Motivation toward Education Scale. *Canadian Journal of Behavioural Science*, *21*, 323–349.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Valliéres, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, *52*, 1003–1017.

Van den Broeck, A., Howard, J. L., Van Vaerenbergh, Y., Leroy, H., & Gagné M. (2021). Beyond intrinsic and extrinsic motivation: A meta-analysis on self-determination theory's multidimensional conceptualization of work motivation. *Organizational Psychology Review*, 11, 240–273. 20413866211006173.

Vansteenkiste, M., Aelterman, N., Haerens, L., & Soenens, B. (2019). Seeking stability in stormy educational times: A need-based perspective on (de)motivating teaching grounded in self-determination theory. In *Advances in motivation and achievement, Motivation in education at a time of global change* (Vol. 20, pp. 53–80). Emerald Publishing.

Vansteenkiste, M., Lens, W., De Witte, S., De Witte, H., & Deci, E. L. (2004). The "why" and "why not" of job search behavior: Their relation to searching, unemployment experience, and well-being. *European Journal of Social Psychology*, *34*, 345–363.

Vasconcellos, D., Parker, P., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., Ryan, R. M., & Lonsdale, C. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. *Journal of Educational Psychology*, *112*(7), 1444–1469.

Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, *98*, 222–244.

Weinstein, N., Ryan, W. S., DeHaan, C. R., Przybylski, A. K., Legate, N., & Ryan, R. M. (2012). Parental autonomy support and discrepancies between implicit and explicit sexual identities: Dynamics of self-acceptance and defense. *Journal of Personality and Social Psychology*, *102*, 815–832.

Wilson, P. M., Rodgers, W. M., Loitz, C., & Scime, G. (2006). It's who I am . . . really! The importance of integrated regulation in exercise contexts. *Journal of Applied Biobehavioral Research*, *11*, 79–104.

# Basic Psychological Needs Theory: A Conceptual and Empirical Review of Key Criteria

Maarten Vansteenkiste, Bart Soenens, *and* Richard M. Ryan

## Abstract

Although the existence of a set of physical needs is well accepted within biology, the question whether humans have a parallel set of psychological needs has been more controversial within the psychological landscape. The identification, characterization, and study of basic needs has been central to the research agenda of Basic Psychological Needs Theory, one of SDT's six mini-theories. In this chapter, we provide an in-depth characterization of the nine criteria that characterize the basic needs for autonomy, relatedness, and competence: essential, psychological, pervasive, universal, inherent, distinct, content-specific, directional, and explanatory. We elaborate on the theoretical and research implications of these criteria and provide a selective review of this rapidly growing body of empirical work. We conclude that basic needs provide a universal and parsimonious framework to account for people's growth and flourishing as well as their stagnation and problem behavior, while also accounting for the growth-conducive versus toxic effects of different environments.

**Key Words:** Key words: basic needs, autonomy, competence, relatedness, universality, directional, explanatory, self-determination theory

Few modern psychological theories, if any, take such a strong standpoint regarding the essential psychological processes that underlie people's thriving, resilience, and integrity as Basic Psychological Needs Theory (BPNT), one of the six mini-theories of self-determination theory (SDT; Ryan & Deci, 2017). BPNT defines basic psychological needs as psychological *nutrients* essential for individuals' adjustment, well-being, and psychological growth (Ryan, 1995). Vulnerability for defensiveness, problem behavior, and psychopathology is said to arise when these same psychological needs are severely or chronically frustrated (Ryan, Deci, & Vansteenkiste, 2016; Vansteenkiste & Ryan, 2013). BPNT thus assumes that the phenotypic variation in people's (mal)adaptive functioning can be traced to a large extent to the satisfaction and frustration of a limited set of underlying basic needs, that is, the needs for autonomy, competence, and relatedness.

*Autonomy* refers to the experience of volition, willingness, and authenticity in one's actions, thoughts, and feelings. Autonomy reflects integrity, as one is "in unison" with regard to one's aims and actions. When frustrated, one experiences a sense of pressure and inner conflict, thereby feeling pushed in an unwanted direction. *Relatedness* denotes the experience of warmth, bonding, and care and is satisfied when one feels connected to significant others. Relatedness frustration involves a sense of social alienation, exclusion, and loneliness. *Competence* concerns the experience of effectiveness and mastery. When frustrated, one experiences a sense of failure and helplessness.

From the early formulations of SDT (Deci & Ryan, 1980), the concept of psychological needs was integral, as it helped to describe and predict the conditions in which people's interest in an activity peaks or plummets (see Reeve, this volume). As research on the dynamics, consequences, and antecedents of psychological needs accumulated (Deci & Ryan, 2000), different formal propositions were proposed as part of BPNT (Ryan & Deci, 2002, 2017). Since its formulation, BPNT has served a unifying role across the other mini-theories, facilitating their interconnection. The basic psychological needs for autonomy, competence, and relatedness account for the development and maintenance of intrinsic motivation (Cognitive Evaluation Theory; Reeve, this volume) and for the gradual internalization of regulations, norms, and attitudes (organismic integration theory; Pelletier & Rocchi, this volume). These needs also form the basis for understanding important personality differences (causality orientation theory; Koestner & Levine, this volume), the differential effects of life aspirations (goal contents theory; Bradshaw, this volume), and the factors characteristic of healthy and mature relationships (relationship motivation theory; Knee & Browne, this volume). As such, need-based experiences serve as the "glue" between mini-theories, helping to place diverse phenomena in a coherent framework.

The aim of the present chapter is to outline key theoretical tenets of BPNT and to provide a review of recent empirical work. The chapter is organized around nine interrelated key criteria that characterize these three needs as *basic* (Ryan & Deci, 2017; Vansteenkiste, Ryan, & Soenens, 2020). A description of each criterion and its implications for research can be found in Table 4.1. We discuss each criterion conceptually and review the empirical evidence available. Because empirical work within BPNT has grown exponentially, in this review we highlight only a subset of studies to illustrate key theoretical assumptions within BPNT. Some of the criteria we discuss pertain to the very nature of what a basic need involves (i.e., psychological, inherent, distinct, content-specific), while other criteria denote a need's function or role (i.e., essential, pervasive, explanatory, universal, directional). Throughout the chapter, we address and refine formal propositions that are part of BPNT (Ryan & Deci, 2017) and sketch directions for future research. To help structure this discussion, Figure 4.1 provides a graphical representation of the complex interplay between contextual support for the needs, individuals' need-based experiences, and psychosocial adjustment.

**Table 4.1** Description of the Key Criteria and Implications of a Basic Need within Basic Psychological Needs Theory

| Criteria | Description |
|---|---|
| 1. Essential | The satisfaction of a basic need contributes to growth, well-being, and adjustment, *and* the frustration of the need predicts problem behavior, ill-being, and psychopathology. |
| 2. Psychological | A basic need concerns the psychological and not the physical functioning of human beings. |
| 3. Pervasive | The effects associated with need-based experiences should be reflected in myriad cognitive, affective, and behavioral outcomes, while also surfacing at different levels, from the psychological to the neurological/biological. |
| 4. Universal | Felt need satisfaction and need frustration should predict the thriving and ill-being of *all* individuals, regardless of differences in socio-demographics, personality, cultural background, or need strength. |
| 5. Inherent | A basic need represents an evolved aspect of our psychological nature due to adaptive advantages associated with need satisfaction. |
| 6. Distinct | A basic need concerns a distinct set of experiences, and its emergence is not contingent upon nor derivative from the frustration of other needs. |
| 7. Content-specific | Satisfaction and frustration of a basic need manifest through specific behaviors and experiences, and are well represented in natural language. |
| 8. Directional | A basic need directs and shapes individuals' thinking, acting, and feeling, thereby spurring the proactive search for need-conducive circumstances, partners, and activities under supportive conditions, while eliciting corrective behavior under need-thwarting circumstances. |
| 9. Explanatory | A basic need helps to account for or explain the relation between variations in social contexts, both growth-promoting and toxic, and wellness-related outcomes. |

*Source:* Adapted from Vansteenkiste et al., 2020.

## Criterion 1: Essential Role

*Conceptualization*

In everyday language, the term "need" often refers loosely to desired attributes or outcomes. Children may say that they need a new game, or adults may say that they need a vacation to recover from work. The term in these cases denotes the presence of a particular desire or preference, with these desires or preferences varying widely between individuals. Yet, when a need is considered basic, a more restrictive definition is used. Within BPNT, a need is considered basic only when its satisfaction is essential for individuals' health, integrity, and wellness (Ryan & Deci, 2017).

Apart from yielding a growth-conducive effect when satisfied, the essential role of basic psychological needs also implies that their frustration should come with a functional cost. Need frustration predicts not only delayed or suboptimal development of one's potential but also more impoverished functioning and multiple forms of

MAARTEN VANSTEENKISTE, BART SOENENS, AND RICHARD M. RYAN

**Figure 4.1** Graphic representation of key criteria and associated themes

maladjustment (Bartholomew et al., 2011; Ryan et al., 2016; Vansteenkiste & Ryan, 2013). This is because frustration of the psychological needs involves more than a lack of fulfillment; need frustration also entails a direct threat and obstruction of the basic needs.

Conceptually, experiences of need satisfaction and need frustration stand in an asymmetrical relation to each other, as the absence of need satisfaction does not necessarily imply the presence of need frustration. In contrast, the presence of need frustration does denote the absence of need satisfaction (Vansteenkiste & Ryan, 2013). To illustrate, students who do not feel strongly connected to their classmates do not necessarily feel excluded and alienated from them. Yet experiences of failure, loneliness, and pressure would imply the absence of, respectively, competence, relatedness, and autonomy satisfaction.

The essential role of the basic psychological needs manifests through a dual-process model, in which one process denotes a "bright" path from need satisfaction to well-being and the other denotes a "dark" pathway from need frustration to ill-being (Haerens et al., 2015; Vansteenkiste & Ryan, 2013). Figure 4.1 includes two distinct paths, one relating need satisfaction to full functioning and another relating need frustration to impoverished functioning. This dual-process view is congruent with the metatheoretical assumption in SDT that we have a dual nature, which is both growth-oriented and self-protective (Ryan & Deci, 2017). While need satisfaction energizes proactive, prosocial and growth-oriented inclinations, need frustration awakens vulnerabilities for passivity, self-centeredness, and defensiveness.

*Empirical Evidence*

RELATION BETWEEN NEED SATISFACTION AND NEED FRUSTRATION

Congruent with the conceptual distinction between need satisfaction and need frustration, various studies have shown that both sets of experiences are empirically distinct. Confirmatory factor analyses (Chen, Vansteenkiste et al., 2015) and bifactor exploratory structural equation models (István et al., 2018) indicated that the experience of need frustration can be empirically separated from the experience of need satisfaction, with both types of experiences being moderately negatively correlated. Profile analyses further indicate that apart from the identification of contrasting need profiles (i.e., high need satisfaction/low need frustration and vice versa), some people also display a more mixed profile (Rouse et al., 2020), indicating that the experiences can co-occur.

At the same time, there is substantial variation in the association between need satisfaction and need frustration, with some studies reporting a null relation—indicating an almost orthogonal relation—(e.g., Unanue et al., 2017, Study 2) and other studies reporting a negative association as high as –.82, signaling that, under specific circumstances, both need dynamics form almost opposite poles (e.g., Brenning et al., 2021). The question of how need satisfaction and need frustration relate to each other and how variation in their interrelation can best be understood, modeled, and handled is an interesting research topic in its own right. Different factors can determine the strength of the association, including the intensity of the need-thwarting context, the employed research design, the sampled population, the scales used to measure need-relevant experiences, and the time frame of measurement (i.e., short-term intervals vs. long-term periods).

NEED SATISFACTION AS A CATALYST OF WELL-BEING

Hundreds of studies in various life domains, including work, education, sports, romantic relationships, and parenting, have provided evidence for the proposition that need satisfaction enhances subjective well-being. Some of this work has been summarized in meta-analyses (e.g., Tang, Wang, & Guerrien, 2020). To illustrate, need satisfaction relates positively to employees' positive affect and life satisfaction (Van den Broeck et al., 2010), negatively to athlete burnout (Li et al., 2013), and positively to individuals' quality of life and positive affect in the healthcare domain (Ng et al., 2012). Need satisfaction not only relates to concurrent well-being but also predicts *improved* well-being over time. To illustrate, estimating different trajectories in need satisfaction among university students, Gillet et al. (2019) revealed that students in a high-increasing trajectory reported more positive affect and higher effort and obtained higher achievement scores compared to those in a low-decreasing trajectory. In older adults, Houlfort et al. (2015) found need satisfaction contributed to increased psychological adjustment in retirement over a six-year period.

Congruent with SDT's organismic foundation (Ryan & Vansteenkiste, this volume), psychological need satisfaction should not just produce a sense of contentment,

happiness, and satisfaction (i.e., subjective well-being) but should be conducive to individuals' *full functioning*. Such full functioning does not merely imply the presence of pleasant emotions and the avoidance of distressing experiences; it also entails the capacity to bring one's experiences to full awareness, deriving a sense of meaning from them (Roth, Vansteenkiste, & Ryan, 2019). More generally, meaning and purpose in life appear to be strongly rooted in the satisfaction of basic needs (Martela, Ryan, & Steger, 2018). Elderly persons who report having their psychological needs better met over their life report a greater sense of ego integrity and acceptance at the end of their lives, whereas those who report more need-frustrating experiences throughout their life report greater despair and bitterness over missed opportunities (Van der Kaap-Deeder et al., 2020).

A more in-depth understanding of the relation between individuals' need-based experiences and meaning requires a consideration of the type of life goals people value, strive for, and eventually attain (or fail to), a topic central to goal contents theory (Bradshaw, this volume). Goal contents theory, which was at one time a part of BPNT (Ryan & Deci, 2002), distinguishes the types of goals people pursue, arguing that not all goals are created equal in terms of need satisfaction (Vansteenkiste et al., 2006). Specifically, intrinsic goals such as contributing to one's community, developing one's potential, or building intimate relations, are differentiated from extrinsic goals, such as pursuing fame and popularity, an attractive image, or a materialistic lifestyle. Intrinsic, relative to extrinsic, goals predict greater meaning because they allow for greater need satisfaction (Unanue et al., 2017). Because intrinsic goals afford more opportunities for need satisfaction, elderly who prioritize these goals are more at peace with their lifespan and with their mortality at the end of their life (Van Hiel & Vansteenkiste, 2009).

In addition to meaning, another critical indicator of individuals' full functioning is subjective vitality. Subjective vitality denotes a sense of aliveness and vigor and signals the energy available to the self (Frederick & Ryan, this volume). A key proposition within BPNT is that need satisfaction should replenish and mobilize energetic resources, thus fostering vitality (Ryan & Deci, 2017). According to SDT's organismic viewpoint, being capable of acting upon one's natural propensities to act in a volitional, effective, and relationally supportive way should "free up" energy to the self. This proposition has been confirmed repeatedly. Need satisfaction was found to relate to greater vitality in multiple life domains, including religion, work, healthcare, and parenting (e.g., Neubauer et al., 2021). For instance, a diary study among working adults found that need satisfaction in the hours after work contributed to better work recovery and more vigor at the end of the day (Van Hooff & Geurts, 2014). Other studies using other indicators of energy available to the self also support this proposition. For instance, teachers were found to report greater enthusiasm on days when they felt more competent and better connected with their students (Aldrup, Klusmann, & Lüdtke, 2017). Similarly, on days that parents get their own psychological needs met they report being more psychologically available for their children, suggesting more energetic resources (Van der Kaap-Deeder et al., 2019).

Consistent with the assumption that need frustration should predict ill-being, it has been found to predict a variety of internalizing problems, including increased stress (Campbell et al., 2017), depressive complaints (Bartholomew et al., 2011), and symptoms of anxiety (Haraldsen et al., 2020). A key proposition within BPNT is that need frustration depletes energetic resources (Ryan & Deci, 2017). Various indicators of energy loss have received attention, including experiences of fatigue, emotional exhaustion, and a need for recovery. To illustrate, spanning a 15-month interval, Olafsen et al. (2017) showed that need frustration among Norwegian leaders related to increasing emotional exhaustion, while need frustration predicted physical tiredness in athletes (Li et al., 2013). More recently, parents experiencing need frustration in the interaction with their children during the COVID-19 crisis reported more fatigue in their parenting role (Schrooyen et al., 2021).

The critical role of need frustration in the prediction of energy loss was confirmed in a clinical population of people who suffer from chronic fatigue. Among patients with unexplained chronic fatigue, need frustration on a given day related positively to feelings of tiredness and strain, an effect accounted for by elevated stress (Campbell et al., 2017). These findings also emerged at the day-to-day level, with daily variation in need frustration relating to daily variation in evening fatigue (Campbell, Vansteenkiste et al., 2018). The association between need frustration and fatigue is bidirectional in nature: adolescents report more fatigue in the morning after having slept fewer hours at night; in turn, morning fatigue predicts higher need frustration in the evening (Campbell et al., 2020).

### Summary

Due to the separate assessment of individuals' need satisfactions and need frustrations, clear progress has been made within BPNT. Whereas need satisfaction contributes primarily to individuals' well-being and healthy adjustment, need frustration was found to be highly predictive of individuals' ill-being. Thus, for people to feel vitalized and to experience their lives as meaningful, more is needed than the absence of need frustration. They need to make use of and develop their capacities, feel authentically connected to others, and be volitionally engaged in activities. Even in distressing times, need-satisfying experiences help individuals to grow as persons by fostering self-acceptance and meaning.

## Criterion 2: Psychological Nature

### Conceptualization

From birth, humans have both physical and psychological needs. It is essential for infants' physical growth that they drink, eat, and sleep sufficiently. When feeding is difficult or when babies lack sufficient sleep, their physical growth is hampered (at least temporarily). Physiological needs, such as hunger, thirst, and sleep, have received considerable attention in the field of biology, where the focus is on physical growth and health.

Yet, already in the early months of life, a set of psychological needs also has to be met for newborns to develop psychologically. Even at this early moment of development, within SDT's organismic viewpoint, people are seen as naturally inclined to seek out opportunities for autonomy, competence, and relatedness satisfaction (Ryan & Vansteenkiste, this volume). Indeed, infants want to feel securely attached and seek connection with their caregivers (Ainsworth, 1978), they express their preferences through utterances and self-initiated gestures, and they are eager to explore their environment (Belsky & Most, 1981; Piaget, 1952). These explorative and contact-seeking activities are intrinsically motivated and important to cognitive and emotional development. They are also expressions of vitality in a healthy infant.

Just as caregivers' support of children's physical needs can vary, to different degrees they also nurture or thwart children's psychological needs, impacting children's psychological growth and wellness (Grolnick & Lerner, this volume; Joussemet & Mageau, this volume; Soenens & Vansteenkiste, this volume). Indeed, SDT argues that when infants and toddlers experience support for autonomy, competence, and relatedness they thrive, showing greater intrinsic motivation and curiosity and feeling more securely attached.

The finding that thriving in early childhood depends upon these psychological need supports is only the beginning of that story. Across the lifespan support for psychological need satisfaction is crucial for individuals' active and constructive engagement in age-related developmental tasks (Soenens & Vansteenkiste, this volume). At the same time, the satisfaction of physical needs remains critical as well; both sets of needs are dynamically interrelated and play a critical role in people's adjustment across the lifespan.

*Empirical Evidence*

The interface between psychological and physical needs can be studied from at least two different angles. First, it is possible to examine the unique role of both types of needs for individuals' psychological and physical health. Whereas physical needs are most likely to affect outcomes in the domain of physical health, psychological needs most likely have unique effects on aspects of individuals' mental health. At the same time, cross-paths may emerge. For example, the satisfaction of individuals' psychological needs relates negatively to perceived somatic burden (chest pain, headache, stomach pain; Reinboth, Duda, & Ntoumanis, 2004) and positively to overall perceived physical health (Ng et al., 2012). Further, psychological need satisfaction was found to predict the mental health of individuals whose physical health is seriously compromised, including patients with morbid obesity (Megias et al., 2018) and chronic pain (Kindt et al., 2016).

Second, physical and psychological needs do not operate independently but can affect one another, as indicated by the double arrow in Figure 4.1 (see Campbell & Vansteenkiste, this volume). Basic psychological needs have been found to relate to individuals' quality of sleep (e.g., Campbell, Vansteenkiste et al., 2018), satisfaction in sexual

relationships (Smith, 2008), and healthy or unhealthy eating style (Verstuyf et al., 2013). In turn, individuals' physical need satisfaction feeds back into their experienced psychological need satisfaction. For instance, individuals who were experimentally deprived of sleep for three consecutive days (sleeping only five hours per night) reported reduced need satisfaction on day 3 compared to control group participants (Campbell, Soenens, Weinstein, & Vansteenkiste, 2018).

A critical link within the reciprocal dynamics between psychological needs and physical health is individuals' felt energy. Psychological needs serve as an important source of energy that underlies people's capacity to engage in the self-control needed to optimize the regulation of their physical needs (Frederick & Ryan, this volume). In contrast, because experiences of psychological need frustration are energy-depleting, they can decrease self-control, including optimal regulation of physical needs. To illustrate, on days that adolescents report higher need frustration than usual, they report more bulimic symptoms, an association somewhat reduced for those high in self-control (Verstuyf et al., 2013). Interestingly, physical need satisfaction also constitutes a resource of energy in its own right that can be mobilized in the service of the satisfaction of basic psychological needs. Physically active individuals feel more vitalized, with this energy allowing them to better meet psychological needs (Nezlek et al., 2018).

### Summary

In short, much as physical needs are part of our biological makeup, a limited set of psychological needs are integral to our psychological nature. The study of the unique role of both physical and psychological needs and their associations and interactions allows for a more complete understanding of individuals' organismic functioning and thriving.

### Criterion 3: Pervasive Role

#### Conceptualization

The essential character of the basic needs refers to their role in predicting individuals' well-being and ill-being. The pervasiveness criterion, however, refers to the assumption that their effects should be visible across all facets and levels of human functioning. The pervasiveness criterion contains different aspects. First, basic needs should have predictive power for a broad range of motivational, cognitive, and behavioral outcomes, as depicted on the right side of Figure 4.1. Some outcomes are more proximally related to need-based experiences; others have a more distal relationship that may be predicted through a sequence of intervening variables.

Another aspect of the pervasiveness criterion addresses the level at which the benefits of need satisfaction and the costs of need frustration are evident. Effects should be identified at multiple levels of analysis, including the within-person level of change, the trait level of individual differences, and the contextual (even societal) level (Ryan & Deci, 2017) and including both conscious and nonconscious levels of experience (e.g., Banting,

Dimmock, & Grove, 2011). Effects of need-based experiences should also be observable phenomenologically, behaviorally, and even at the neurobiological level of analysis (Di Domenico & Ryan, 2017).

*Empirical Evidence*

BREADTH OF OUTCOMES

**Motivation.** Satisfaction of the psychological needs is said to energize high-quality forms of motivation. To illustrate, adolescent athletes who have their psychological needs met report more intrinsic motivation for their sports (Jõesaar, Hein, & Hagger, 2011). Satisfaction of the basic needs is also vital to internalize the regulation of activities that are not inherently interesting and satisfying (Pelletier & Rocchi, this volume). Internalization is a critical growth process that applies to multiple life domains, including health behavior, volunteering, sustainability, and moral development (Vansteenkiste et al., 2018). To illustrate, to the extent that citizens maintained high levels of basic need satisfaction during the COVID-19 crisis, they were more likely to endorse and willingly adhere to health-protective measures (Morbée et al., 2021).

**Cognitions, attitudes, and goals.** Need-based experiences have been found to predict a variety of cognitive outcomes, including thought patterns, attitudes, and goals. Whereas need frustration relates to various forms of dysfunctional thinking, including worry, rumination, catastrophizing, and obsessive thinking (Vahlstein et al., 2020), need satisfaction predicts more helpful and positive thoughts (Nieto-Casado et al., 2022). To illustrate, undergraduates who experienced greater need frustration during an uncertain waiting period to learn the outcome of their bar exams worried more about feared outcomes of failure (Howell & Sweeny, 2019). Patients with unexplained chronic fatigue report engaging in more dysfunctional pre-sleep cognitions if their basic needs get frustrated, interfering with sleep (Campbell et al., 2017). Need frustration even relates to people's darkest thoughts, including suicidal ideation (Rowe et al., 2013).

Experimental work indicates that dysfunctional thoughts can also be activated experimentally through need-based experiences (Philippe, this volume). Elementary school children who had to solve a series of overly difficult math exercises reported thinking more about disengaging from the activity, an effect accounted for by elevated competence frustration (Baten et al., 2020). Tennis players exposed to a critical and competence-thwarting context reported engaging in more negative self-talk during subsequent independent tennis exercises, which further impeded their own competence and autonomy need satisfaction (De Muynck et al., 2017). Need-frustrating experiences appear to elicit a more self-critical and controlling thought pattern.

Apart from relating to people's thought patterns, need-based experiences also relate to individuals' attitudes, goals, and values. Overall, basic need satisfaction has been found to predict a more open, prosocial, and flexible interpersonal attitude. For instance, autonomy and relatedness satisfaction predicts empathic concern among adolescents

(Fousiani et al., 2016) and greater psychological availability among parents for their children (Van der Kaap-Deeder et al., 2019). Need-based experiences also stem from and contribute to the type of life goals individuals value. Aspiring to intrinsic life goals, such as community contribution, building intimate relationships, and personal growth, generates more need-satisfying experiences over time, which, in turn, predicts improved well-being (Hope et al., 2019).

In contrast, experiences of need frustration predict more self-centered, defensive, and rigid interpersonal attitudes. When basic needs are unmet in close relationships, people display a more defensive and less open, honest, and authentic way of presenting themselves to others (Hadden, Overup, & Knee, 2014), even on social network sites (Liu et al., 2020). Further, in the context of physical education, need frustration predicted a more individualistic and competitive orientation (Salazar-Ayala et al., 2021) and a more accepting attitude toward cheating (Cheon, Reeve, & Ntoumanis, 2018). Need frustration also relates to dehumanization, broadly defined as denying humanness to others (Haslam, 2006). For instance, need frustration related to players' adoption of an objectifying stance toward opponents, lowering the threshold for antisocial play (Delrue et al., 2017).

While intrinsic goal pursuit is conducive to need satisfaction, need frustration distracts people from a growth trajectory, leading them to overidealize the benefits associated with extrinsic goals, such as becoming famous, wealthy, or thin, attractive, and good-looking (Sheldon & Gunz, 2009). Because individuals' self-worth can feel conditional on such outcomes, individuals high on need frustration overinvest in activities perceived as instrumental for achieving these extrinsic ideals, including engagement in unhealthy muscularity-oriented behaviors (Selvi & Bozo, 2020) or excessive dieting to achieve a thin ideal (Verstuyf et al., 2016). Engagement in rigid behavioral patterns (e.g., workaholism) can often be traced back to the pursuit of extrinsic goals that serve to substitute for the need satisfactions people may be missing in other life domains.

**Behavior.** Need-based experiences predict a broad variety of behaviors, as evidenced in self-reports, reports from multiple informants, or objective observations. To illustrate, need satisfaction relates to more self-reported high-quality practicing in music students (Evans & Bonneville-Roussy, 2016) and greater adherence among exercisers (Rodrigues et al., 2020). Low need satisfaction and especially high need frustration predict dropout, as observed among Belgian employees (Van den Broeck et al., 2010) and Estonian team-sport athletes (Jõesaar et al., 2011). Similar findings have been observed in the laboratory, where experimentally induced need-supportive conditions have contributed to more behavioral persistence over time (e.g., Deci et al., 1994).

Further, when needs are satisfied, individuals are more likely to be proactive, for instance seeking to continue developing their skills or signaling their preferences and needs (Reeve, 2013). For example, competence need satisfaction, experimentally enhanced through positive versus negative feedback (Mabbe et al., 2018) or provision of difficult versus easy to medium math exercises (Baten et al., 2020), predicts greater behavioral

challenge seeking. Presumably because individuals high in need satisfaction persist more, set personally endorsed and realistic goals, and proactively inform others about their wishes and preferences, they are more performant and productive. For instance, employees who report higher need satisfaction were found to perform better (Baard, Deci, & Ryan, 2004). Experimental studies confirm this association, with need-supportive inductions predicting performance (Vansteenkiste et al., 2005).

A full understanding of the association between need-based experiences and behavioral outcomes requires careful consideration of the type of outcomes assessed and the chosen time frame. Although temporary need frustration may elicit compensatory attempts to restore thwarted needs in the short run (Waterschoot, Van der Kaap-Deeder, & Vansteenkiste, 2020), especially chronic forms of need frustration should produce problem behavior and pathology over time (Ryan et al., 2016). As for the type of outcome, although need frustration may predict shallow task engagement and short-term persistence (Vansteenkiste et al., 2005), experiences of need satisfaction would be a prerequisite for deep-level engagement and long-term persistence (Sarrazin et al., 2002). Another qualitative behavioral outcome reflects the extent to which individuals transfer an acquired behavior to a new context or to a new behavior, thus generalizing their repertoire of desirable behaviors. Need satisfaction energizes behavioral generalization, as when need satisfactions during physical education classes spill over to greater physical activity in leisure time (Barkoukis et al., 2010; Chen et al., 2020).

Need frustration relates to various types of problem behavior, with different mechanisms accounting for these associations. Need frustration has been found to predict various externalizing problem behaviors, including bullying (Hein, Koka, & Hagger, 2015), cheating (Kanat-Maymon et al., 2015), aggressive behaviors (Vandenkerckhove, Brenning et al., 2019), and delinquency (Van Petegem et al., 2015). These problems can be accounted for by individuals' dehumanizing attitude (Moller & Deci, 2010) but also by reactive forms of defiance; adolescents, for instance, may try to regain their threatened freedom in relation to their parents by doing the opposite of what is required (Van Petegem et al., 2015).

Further, the energy-depleting effect of need frustration helps to explain why individuals high in need frustration are vulnerable to various problematic behaviors signaling poor self-control (Vansteenkiste & Ryan, 2013; Ryan et al., 2016). Although in-game experiences of need satisfaction contribute to individuals' enjoyment of video games (Ryan, Rigby, & Przybylski, 2006), when psychological needs are frustrated in the offline world students are more vulnerable to an internet gaming disorder (Mills & Allen, 2020) and increased disordered internet gaming over time (Weinstein, Przybylski, & Murayama, 2017). The costs of reduced self-control among individuals high on need frustration have also been observed in other life domains, such as eating regulation (Bartholomew et al., 2011), social network use (Chen et al., in press), and gambling (Mills, Anthony, & Nower, 2020). Individuals' capacity to resist attractive impulses gets compromised under

conditions of need frustration because they may overestimate the hoped-for benefits associated with gaming, comfort food, or gambling to compensate for basic need satisfactions missing in their daily lives (Chamarro et al., 2020).

**The outcome-transcending role of basic needs.** Apart from predicting a broad variety of outcomes, the pervasive character of psychological needs also manifests through its capacity to explain the *co*-occurrence and *co*-evolution between diverse outcomes. In the case of need frustration, this outcome-connecting function manifests through its *transdiagnostic* role, whereby psychological need frustration accounts for a diversity of pathological symptoms (Nolen-Hoeksema & Watkins, 2011). Illustrating this transdiagnostic function, Campbell, Boone et al. (2018) reported that need frustration accounts for the co-occurrence of adolescents' depressive symptoms and eating pathology. Need frustration was even found to explain why these symptoms evolved in tandem over a six-month period. Need frustration not only accounted for the co-occurrence between two internalizing problems (i.e., depressive symptoms and eating pathology) but also explained the covariation between internalizing and externalizing problems in a heterogeneous group of referred and nonreferred youth (Brenning et al., 2021). Future research will need to examine whether this transdiagnostic role can be observed for any pair of outcomes in diverse populations or is restricted to a specific subset of outcomes in specific subgroups.

Much as need frustration accounts for the covariation between different problem behaviors, need satisfaction may explain why people display different indicators of healthy adjustment. Thus, need satisfaction may not only predict indicators of subjective (e.g., life satisfaction) and psychological (e.g., vitality) well-being, but also their co-occurrence and even their codevelopment over time. Moving beyond well-being, future research may examine whether need satisfaction explains the covariation between different types of adaptive outcomes, such as the engagement in growth-conducive behavior (e.g., prosocial behavior, environmental activism) and mental health.

### DIFFERENT LEVELS OF ANALYSIS AND FUNCTIONING

**Different levels of functioning**. Another way the pervasive nature of the needs can be inferred is through their critical role at different levels of functioning, including the between-person, within-person, and between-group levels. Although need satisfactions clearly vary between people, they also fluctuate within persons across time and situations, underscoring their dynamic nature. As a result, a critical proposition within BPNT is that variations in individuals' own need-based experiences across time, contexts, or interaction partners should produce parallel variations in individuals' wellness and full functioning (Ryan & Deci, 2017). Congruent with this proposition, studies within varying time frames, ranging across episodes, days, weeks, and months (Vandenkerckhove, Soenens et al., 2019; Zeijen et al., 2020), have shown that a substantial amount of variance in need-based experiences lies at the within-person level, systematically relating to

within-person variation in individuals' wellness across time. The functional costs associated with need frustration are also visible at the within-person level (Bartholomew et al., 2011; Vandenkerckhove, Soenens et al., 2019).

Such within-person variation is visible in person's need-based experiences at the domain-level, with domain-specific experiences of need satisfaction relating to well-being in the corresponding domains (Milyavskaya & Koestner, 2011). Need-based experiences also play a critical role at the group level (Kachanoff, this volume). Groups that reported as a whole greater need satisfaction during a group task reported more pleasant affect, greater intrinsic motivation, and higher performance satisfaction compared to groups that experienced lower need satisfaction, an effect that emerged above and beyond between-person differences in need satisfaction (Kelly et al., 2008).

**Different levels of analysis.** The effects of need-based experiences should be visible at different levels of analysis, from the macro- to the micro-level, and when using a first-order approach (relying on individuals' personal experiences) or a third-person approach (relying on objective assessments, including neurophysiological measures). To shed light on the richness of individuals' phenomenology of need-relevant experiences, a qualitative approach is useful. Several qualitative studies have indeed shown that need-based experiences are mentioned spontaneously when people are asked in open-ended ways to report on their adjustment in a certain domain of life, including parenting (e.g., Dieleman et al., 2018), community gardening (Quested et al., 2018), and teaching (e.g., White et al., 2020). Such qualitative work helps to shed light on the varied and subtle manifestations of need-relevant experiences within varying contexts and situations.

Other studies relying on a third-person perspective have linked need-relevant experiences to physiological responses (see Steel, Bishop, & Taylor, 2021). Need frustration related positively to higher levels of physiological arousal (i.e., secretory immunoglobulin A) in a sample of junior athletes (Bartholomew et al., 2011) and higher need satisfaction predicted a lower cortisol excretion before, during, and after the performance of a ballet routine among dancers (Quested et al., 2011). Using an experimental approach, individuals exposed to an autonomy-thwarting, relative to an autonomy-supportive, environment were found to display increased cortisol reactivity (Reeve & Tseng, 2011). The experimental priming of volitional motivation prior to engaging in a new motor task led participants to invest extra effort, as indicated by more intensive heart rate (Radel, Sarrazin, & Pelletier, 2009). Further, frustration of the basic needs was found to increase the odds of having risky high-density lipoprotein levels, after controlling for age, gender, ethnicity, income level, suspected or confirmed heart disease, and Body Mass Index (Uysal, Aykutoglu, & Ascigil, 2020).

Apart from studies shedding light on the correlates of needs at the micro-level, a focus on basic needs has proven fruitful to explain the effects of variations in economic, political, and societal structures at the macro-level as they affect people's flourishing (Ryan & DeHaan, this volume). Need-based experiences are affected by the degree of political

freedom or control provided to citizens (De Caro, Janssen, & Lee, 2015), the values that prevail in a society (Kasser et al., 2007), and countries' level of wealth and economic inequality (Di Domenico & Fournier, 2014).

*Summary*

The pervasive role of the basic needs involves the idea that the effects of need satisfaction should not be limited to individuals' well-being but should instead radiate to a broader set of outcomes and be observed at different levels of analysis and functioning. Congruent with this criterion, this selective review indicates that need-based experiences underlie the presence of phenotypically diverse phenomena as well as their co-occurrence, suggesting that different outcomes can be traced back to a common underlying source. Effects of need-based experiences also manifest across different levels of functioning and analysis, attesting to the robust and dynamic role of need-based experiences. Given its manifold and multilayered effects, basic needs provide a parsimonious explanation for the wide variation in individuals' full and impoverished functioning.

## Criterion 4: Universal Role

Although the basic needs clearly have implications for people's wellness, the question whether the functional impact of basic needs applies universally has spurred much controversy and research, especially with respect to the need for autonomy. Given the vast heterogeneity in people's functioning across cultures, socio-demographics, and personality, the notion that the psychological needs serve as a universal foundation for thriving may be perceived as naïve. Yet the idea that some basic principles concerning needs operate across different cultures, life domains, life phases, and historical epochs also makes both biological and evolutionary sense.

SDT's universality assumption does not imply perfect uniformity in psychological processes (Soenens, Vansteenkiste, & Van Petegem, 2015). Basic needs are treated as etic universals with functional import for adaptation across cultures (Reeve, Ryan, & Deci, 2018). Yet there are emic differences in the extent to which these needs are valued, expressed, and fulfilled (Ryan & Deci, 2017). Three qualifications are needed to fully understand the assumptions underlying this principle of *universality without uniformity* applied in SDT (Soenens et al., 2015; Vansteenkiste & Soenens, 2022).

First, although need satisfaction should promote fuller functioning, and need frustration should come with a functional cost, there may be inter- and intrapersonal differences in the *gradation* or dosage of these effects. Some people may extract fewer mental health benefits from need satisfaction or suffer more from need frustration than others (e.g., depending on their personality or cultural background). Also, due to changing circumstances, one may display variable sensitivity to the effects of need-relevant experiences, thereby being better able to maximize its benefits at some moments than at others. To

shed light on the gradation of these effects, it is necessary to formally test whether contextual and individual differences affect the strength of the association between need-relevant experiences and outcomes.

Second, the specific *manifestation* of need-relevant experiences may vary across and within individuals. While some individuals experiencing high levels of need satisfaction may openly display their enthusiasm through their facial expressions (Reeve & Nix, 1997), others may keep their enthusiasm more for themselves. Along similar lines, the precise cost of need frustration may be expressed differently, with some individuals acting out against the frustration with aggressive behaviors and others turning their distress inward, thereby displaying more internalizing problems. Given that the effects of need-relevant experiences may manifest differently, it is critical for research to include a sufficiently broad array of outcomes. Further, the appropriate outcome and fitting level of assessment needs to be chosen as a function of studied groups. To illustrate, need frustration relates to different types of anxiety depending on the population studied: students report symptoms of test anxiety (Spadafora et al., 2020), athletes report performance anxiety (Haraldsen et al., 2020), patients report dental anxiety (Halvari, Halvari, & Deci, 2019), and elderly report death anxiety (Van der Kaap-Deeder et al., 2020).

Third, it is critical to distinguish between the input and output side of the model in Figure 4.1. While the input side refers to the fact that contextual factors and interpersonal differences feed into individuals' basic needs, the output side of the model denotes the relation between need-relevant experiences per se and various outcomes. The universalistic claim especially pertains primarily to the output side of the model, where need satisfaction comes with at least some benefits for all persons and need frustration yields at least some costs for everyone. Yet there exists some variation around the pathways leading toward need-based experiences (i.e., the input side of the model). While some contextual factors are robustly and universally linked to need-based experiences, either positively (e.g., taking another person's frame of reference; Marbell-Pierre et al., 2019) or negatively (e.g., intimidating others; Bartholomew et al., 2011), there is more variation around the average effect of other contextual factors, such as the provision of choice (e.g., Patall, Sylvester, & Han, 2014). The notion of *functional significance,* which refers to the meaning people attribute to external events, helps in understanding this variation (Deci & Ryan, 1985). An event can be appraised either as informational and need-enabling or as more evaluative and need-thwarting, with factors such as individuals' personality, socialization history, or cultural background affecting the interpretation of the event.

*Empirical Evidence*

CONTEXTUAL DIFFERENCES

Many studies have addressed the question of whether the linkage between basic needs and well-being applies across nations and cultures. Several multicountry studies, recruiting samples differing widely in terms of cultural orientation, have shown that need-relevant

experiences play a similar role in the prediction of individuals' well-being (e.g., Chen, Vansteenkiste et al., 2015). During the past two decades, the body of cross-national and cross-cultural work has grown, as individuals from continents across the globe have been sampled to participate in surveys (Lynch, this volume). For instance, Peruvian, Belgian, American, and Chinese university students commonly benefited from need satisfaction and reported more depressive complaints when their needs were frustrated (Chen, Vansteenkiste et al., 2015). Similarly, surveying college students from Israel, Brazil, and Peru, Benita, Benish-Weisman, and Matos (2020) found the well-being correlates of need satisfaction and frustration were invariant across groups. Contrasting American and Asian participants, a meta-analysis of 36 independent samples by Yu, Levesque-Bristol, and Maeda (2018) revealed that the well-being benefits of autonomy applied similarly across groups.

Between-nation differences in cultural orientation represent a rather "rough" proxy for cross-cultural differences because people within countries typically differ strongly in terms of their cultural orientation. Thus some studies have included assessments of cultural orientation (e.g., Chirkov et al., 2003; Soenens et al., 2018), so far showing that different cultural orientations—both between countries and between individuals within a given country—play a minimal role in altering the effects of need-based experiences. Further attesting to the universal role of basic need satisfactions, they have been associated with wellness in diverse populations, including individuals with intellectual disabilities (Frielink, Schuengel, & Embregts, 2019), gifted students (Hornstra et al., 2020) and referred youth (Van Petegem et al., 2015), among others.

### BETWEEN-PERSON DIFFERENCES

Apart from contextual differences, a broad variety of individual differences have been examined in relation to need-relevant dynamics, including causality orientations (Hagger & Chatzisarantis, 2011), self-critical perfectionism (Boone et al., 2014), mindfulness (Olafsen et al., 2021), relational dependency (Vandenkerckhove, Brenning et al., 2019), achievement and affiliation motives (Schüler, Brandstäter, & Sheldon, 2013), and Big Five traits (Mabbe et al., 2018), to name a few (see Ryan, Soenens & Vansteenkiste, 2019 for a more elaborate discussion). Such studies generally converge in concluding that the benefits of need satisfaction and the costs of need frustration generalize across individual differences, including gender and age (Rodriguez-Meirinhos et al., 2019).

An increasing number of experimental studies are now available to address the left side of the model in Figure 4.1, addressing the question whether individuals, depending on personality characteristics, perceive a standardized manipulation (e.g., offering competence-thwarting feedback) differently and react to it differently (Hagger, Koch, & Chatzisarantis, 2015). These studies indicate that the perceived functional significance of an external event is in some cases colored by individuals' personality differences, which helps to understand why the same event may have variable effects. For instance, elementary

school children high in indecisiveness were found to experience the provision of choice as equally autonomy-satisfying but less competence-satisfying compared to those low on indecisiveness (Waterschoot, Vansteenkiste, & Soenens, 2019). An induction of negative feedback was found to produce competence frustration mainly among tennis players high in self-critical perfectionism (De Muynck et al., 2021), likely because they interpret the feedback in more evaluative terms.

*Summary*

The universality criterion has been examined quite intensively, with studies testing BPNT at its limits. Basic need experiences appear to be foundational as a basis for healthy living and full functioning across diverse contexts and types of people. The number of potential moderators considered in research has also increased steadily over the years, and both correlational and experimental work has addressed the universality criterion. Importantly, BPNT's universality claim does not imply that every person should benefit in exactly the same way from need-satisfying experiences or suffer in exactly the same way from need-frustrating experiences. There is room for variation in the gradation and manifestation of the costs and benefits associated with, respectively, need satisfaction and need frustration as well as sometimes different pathways to need fulfillment as a function of factors such as culture, developmental history, and personality.

## Criterion 5: Inherent Nature

*Conceptualization*

Basic needs reflect fundamental organismic growth tendencies that propel action. Basic needs play this energizing role because they have evolved as an integral part of our human nature. Because behaviors associated with these basic need satisfactions provide adaptive advantages (Ryan & Deci, 2017), they have come to form an *inherent* part of individuals' functioning. This criterion fits with the organismic metatheory underlying SDT (Ryan & Vansteenkiste, this volume). The assumption that psychological needs form an ingrained part of our psychological equipment opposes blank-slate conceptions in which people's needs, values, and satisfactions are merely scripted or programmed into individuals by social environments. Instead, BPNT recognizes that there are specific propensities within human nature that foster psychological growth and proactivity under conditions of support.

The presumed inherent nature of the needs has a number of implications. First, there should be correlates of processes associated with these needs observable in neurological and physiological phenomena. Second, the basic needs should yield universal effects, as they are part of every person's psychological foundation, a criterion that was extensively discussed above. Third, people do not have to be consciously aware of their need-relevant experiences for these experiences to yield an effect. If the needs are inherent, need-relevant experiences should have effects even when primed outside individuals' awareness. Indeed,

conscious awareness of one's needs is not a prerequisite to benefit from encountered need satisfaction. Fourth, the inherent character of needs should manifest through people's attempts to overcome need frustrations during distressing times. Need frustration plays an important signaling function, mobilizing corrective behavior, adaptive emotion regulation (Roth et al., 2019), and coping (Skinner & Zimmer-Gembeck, 2007).

Before discussing research addressing the inherent nature of the needs, it is important to clarify exactly what is inherent about the psychological needs (and what is not). The primary focus within BPNT is on differences in the satisfaction and frustration of needs instead of on individual differences in the valuation of the psychological needs (i.e., the need strength). Whereas need-based experiences would be inherently facilitating of human nature functioning, individual differences in need strength are thought to be more a function of individuals' developmental history (Deci & Ryan, 2000).

Individual differences in *need strength* have received substantial attention in other theoretical traditions, including motive disposition theory, where the implicit motives for affiliation, achievement, and power were intensively studied (e.g., McClelland, 1987). To the extent individual differences are dealt with in BPNT, a differentiated approach is used, thereby distinguishing between individuals' *desire* to get their needs met and the *valuation* of or importance ascribed to basic needs (Van Assche et al., 2018). Need desire often reflects a momentary craving for need satisfaction due to an encountered frustration of need satisfaction and, hence, is more deficit-based (Sheldon & Gunz, 2009) whereas increasing valuation of needs may develop as a function of encountered need satisfaction, which can foster greater awareness of what is a need-fulfilling life.

*Empirical Evidence*

MARKERS OF NEED-BASED EXPERIENCES IN THE BRAIN

Congruent with this assumption, an increasing number of studies have identified neurological correlates of need-based experiences (Di Domenico & Ryan, 2017). For instance, Lee and Reeve (2020) reported findings indicating that individuals' brain morphometry, and in particular the ventral striatum gray matter volume, correlates positively with participants' experienced need satisfaction. Further, Murayama et al. (2015) found that choice provision relates to greater neural activations in reward processing, such as in the midbrain and ventromedial prefrontal cortex. Lee and Reeve (2017) reported that participants exhibited greater neural activations of the ventral striatum, anterior insula, and medial prefrontal cortex when experiencing competence and associated intrinsic motivation. As another illustration, Di Domenico et al. (2016) reported that respondents with greater need satisfaction were better equipped to respond economically and appropriately to decisional challenges, expending more neural resources in the medial prefrontal cortex during high- relative to low-conflict situations. More

extensive overviews of recent neurological work can be found in Lee (this volume) and Di Domenico and Ryan (this volume).

### ROLE OF CONSCIOUSNESS

Two lines of research have shed light on the role of people's conscious awareness of their need-based functioning in the prediction of outcomes. A first line of research examined whether need-based experiences relate to mental health when accounting for individual differences in need strength. When need satisfactions and need strength compete for unique variance in individuals' adjustment/maladjustment, differences in need strength appear to play a minimal role above and beyond need satisfaction/frustration (Chen, Vansteenkiste et al., 2015; Van Assche et al., 2018). In addition, there is little, if any, systematic evidence for the assumption that the benefits of need satisfaction and the costs of need frustration would be absent for those scoring low on need strength. Said differently, individuals do not need to value or desire getting basic needs met to benefit from the satisfaction or suffer from the frustration. In two large cross-cultural samples, Chen, Vansteenkiste et al. (2015) found that neither need desire nor need valuation moderated the link between need-based experiences and either well-being or ill-being. Similar evidence for the main effect of needs and the limited role of need strength as a moderator was reported by Van Assche et al. (2018), using an implicit instead of explicit measure of need strength, and by Wörtler, Van Yperen, and Barelds (2020), who focused on the work domain instead of people's life in general.

A second line of research indicates that the priming of need-based experiences outside awareness predicts various positive outcomes, suggesting effects are not value dependent. Various studies have made use of a sentence-scrambling method which requires participants to construct a sentence out of a series of words that are associated with a specific need (Levesque & Pelletier, 2003). This manipulation activates participants' need-specific experiences while they are not aware of the exact purpose of the task. Autonomy priming was found to predict better relationship quality in a joint task (Weinstein, Hodgins, & Ryan, 2010), less defensive self-esteem (Hodgins, Brown, & Carver, 2007), and more intensive exercising (Banting et al., 2011), while relatedness priming activated higher interest in volunteering, higher volunteering intentions, and greater donation of money to charity organizations (Pavey, Grietemeyer, & Sparks, 2011). Similarly, the activation of need-satisfying episodic memories related to individuals' current well-being, an effect unmoderated by participants' awareness of the influence of these memories (Philippe et al., 2012). Further, the priming of need-satisfying memory outside people's awareness promoted greater momentary well-being, while the priming of a need-thwarting memory decreased well-being compared to a control group. One study even showed that subliminal priming of autonomy versus heteronomy predicted greater autonomy-need satisfaction, behavioral persistence, and performance on a new motor task (Radel et al., 2009).

A variety of studies using different methodologies have shown that people strive to restore satisfactions when needs are frustrated. For instance, in a series of correlational and experimental studies, Sheldon and Gunz (2009) showed that need frustration (but not need satisfaction) relates to a corresponding desire to get the thwarted need met. This association was found to hold across culturally diverse samples (Chen, Vansteenkiste et al., 2015). As a restorative attempt to overcome encountered need frustration, need desire may thus represent deficit-based interpersonal differences in need strength (Van Assche et al., 2018). Further illustrating the restorative functioning of needs, after exposure to a need-thwarting environment, participants displayed an attentional bias to need-relevant information, as assessed through either a lexical decision task (Radel et al., 2011) or a dot probe task (Waterschoot et al., 2020). The increased cognitive attention to need-relevant stimuli during an alarm phase may not suffice to guarantee adequate handling of need-frustrating events as individuals may need additional adequate emotional regulation (Roth et al., 2019) and coping strategies (Skinner & Zimmer-Gembeck, 2007). Future research can examine whether restorative reactions depend on people's capacity to react in resilient ways, which, in turn, may be a function of their developmental history of need-frustration experiences.

*Summary*

In BPNT the basic needs represent evolved propensities, the functioning of which should be visible at a biological as well as a psychological level of functioning. Yet the effects of the basic needs do not have to be experienced consciously to yield functional costs or advantages. Restorative (and compensatory) processes following need frustration are just beginning to be studied, but are expected given the inherent nature of needs.

## Criteria 6 and 7: Distinct Role and Content-Based

A sixth criterion that characterizes basic psychological needs involves their *distinct* nature. A basic need should be sufficiently *distinct* from other identified (basic) needs experientially, dynamically, and in terms of predictive validity. Experientially, the satisfaction and frustration of each basic need should come with a qualitatively distinct and relatively unique set of experiences.

Basic needs should also be dynamically and developmentally distinct from each other. Basic need experiences should emerge fairly independently instead of being solely a byproduct or derivative of another (thwarted) need (Ryan & Deci, 2017). Further, desires that emerge only in response to frustrations of basic psychological needs cannot be considered basic but instead represent a *need substitute* or a *compensatory preference* (Ryan & Deci, 2017; Vansteenkiste & Ryan, 2013).

This criterion allows for a better understanding of the differentiation between BPNT needs and other candidate needs that have been proposed. For instance, although some

scholars consider self-worth to be a basic need, it has been found to stem from basic need satisfactions (Balaguer, Castillo, & Duda, 2008). Moreover, concerns about self-worth largely surface when basic needs get frustrated (Bartholomew et al., 2018). Similarly, a desire for psychological security typically emerges under conditions of need frustration, often because of controlling, uncaring, or overchallenging (i.e., need-thwarting) circumstances. As another illustration, a desire for power (Hofer & Bush, 2019) may signal that one is attempting to compensate for a lack of autonomy.

The dynamic distinctiveness of the basic needs does not preclude the possibility that they may mutually impact each other, with, for instance, experiences of autonomy and self-expression in a social role predicting greater connection and competence and vice versa (Bettencourt & Sheldon, 2001). Indeed, in relationship motivation theory (Knee & Browne, this volume), it is proposed that healthy close relationships involve the simultaneous satisfaction of autonomy and relatedness, both needs mutually reinforcing each other.

The distinctive nature of the needs also manifests through their unique and nonconditional roles in predicting outcomes. That is, when considering a broad range of outcomes, autonomy, competence, and relatedness should each have unique associations with at least some outcomes. Moreover, effects of one basic need should not be entirely dependent upon the satisfaction of physical needs or other basic needs. The satisfaction and frustration of each basic need should matter by themselves, regardless of the level of satisfaction of other needs. Yet basic needs could synergistically create an additional advantage when being simultaneously satisfied or incremental risks when being frustrated simultaneously.

*Empirical Evidence*

CONTENT-BASED NATURE AND EXPERIENTIAL DISTINCTIVENESS

Speaking to the criterion that basic psychological needs have substantive content, need-relevant experiences and behaviors were found to be *salient* in people's natural language when asked to reflect about their most satisfying and dissatisfying experiences (Jang et al., 2009), to recall significant memories (Philippe et al., 2012), or to engage in a life review (Bauer & McAdams, 2000).

Moreover, there are clear differences in the ways satisfaction and frustration of the basic needs manifest in individuals' experiences. Autonomy-need satisfaction typically involves the experience of volition and psychological freedom; relatedness involves an experience of connection; and competence entails the experience of effectiveness. Within these broad characterizations of a given psychological need, people can also experience distinct manifestations of the need. To capture the heterogeneity in the manifestation of psychological needs, a *faceted approach* may be useful (Vansteenkiste et al., 2020). That is, within a particular need, different facets can be distinguished, these facets being characterized by an underlying common, conceptual core. The salience and relevance of different facets can vary across situations, life periods, and persons.

To illustrate, autonomy manifests through acts of choice and volitional independent functioning (Van Petegem et al., 2012), willing reliance on others (Ryan et al., 2005), and authentic self-expression and felt congruence between acting, thinking, and feeling (Ryan & Ryan, 2019). Relatedness-need satisfaction can be experienced through felt intimacy with significant others (Knee et al., 2013), a sense of group inclusion through shared identity (Sheldon & Bettencourt, 2002), or through mutual care and support (Deci et al., 2006). Competence-need satisfaction may also be achieved through different pathways, including the mastery of tasks and attainment of goals and, by extension, through the full use and development of one's skills and expertise (Kazakova et al., 2014). Notably, competence satisfaction does not necessarily require one to continually challenge and stretch one's skill level, as one can also experience a sense of effectiveness from carrying out mundane, relatively easy tasks that require little expertise (e.g., cleaning the house).

Such a faceted approach helps to shed light on the different pathways through which basic needs get fulfilled in different situations or at different moments in time. For instance, while competence satisfaction typically involves the extension and refinement of skills in childhood, with increasing age people may gradually focus more on preserving their acquired skill level or achievement standards (Senko & Freund, 2015). Thus, a faceted approach may do better justice to the different ways needs get fulfilled as one encounters different developmental challenges with age (Soenens & Vansteenkiste, this volume).

### UNIQUE ROLE

All three need satisfactions and all three need frustrations typically co-vary, implying that the satisfaction of a need in a given situation typically goes hand in hand with the two other need satisfactions, while frustration of one of them typically goes along with frustration of the two other needs (e.g., Ratelle & Duchesne, 2014). In spite of their substantial covariation, several studies have found all three to yield unique associations when competing for shared variance in the prediction of wellness (e.g., Chen, Van Assche et al., 2015). Also, the unique contributions of SDT's basic needs typically remain significant when controlling for various critical factors, including personality differences (Nishimura & Suzuki, 2016) beneficence (Martela et al., 2018) and felt insecurity (Chen, Van Assche et al., 2015). All three need satisfactions relate uniquely to the experience of meaning (Martela et al., 2018) and global well-being (Chen, Vansteenkiste et al., 2015).

Few studies so far have tested the interplay between the three basic needs themselves. A study among Chinese emerging adults yielded only a limited number of interactions (Vansteenkiste et al., 2006); however, in none of interactions was the contribution of a basic need canceled out. The interplay between the three basic needs can be examined also by performing person-oriented analyses, thereby deriving profiles that combine different needs. Using this approach, Rouse et al. (2020) identified a profile of people experiencing high satisfaction and low frustration across the three needs as well as an opposite profile (low overall satisfaction and high frustration). Interestingly, this analysis also revealed a

profile characterized only by high satisfaction of the need for competence (but not the other two needs). In terms of psychological adjustment, participants in the latter profile were found to do better than participants in the low satisfaction–high frustration profile but worse than participants in the high satisfaction–low frustration profile. Still, the simultaneous satisfaction of the three needs was found to be more beneficial for mental health than the satisfaction of only one specific need. Overall, research has begun to show how and when each individual need matters uniquely. Yet as proposed within BPNT, the more each of the three needs is satisfied, the better for individuals' mental health.

### Summary

Each of SDT's basic needs has been found to have specific content, emerging in natural language use. Further confirming the distinctiveness criterion, research has shown that the basic needs develop in fairly independent ways and do not emerge as byproducts of other dynamics. Moreover, the needs for autonomy, competence, and relatedness can have unique roles in predicting outcomes.

## Criterion 8: Directional Role

Dozens of studies have shown that the satisfaction of individuals' psychological needs is influenced by the need-supportive characteristics of social contexts. Yet basic needs not only serve as requirements for growth and adjustment at the "input" side (cf. the essential criterion); they also pull individuals into action (Ryan & Deci, 2017; Sheldon, 2011; Vansteenkiste et al., 2020). Although the needs are theoretically assumed to play a directional role in individuals' behavior, relatively little empirical attention has been devoted to the question whether and how individuals uplift their own need satisfactions. Yet the assumption of a proactive orientation toward one's own need experiences is congruent with SDT's metatheoretical assumptions regarding human nature. Within SDT, it is recognized that we are not simply passive recipients of contextual inputs, but that we have a natural inclination to steer our functioning toward improved growth, adaptation, and social integration. This proactivity does not move in a random direction but is systematically oriented, albeit not necessarily consciously, toward improved need satisfaction. That is, basic psychological need experiences form *experiential guideposts* for functioning, as people are sensitive to such experiences and proactively seek and prefer need-conducive activities.

One example of human beings' propensity to manage their own needs is found in the phenomenon of *need crafting* (Laporte, Soenens et al., 2021). Individuals high in need crafting are knowledgeable and attentive to activities, contexts, and relational partners that are potentially need-conducive, being more aware of what it takes to have their needs met. Individuals high in need crafting also manage to optimize their need-relevant experiences such that their choices allow for a better realization of their interests, values, and preferences (i.e., autonomy-need crafting), are conducive to their skill development

and sense of mastery (i.e., competence-need crafting), and better guarantee the development of relationships characterized by reciprocal care and intimacy (i.e., relatedness-need crafting).

The directional function of the basic needs may manifest during distressing times. Experiences of need frustration play an important signaling function, mobilizing adaptive emotion regulation (Roth et al., 2019) and coping responses (Skinner & Zimmer-Gembeck, 2007). Some of these reactive and restorative processes were discussed in the context of the inherent nature of the basic needs (Criterion #5). Yet the directional role of the basic needs is not just deficit-based. Need satisfaction often serves to energize behavior, leading individuals to invest further in need-conducive activities even when basic needs are optimally satisfied, and evoking a positive spiral of energizing behaviors and mental health.

*Empirical Evidence*

A variety of studies have shed light on individuals' capacity to make need-congruent choices. Legault and colleagues (2017) focused on the notion of *asserted autonomy*, reflecting the extent to which individuals claim their autonomy instead of assisted autonomy, which stems from contextual supports. Asserted autonomy yielded a positive association with well-being above and beyond individuals' assisted autonomy. Laporte, Soenens et al. (2021) found that need crafting relates positively to well-being through higher need satisfaction and lower need frustration, an effect that emerged above and beyond the positive contribution of autonomy-supportive parenting.

Intervention studies have provided evidence for the malleability of individuals' need-crafting efforts. For instance, merely asking participants to bring a need-satisfying experience to awareness during distressing COVID-19 times improved momentary well-being and reduced momentary stress, with relatedness satisfaction playing an especially important role (Cantarero, Tilburg, & Smoktunowicz, 2020). Similarly, Weinstein, Khabbaz, and Legate (2016) showed that Syrian refugees who were guided toward the selection and enactment of daily need-satisfying activities reported reduced stress and improved well-being compared to participants in a control group. Toyama, Upadyaya, and Salmela-Aro (2020) found that school principals who increased structural job resources (e.g., mobilizing their autonomy, creating opportunities for skill development) reported higher engagement via improved need satisfaction. And adults who actively participated in an online intervention program involving structured guidance to engage need-relevant activities reported greater need crafting, with resulting benefits for well-being if they were actively involved in the program (Laporte, Van den Bogaard et al., 2022).

Individuals' proactivity also manifests through their capacity to elicit or evoke need-supportive responses from people around them, creating an upward spiral. For

instance, students high in agentic engagement, which denotes the capacity to signal preferences, needs, and interests, elicit more autonomy-supportive teaching (Reeve, 2013). Proactivity is also manifest in feedback seeking (Crommelinck & Anseel, 2013) and seeking out autonomy- and relatedness-supportive others in times of distress (Ryan et al., 2005).

Individuals' appraisals of external events affect levels of need satisfaction. Some individuals may interpret a particular context in evaluative and pressuring terms and as a potential threat to their needs, whereas others may interpret the same context in more informational ways and see it as an opportunity for improved need satisfaction (Deci & Ryan, 1985; Koestner & Levine, this volume). Illustrating differential appraisals of the context, Chen et al., (2016) found that whereas Belgian adolescents interpreted parental guilt-induction as equally controlling (i.e., autonomy-need-thwarting) compared to a more bluntly controlling parental statement, Chinese adolescents had a more nuanced view, perceiving it to be less controlling than the bluntly controlling parental statement yet still more controlling than a clearly autonomy-supportive statement. Most likely their collectivist cultural background, where guilt takes a prominent place to signal the importance of culturally important values, influenced their more benign interpretation of guilt-induction as a parental practice. Similarly, Zhou, Lam, & Chan (2012) found that Chinese students who felt more closely related to their teacher had more benign appraisals of the teacher's potentially controlling behaviors.

Once engaged in the activity, one may make use of need-conducive *self-talk* (Oliver et al., 2008). Such self-talk allows one to extract greater need satisfaction from the activity at hand by transforming need-depriving activities into more need-satisfying ones. To illustrate, individuals who were capable of supporting their own autonomy during an arduous hike along the Pacific Crest Trail reported greater well-being, even controlling for contextually supported autonomy (Sheldon, Corcoran, & Titova, 2020).

*Summary*

The idea that individuals can proactively steer their own functioning is receiving increasing attention within BPNT. Basic need experiences provide direction for individuals to make healthy choices and develop a fulfilling lifestyle. Need crafting involves optimization and maximization of basic needs through selection of need-satisfying activities and contexts. Individuals can also actively elicit need-supportive responses from others through agentic engagement and by interpreting the environment in informational ways. The more people are aware of their basic needs and the conditions that contribute to them, the better they may be able to see the potentially need-conducive features within a given context. Future research can examine the interplay between people's need crafting, agentic engagement, and appraisals of the environment, as well as additional processes that influence need satisfaction and the flourishing associated with it.

## Criterion 9: Explanatory Role

*Conceptualization*

One final criterion that characterizes the basic needs is their explanatory role. In addition to reliably predicting variations in people's wellness (essential criterion) and relating to a broad variety of outcomes (pervasive criterion), to be conceived as basic a need has to explain why some contexts are more growth-promoting and others forestall psychological growth and are even toxic. The explanatory criterion thus addresses why variations in social contexts yield different relations to full functioning and ill-being. In Figure 4.1, the explanatory role can be seen in the left side of the model. Much as needs should predict a wide variety of outcomes, the mediational role of basic needs should apply widely, explaining the benefits and costs associated with different social contexts, socio-demographic characteristics, personal traits, and between-group differences.

To fill this explanatory role, first, basic needs should be context-responsive and personality-dependent constructs, thus systematically showing variability as a function of contextual and interpersonal variations. For this reason, the boxes on the left side in Figure 4.1, reflecting these contextual and interpersonal differences, are related to need-based experiences in the middle. Second, basic needs should account for the link between independent variables and individuals' full and impoverished functioning. If a basic need serves such an explanatory function, it implies that it is impacted dynamically by variation in external events, and in turn predicts variations in individuals' adjustment.

This criterion helps to explain why basic needs have a high potential for application in daily practice. Many practitioners see merit in the notion of the basic needs because they provide a parsimonious framework to better understand the effects of their motivating styles and interventions. The basic needs offer a lens to gain deeper theoretical insights, while at the same time offering pathways for improvement. Today considerable correlational and experimental evidence has been gathered showing that diverse contextual influences serve as inroads to the basic psychological needs and subsequent motivation, engagement, and well-being (e.g., Aelterman & Vansteenkiste, this volume).

*Empirical Evidence*

CONTEXTUAL DIFFERENCES

Many studies have examined whether basic need experiences can account for the differential effects of contextual need support and need thwarting on individuals' motivation, well-being, and performance. Evidence for the explanatory role of basic needs is remarkably strong, with need satisfaction accounting for both concurrent and longitudinal improvements in adjustment as a function of perceived contextual need supports (Haerens et al., 2015) and with need frustration accounting for both concurrent and longitudinal increases in problem behavior as a function of contextual need thwarting (Jang et al., 2020). Also, basic needs were established as critical mechanisms for

phenomena studied in other literatures, such as transformational leadership (Jensen & Bro, 2018) and helicopter parenting (Shiffrin et al., 2021), to name just two other contextual predictors.

This explanatory role has further been confirmed in studies using observer ratings (e.g., Wuyts et al., 2018) and experimental inductions. For example, the mediational role of competence-need satisfaction has been established for manipulated feedback (Mabbe et al., 2018) and goal difficulty (Baten et al., 2020); autonomy-need satisfaction can account for the impact of manipulated choice (Waterschoot et al., 2019), inviting versus controlling language (Vansteenkiste et al., 2005), a controlling tone of voice (Weinstein, Vansteenkiste, & Paulmann, 2019), and manipulated role fit (Bettencourt & Sheldon, 2001); relatedness-need satisfaction explains the effects of ostracism (Legate, Weinstein, & Ryan, 2021). The benefits associated with manipulated gamification elements can also be accounted for by improved need satisfaction associated with specific features (Sailer et al., 2017). Such experimental work is important because it illustrates that needs can be causally enhanced or diminished, indicating the malleability of individuals' need-based experiences.

## BETWEEN-PERSON AND BETWEEN-GROUP DIFFERENCES

Basic needs have been established as a critical mechanism underlying the salutary effects of mindfulness (Chang, Chang, & Chen, 2018; Ryan, Donald, & Bradshaw, 2021), intrinsic life goals (Unanue et al., 2017), and optimism (Desrumaux et al., 2015) and the adverse correlates of self-critical perfectionism (Boone et al., 2014), suppressive emotion regulation (Benita et al., 2020), dependency (Vandenkerckhove, Brenning et al., 2019), and narcissism (Sedikides, Ntoumanis, & Sheldon, 2019). What remains to be explored in greater detail is which mechanisms can explain why these various interpersonal differences relate to individuals' wellness. While basic needs constitute macro-mediational mechanisms, a better understanding of the specific mechanisms that intervene between different individual traits and the three specific needs could be illuminating (Vansteenkiste et al., 2008).

Moving beyond between-person differences, basic needs also help to explain between-group differences. Chinese sojourners temporarily moving to Belgium reported lower well-being compared to counterparts still in China, because they were less capable of satisfying basic psychological needs (Vansteenkiste et al., 2006). Law students from different institutions were found to develop differently over time as a function of mean-level differences in need satisfaction during the academic year (Sheldon & Krieger, 2004). Students in online, relative to those in face-to-face, learning environments reported lower need satisfaction, helping to explain their lower motivation and lower perceived course knowledge transfer (Wang et al., 2019).

*Summary*

The number of phenomena that can be understood through the lens of basic needs has widened steadily over the years. Whether self-reported, observed, or manipulated, the systematic role of basic needs as explanatory mechanisms speaks to both their critical theoretical value and their practical importance. Indeed, basic need satisfactions provide clear criteria for diagnosing, and targets for optimizing, most any human context.

## A Note on Need Candidates

The question whether the list of basic needs should be extended has been a topic of lively discussion and empirical study. Different need candidates have been suggested, including needs for novelty/variety (Bagheri & Milyavskaya, 2020; Gonzalez-Cutre et al., 2016), beneficence (Martela & Ryan, 2016), and nature (Baxter & Pelletier, 2019). Whether a fourth need should be added is an open issue for SDT (Deci & Ryan, 2000; Vansteenkiste et al., 2020) but requires a few considerations.

First, it is important to move BPNT forward conservatively, as in SDT's approach of avoiding "errors of commission" (Ryan & Deci, 2019). This implies that sufficient evidence for each of the criteria would need to be obtained before a fourth need could be formally incorporated into the theory. Second, in studying a fourth need, it will be critical to incorporate the established three basic needs as a reference point to better understand the similarities/dissimilarities in the functioning and effects of a new need candidate. Need candidates may, for example, only enhance well-being instead of also yielding a cost and eliciting psychopathology when frustrated. Also, candidate needs may show only limited or inconsistent explanatory roles in accounting for contextual variations above and beyond the effects of basic needs.

## Conclusion

We opened this chapter with the observation that few psychological theories take such a strong perspective regarding the notion of basic needs as SDT. Although salient, the SDT perspective on individuals' needs is nuanced and elaborated, as shown in the in-depth discussion of the different conceptual criteria and their related implications in this chapter. Much as the work on basic needs has burgeoned since the beginning of this millennium, we hope that the many fundamental and lingering questions regarding the characterization, correlates, and outcomes associated with basic needs will receive continued attention in the coming decade. By getting deeper insight in the basic nature of needs, the multiple and multilayered factors influencing them, and the ubiquitous outcomes following from them, we can gain a deeper understanding of human nature itself. The payoff for such studies is potentially great, as the support of basic needs is critical to people's flourishing, self-actualization, and connections with those around them.

# References

Ainsworth, M. (1978). The Bowlby-Ainsworth attachment theory. *Behavioral and Brain Sciences*, *1*(3), 436–438. https://doi.org/10.1017/S0140525X00075828

Aldrup, K., Klusmann, U., & Lüdtke, O. (2017). Does basic need satisfaction mediate the link between stress exposure and well-being? A diary study among beginning teachers. *Learning and Instruction*, *50*, 21–30. https://doi.org/10.1016/j.learninstruc.2016.11.005

Baard, P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, *34*(10), 2045–2068. https://doi.org/10.1111/j.1559-1816.2004.tb02690

Bagheri, L., & Milyavskaya, M. (2020). Novelty-variety as a candidate basic psychological need: New evidence across three studies. *Motivation and Emotion*, *44*(1), 32–53. https://doi.org/10.31234/osf.io/jv5d7

Balaguer, I., Castillo, I., & Duda, J. (2008). Autonomy support, needs satisfaction, motivation and well-being in competitive athletes: A test of the self-determination theory. *Revista de Psicologia del Deporte*, *17*(1), 123–139.

Banting, L., Dimmock, J., & Grove, R. (2011). The impact of automatically activated motivation on exercise-related outcomes. *Journal of Sport & Exercise Psychology*, *33*(4), 569–585. https://doi.org/10.1123/jsep.33.4.569.

Barkoukis, V., Hagger, M. S., Lambropoulos, G., & Tsorbatzoudis, H. (2010). Extending the trans-contextual model in physical education and leisure-time contexts: Examining the role of basic psychological need satisfaction. *British Journal of Educational Psychology*, *80*(4), 647–670.

Bartholomew, K., Mouratidis, T., Katartzi, E., Thøgersen-Ntoumani, C., Vlachopoulos, S., & Ntoumanis, N. (2018). Beware of your teaching style: A school-yearlong investigation of controlling teaching and student motivational experiences. *Learning and Instruction*, *53*, 50–63. https://doi.org/10.1016/j.learninstruc.2017.07.006

Bartholomew, K., Ntoumanis, N., Ryan, R. M., Bosch, J., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, *37*(11), 1459–1473. https://doi.org/10.1177/0146167211413125

Baten, E., Vansteenkiste, M., De Muynck, G.-J., De Poortere, E., & Desoete, A. (2020). How can the blow of math difficulty on elementary school children's motivational, cognitive, and affective experiences be dampened? The critical role of autonomy-supportive instructions. *Journal of Educational Psychology*, *112*(8), 1490–1505. https://doi.org/10.1037/edu0000444

Bauer, J., & McAdams, D. P. (2000). Competence, relatedness, and autonomy in life stories. *Psychological Inquiry*, *11*(4), 276–279.

Baxter, D. E., & Pelletier, L. (2019). Is nature relatedness a basic human psychological need? A critical examination of the extant literature. *Canadian Psychology*, *60*(1), 21–34. https://doi.org/10.1037/cap0000145

Belsky, J., & Most, R. K. (1981). From exploration to play: A cross-sectional study of infant free play behavior. *Developmental Psychology*, *17*(5), 630–639. https://doi.org/10.1037/0012-1649.17.5.630

Benita, M., Benish-Weisman, M., & Matos, L. (2020). Integrative and suppressive emotion regulation differentially predict well-being through basic need satisfaction and frustration: A test of three countries. *Motivation and Emotion, 44*(2), 67–81. https://doi.org/10.1007/s11031-019-09781-x

Bettencourt, B. A., & Sheldon, K. M. (2001). Social roles as mechanism for psychological need satisfaction within social groups. *Journal of Personality and Social Psychology*, *81*(6), 1131–1143. https://doi.org/10.1037/0022-3514.81.6.1131

Boone, L., Vansteenkiste, M., Soenens, B., van der Kaap- Deeder, J., & Verstuyf, J. (2014). Self-critical perfectionism and binge eating symptoms: A longitudinal test of the intervening role of psychological need frustration. *Journal of Counseling Psychology*, *61*(3), 363–373. https://doi.org/10.1037/a0036418

Brenning, K., Soenens, B., Vansteenkiste, M., De Clercq, B., & Antrop, I. (2021). Emotion regulation as a transdiagnostic risk factor for (non)clinical adolescents' internalizing and externalizing psychopathology: Investigating the intervening role of psychological need experiences. *Child Psychiatry and Human Development, 53*(1), 124–136. https://doi.org/10.1007/s10578-020-01107-0.

Campbell, R., Boone, L., Vansteenkiste, M., & Soenens, B. (2018). Psychological need frustration as a transdiagnostic process in associations of self-critical perfectionism with depressive symptoms and eating pathology. *Journal of Clinical Psychology*, *74*(10), 1175–1790. https://doi.org/10.1002/jclp.22628

Campbell, R., Soenens, B., Weinstein, N., & Vansteenkiste, M. (2018). Impact of partial sleep deprivation on psychological functioning: Effects on mindfulness and basic psychological need satisfaction. *Mindfulness*, *9*(2), 1123–1133. https://doi.org/10.1007/s12671-017-0848-1

Campbell, R., Tobback, E., Delesie, L., Vogelaers, D., Mariman, A., & Vansteenkiste, M. (2017). Basic psychological need experiences, fatigue, and sleep in individuals with unexplained chronic fatigue. *Stress and Health*, *33*(5), 645–655. https://doi.org/10.1002/smi.2751

Campbell, R., Vansteenkiste, M., Delesie, L., Tobback, E., Mariman, A., Vogelaers, D., & Mouratidis, A. (2018). Reciprocal associations between daily need-based experiences, energy, and sleep in chronic fatigue syndrome. *Health Psychology*, *37*(12), 1168–1178. https://doi.org/10.1037/hea0000621

Campbell, R., Vansteenkiste, M., Soenens, B., Vandenkerckhove, B., & Mouratidis, T. (2020). Toward a better understanding of the reciprocal relations between adolescent psychological need experiences and sleep. *Personality and Social Psychology Bulletin, 47*(3), 377–394. https://doi.org/10.1177/0146167220923456

Cantarero, K., Tilburg, W., & Smoktunowicz, E. (2020). Affirming basic psychological needs promotes mental well-being during the COVID-19 outbreak. *Social Psychological and Personality Science*, *12*(6), 821–828. https://doi.org/10.1177/1948550620942708

Caspi, A., & Roberts, B. W. (2001). Personality development across the life course: The argument for change and continuity. *Psychological Inquiry*, *12*(2), 49–66. https://doi.org/10.1207/S15327965PLI1202_01

Chamarro, A., Oberst, U., Cladellas, R., & Fuster, H. (2020). Effect of the frustration of psychological needs on addictive behaviors in mobile videogamers—the mediating role of use expectancies and time spent gaming. *International Journal of Environmental Research and Public Health*, *17*(17), 1–16. https://doi.org/10.3390/ijerph17176429

Chang, W. H., Chang, J.-H., & Chen, L. H. (2018). Mindfulness enhances change in athletes' well-being: The mediating role of basic psychological needs fulfillment. *Mindfulness*, *9*(3), 815–823. https://doi.org/10.1007/s12671-017-0821-z

Chen, B., Soenens, B., Vansteenkiste, M., Van Petegem, S., & Beyers, W. (2016). Where do the cultural differences in dynamics of controlling parenting lie? Adolescents as active agents in the perception of and coping with parental behavior. *Psychologica Belgica*, *56*(3), 169–192. https://doi.org/10.5334/pb.306

Chen, B., Van Assche, J., Vansteenkiste, M., Soenens, B., & Beyers, W. (2015). Does psychological need satisfaction matter when environmental or financial safety are at risk? *Journal of Happiness Studies*, *16*, 745–766. https://doi.org/10.1007/s10902-014-9532-5

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, *39*(2), 216–236. https://doi.org/10.1007/s11031014-9450-1

Chen, C., Zhang, T., Gu, X., Lee, J., Ren, S., & Wang, H. (2020). Understanding adolescents' need support, need satisfaction, and health-related outcomes: A self-determination health behavior perspective. *International Journal of Environmental Research and Public Health*, *17*(1), 104. https://doi.org/10.3390/ijerph17010104

Chen, Y., Li, R., & Liu, X. (In press). Relatedness frustration and compensatory behaviors in social networking sites among Chinese college students: Role of self-control failure. *Current Psychology*.

Cheon, S. H., Reeve, J., & Ntoumanis, N. (2018). A needs-supportive intervention to help PE teachers enhance students' prosocial behavior and diminish antisocial behavior. *Psychology of Sport and Exercise*, *35*, 74–88. https://doi.org/10.1016/j.psychsport.2017.11.010

Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence. *Journal of Personality and Social Psychology*, *84*(1), 97–110. https://doi.org/10.1037/0022-3514.84.1.97

Crommelinck, M., & Anseel, F. (2013). Understanding and encouraging feedback-seeking behavior: A literature review. *Medical Education*, *47*(3), 232–241. https://doi.org/10.1111/medu.12075

De Caro, D. A., Janssen, M. A., & Lee, A. (2015). Synergistic effects of voting and enforcement on internalized motivation to cooperate in a resource dilemma. *Judgment and Decision Making*, *10*(6), 511–537.

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, *62*(1), 119–142. https://doi.org/10.1111/j.1467-6494.1994.tb00797.x

Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the benefits of giving as well as receiving autonomy support: Mutuality in close friendships. *Personality and Social Psychology Bulletin*, *32*(3), 313–327. https://doi.org/10.1177/0146167205282148

Deci, E.L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. *Advances in Experimental Social Psychology*, *13*(1), 39–80. https://doi.org/10.1016/S0065-2601(08)60130-6

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Delrue, J., Vansteenkiste, M., Mouratidis, T., Gevaert, K., Broek, G., & Haerens, L. (2017). A game-to game investigation of the relation between need-supportive and need-thwarting coaching and moral behavior in soccer. *Psychology of Sport and Exercise*, *31*, 1–10. https://doi.org/10.1016/j.psychsport.2017.03.010

De Muynck, G.-J., Vansteenkiste, M., Delrue, J., Aelterman, N., Haerens, L., & Soenens, B. (2017). The effects of feedback valence and style on need satisfaction, self-talk, and perseverance among tennis players: An experimental study. *Journal of Sport & Exercise Psychology*, *39*(1), 67–80. https://doi.org/10.1123/jsep.2015-0326

De Muynck, G.-J., Vansteenkiste, M., Morbée, S., Vandenkerckhove, B., Vande Broek, G., & Soenens, B. (2021). The interplay between normative feedback and self-critical perfectionism in predicting competitive tennis players' competence, tension, and enjoyment: An experimental study. *Sport, Exercise, and Performance Psychology*, *10*(3), 345–358. https://doi.org/10.1037/spy0000234

Desrumaux, P., Lapointe, D., Sima, M. N., Boudrias, J. S., Savoie, A., & Brunet, L. (2015). The impact of job demands, climate, and optimism on well-being and distress at work: What are the mediating effects of basic psychological need satisfaction? *European Review of Applied Psychology*, *65*(4), 179–188.

Di Domenico, S., & Fournier, M. A. (2014). Socioeconomic status, income inequality, and health complaints: A basic psychological needs perspective. *Social Indicators Research*, *119*(3), 1679–1697. https://doi.org/10.1007/s11205-013-0572-8

Di Domenico S., & Ryan R. M. (2017). The emerging neuroscience of intrinsic motivation: A new frontier in self-determination research. *Frontiers in Human Neuroscience*, *11*, 145. https://doi.org/10.3389/fnhum.2017.00145

Di Domenico, S. I., Le, A., Liu, Y., Ayaz, H., & Fournier, M. A. (2016). Basic psychological needs and neurophysiological responsiveness to decisional conflict: An event-related potential study of integrative self-processes. *Cognitive, Affective & Behavioral Neuroscience*, *16*, 848–865. doi: 10.3758/s13415-016-0436-1

Dieleman, L. M., Moyson, T., De Pauw, S. S. W., Prinzie, P., & Soenens, B. (2018). Parents' need-related experiences and behaviors when raising a child with autism spectrum disorder. *Journal of Pediatric Nursing*, *42*, 26–37. https://doi.org/10.1016/j.pedn.2018.06.005

Evans, P., & Bonneville-Roussy, A. (2016). Self-determined motivation for practice in university music students. *Psychology of Music*, *44*(5), 1095–1110. https://doi.org/10.1177/0305735615610926

Fousiani, K., Dimitropoulou, P., Michaelides, M. P., & Van Petegem, S. (2016). Perceived parenting and adolescent cyber-bullying: Examining the intervening role of autonomy and relatedness need satisfaction, empathic concern and recognition of humanness. *Journal of Child and Family Studies*, *25*, 2120–2129. https://doi.org/10.1007/s10826-016-0401-1

Frielink, N., Schuengel, C., & Embregts, P. J. C. M. (2019). Psychometric properties of the Basic Psychological Need Satisfaction and Frustration Scale–Intellectual Disability (BPNSFS-ID). *European Journal of Psychological Assessment*, *35*(1), 37–45. https://doi.org/10.1027/1015-5759/a000366

Gillet, N., Maillot, A., Poulin, A., Morin, A., Huyghebaert-Zouaghi, T., Burger, L., & Tricard, E. (2019). University students' need satisfaction trajectories: A growth mixture analysis. *Learning and Instruction*, *60*(1), 275–285. https://doi.org/10.1016/j.learninstruc.2017.11.003

Gonzalez-Cutre, D., Sicilia, Á., Sierra, A. C., Ferriz, R., & Hagger, M. (2016). Understanding the need for novelty from the perspective of self-determination theory. *Personality and Individual Differences*, *102*, 159–169. https://doi.org/10.1016/j.paid.2016.06.036

Hadden, B. W., Overup, C. S., & Knee, C. R. (2014). Removing the ego: Need fulfillment, self-image goals, and self-presentation. *Self and Identity*, *13*(3), 274–293. https://doi.org/10.1080/15298868.2013.815398

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through

unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise*, *16*(3), 26–36. https://doi.org/10.1016/j.psychsport.2014.08.013

Hagger, M., & Chatzisarantis, N. (2011). Causality orientations moderate the undermining effect of rewards on intrinsic motivation. *Journal of Experimental Social Psychology*, *47*(2), 485–489. https://doi.org/10.1016/j.jesp.2010.10.010

Hagger, M., Koch, S., & Chatzisarantis, N. (2015). The effect of causality orientations and positive competence-enhancing feedback on intrinsic motivation: A test of additive and interactive effects. *Personality and Individual Differences*, *72*, 105–111. https://doi.org/10.1016/j.paid.2014.08.012

Halvari, A., Halvari, H., & Deci, E. L. (2019). Dental anxiety, oral health-related quality of life, and general well-being: A self-determination theory perspective. *Journal of Applied Social Psychology*, *49*(5), 295–306. https://doi.org/10.1111/jasp.12583

Haraldsen, H., Solstad, B., Ivarsson, A., Halvari, H., & Abrahamsen, F. (2020). Change in basic need frustration in relation to perfectionism, anxiety and performance in elite junior performers. *Scandinavian Journal of Medicine and Science in Sports*, *30*(4), 754–765. https://doi.org/10.1111/sms.13614

Haslam, N. (2006). Dehumanization: An integrative review. *Personality and Social Psychology Review*, *10*(3), 252–264. https://doi.org/10.1207/ s15327957pspr1003_4

Hein, V., Koka, A., & Hagger, M. (2015). Relationships between perceived teachers' controlling behaviour, psychological need thwarting, anger and bullying behaviour in high-school students. *Journal of Adolescence*, *42*, 103–114. https://doi.org/10.1016/j.adolescence.2015.04.003

Hodgins, H. S., Brown, A. B., & Carver, B. (2007). Autonomy and control motivation and self-esteem. *Self and Identity*, *6*(2–3), 189–208. https://doi.org/10.1080/15298860601118769

Hofer, J., & Busch, H. (2019). Women in power-themed tasks: Need for power predicts task enjoyment and power stress. *Motivation and Emotion*, *43*(5), 740–757. https://doi.org/10.1007/s11031-019-09782-w

Hope, N. H., Holding, A. C., Verner-Filion, J., Sheldon, K. M., & Koestner, R. (2019). The path from intrinsic aspirations to subjective well-being is mediated by changes in basic psychological need satisfaction and autonomous motivation: A large prospective test. *Motivation and Emotion*, *43*(4), 232–241. https://doi.org/10.1007/s11031-018-9733-z

Houlfort, N., Fernet, C., Vallerand, R., Laframboise, A., Guay, F., & Koestner, R. (2015). The role of passion for work and need satisfaction in psychological adjustment to retirement. *Journal of Vocational Behavior*, *88*, 84–94. https://doi.org/10.1016/j.jvb.2015.02.005

Hornstra, L., Bakx, A., Mathijssen, S., & Denissen, J. J. A. (2020). Motivating gifted and non-gifted students in regular primary schools: A self-determination perspective. *Learning and Individual Differences*, *80*, 101871. https://doi.org/10.1016/j.lindif.2020.101871

Howell, J. L., & Sweeny K. (2019). Fulfilling psychological needs predicts less sleep disruption and worry while awaiting uncertain news. *Stress Health*, *35*(3), 277–288. https://doi.org/10.1002/smi.2860

István, T.-K., Alexandre, J. S. M., Beáta, B., Gábor, O., & Adrien, R. (2018). Investigating the multidimensionality of need fulfillment: A bifactor exploratory structural equation modeling representation. *Structural Equation Modeling: A Multidisciplinary Journal*, *25*(2), 267–286. https://doi.org/10.1080/10705511.2017.1374867

Jang, H.-R., Reeve, J., Cheon, S. H., & Song, Y.-G. (2020). Dual processes to explain longitudinal gains in physical education students' prosocial and antisocial behavior: Need satisfaction from autonomy support and need frustration from interpersonal control. *Sport, Exercise, and Performance Psychology*, *9*(3), 471–487. https://doi.org/10.1037/spy0000168

Jang, H., Reeve, J., Ryan, R. M., & Kim, A. (2009). Can self-determination theory explain what underlies the productive, satisfying learning experiences of collectivistically oriented Korean students? *Journal of Educational Psychology*, *101*(3), 644–661. https://doi.org/10.1037/a0014241

Jensen, U. T., Bro, L. L. (2018). How transformational leadership supports intrinsic motivation and public service motivation: The mediating role of basic need satisfaction. *The American Review of Public Administration*, *48*(6), 535–549. https://doi.org/10.1177%2F0275074017699470

Jõesaar, H., Hein, V., & Hagger, M. (2011). Peer influence on young athletes' need satisfaction, intrinsic motivation and persistence in sport: A 12-month prospective study. *Psychology of Sport and Exercise*, *12*, 500–508. https://doi.org/10.1016/j.psychsport.2011.04.005

Kanat-Maymon, Y., Benjamin, M., Stavsky, A., Shoshani, A., & Roth, G. (2015). The role of basic need fulfillment in academic dishonesty: A self-determination theory perspective. *Contemporary Educational Psychology*, *43*, 1–9. https://doi.org/10.1016/j.cedpsych.2015.08.002

Kasser, T., Cohn, S., Kanner, A. D., & Ryan, R. M. (2007). Some costs of American corporate capitalism: A psychological exploration of value and goal conflicts. *Psychological Inquiry*, *18*(1), 1–22. https://doi.org/10.1080/10478400701386579

Kazakova, S., Cauberghe, V., Pandelaere, M., & De Pelsmacker, P. (2014). Players' expertise and competition with others shape the satisfaction of competence needs, gaming gratifications, and contingent self-esteem in a gaming context. *Cyberpsychology Behavior and Social Networking*, *17*(1), 26–32. https://doi.org/10.1089/cyber.2012.0413

Kelly, A. C., Zuroff, D. C., Leybman, M. J., Martin, E. A., & Koestner, R. (2008). Satisfied groups and satisfied members: Untangling the between- and within-groups effects of need satisfaction. *Journal of Applied Social Psychology*, *38*(7), 1805–1826. https://doi.org/10.1111/j.1559-1816.2008.00370.x

Kindt, S., Vansteenkiste, M., Loeys, T., & Goubert, L. (2016). Helping motivation and well-being of chronic pain couples: A daily diary study. *Pain*, *157*(7), 1551–1562. https://doi.org/10.1097/j.pain.0000000000000550

Knee, C. R., Hadden, B. W., Porter, B., & Rodriguez, L. M. (2013). Self-determination theory and romantic relationship processes. *Personality and Social Psychology Review*, *17*(4), 307–324. https://doi.org/10.1177/1088868313498000

Laporte, N., Soenens, B., Brenning, K., & Vansteenkiste, M. (2021). Adolescents as active managers of their own psychological needs: The role of psychological need crafting in adolescents' psychosocial adjustment. *Journal of Adolescence*, *88*, 67–83. https://doi.org/10.1016/j.adolescence.2021.02.004

Laporte, N., Van den Bogaard, D., Brenning, K., Soenens, B., & Vansteenkiste, M. (2022). Testing an on-line program to foster need crafting during the COVID-19 pandemic. *Current Psychology*, early access.

Lee, W., & Reeve, J. (2017). Identifying the neural substrates of intrinsic motivation during task performance. *Cognitive, Affective, and Behavioral Neuroscience*, *17*(5), 939–953.

Lee, W., & Reeve, J. (2020). Brain gray matter correlates of general psychological need satisfaction: A voxel-based morphometry study. *Motivation and Emotion*, *44*(1), 151–158. https://doi.org/10.1007/s11031-019-09799-1

Legate, N., Weinstein, N., & Ryan, R. M. (2021). Ostracism in real life: Evidence that ostracizing others has costs, even when it feels justified. *Basic and Applied Social Psychology*, *43*(4), 226–238. https://doi.org/10.1080/01973533.2021.1927038

Legault, L., Ray, K., Hudgins, A., Pelosi, M., & Shannon, W. (2017). Assisted vs. asserted autonomy satisfaction: Their unique associations with wellbeing, integration of experience, and conflict negotiation. *Motivation and Emotion*, *41*(1), 1–21. https://doi.org/10.1007/s11031-016-9593-3

Levesque, C., & Pelletier, L. (2003). On the investigation of primed and chronic autonomous and heteronomous motivational orientations. *Personality and Social Psychology Bulletin*, *29*(12), 1570–1584. https://doi.org10.1177/0146167203256877

Li, C., Wang, C. K. J., Pyun, D. Y., & Kee, Y. H. (2013). Burnout and its relations with basic psychological needs and motivation among athletes: A systematic review and meta-analysis. *Psychology ofSport and Exercise*, *14*(5), 692–700. https://doi.org/10.1016/j.psychsport.2013.04.009

Liu, Z. S., He, K. R., Wang, R., & Jiang, J. (2020). Do you manage self-image on WeChat moments? Causality orientations, basic psychological needs and self-presentation. *Current Psychology*. Advance online publication. https://doi.org/10.1007/s12144-020-00915-w

Mabbe, E., Soenens, B., De Muynck, G.-J., & Vansteenkiste, M. (2018). The impact of feedback valence and communication style on intrinsic motivation in middle childhood: Experimental evidence and generalization across individual differences. *Journal of Experimental Child Psychology*, *170*, 134–160. https://doi.org/10.1016/j.jecp.2018.01.008

Marbell-Pierre, K. N., Grolnick, W. S., Stewart, A. L., & Raftery-Helmer, J. N. (2019). Parental autonomy support in two cultures: The moderating effects of adolescents' self-construals. *Child Development*, *90*(3), 825–845. https://doi.org/10.1111/cdev.12947

Martela, F., & Ryan, R. M. (2016). The benefits of benevolence: Basic psychological needs, beneficence, and the enhancement of well-being. Journal of Personality, 84, 750–764.

Martela, F., Ryan, R. M., & Steger, M. F. (2018). Meaningfulness as satisfaction of autonomy, competence, relatedness, and beneficence: Comparing the four satisfactions and positive affect as predictors of meaning in life. *Journal of Happiness Studies*, *19*(5), 1261–1282. https://doi.org/10.1007/s10902-017-9869-7

McClelland, D. C. (1987). *Human motivation*. Cambridge University Press.

Megias, A., Gonzalez-Cutre, D., Beltran-Carrillo, V. J., Gomis-Diaz, J. M., Cervello, E., & Bartholomew, K. (2018). The impact of living with morbid obesity on psychological need frustration: A study with bariatric patients. *Stress and Health*, *34*(4), 509–522. https://doi.org/10.1002/smi.2811

Mills, D., & Allen, J. (2020). Self-determination theory, internet gaming disorder, and the mediating role of self-control. *Computers in Human Behavior*, *105*, 106209. https://doi.org/10.1016/j.chb.2019.106209

Mills, D., Anthony, V., & Nower, L. (2020). General motivations, basic psychological needs, and problem gambling: Applying the framework of self-determination theory. *Addiction Research and Theory*, *29*(2), 175–182. doi:10.1080/16066359.2020.1787389

Milyavskaya, M., & Koestner, R. (2011). Psychological needs, motivation, and well-being: A test of self-determination theory across multiple domains. *Personality and Individual Differences*, *50*(3), 387–391. https://doi.org/10.1016/j.paid.2010.10.029

Moller, A., & Deci, E. L. (2010). Interpersonal control, dehumanization, and violence: A self-determination theory perspective. *Group Processes and Intergroup Relations*, *13*(1), 41–53. https://doi.org/10.1177/1368430209350318

Morbée, S., Vermote, B., Waterschoot, J., Dieleman, L., Soenens, B., Van den Bergh, O., Ryan, R. M., Vanhalst, J., De Muynck, G.-J., & Vansteenkiste, M. (2021). Adherence to Covid-19 measures: The critical role of voluntary motivation on a short- and long-term basis. *Motivation Science*, *7*(4), 487–496.

Murayama, K., Matsumoto, M., Izuma, K., Sugiura, A., Ryan, R. M., Deci, E. L., & Matsumoto, K. (2015). How self-determined choice facilitates performance: A key role of the ventromedial prefrontal cortex. *Cerebral Cortex*, *25*(5), 1241–1251.

Neubauer, A., Schmidt, A., Kramer, A. C., & Schmiedek F. (2021). A little autonomy support goes a long way: Daily autonomy-supportive parenting, child well-being, parental need fulfillment, and change in child, family, and parent adjustment across the adaptation to the COVID-19 pandemic. *Child Development*, *92*(5), 1679–1697. https://doi.org/10.1111/cdev.13515

Nezlek, J. B., Cypryanska, M., Cypryanski, P., Chlebosz, K., Jenczylik, K., Sztanchaska, J., & Zalewska, A. M. (2018). Within-person relationships between recreational running and psychological well-being. *Journal of Sport and Exercise Psychology*, *40*(3), 146–152. https://doi.org/10.1123/jsep.2017-0244

Ng, J. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J., & Williams, G. C. (2012). Self-determination theory applied to health contexts: A meta-analysis. *Perspectives on Psychological Science*, *7*(4), 325–340. https://doi.org/10.1177/1745691612447309

Nieto-Casado, F. J., Vansteenkiste, M., Brenning, K., Oliva, A., Rodríguez-Meirinhos, A., & Antolín-Suárez, L. (2022). Basic psychological needs and suicidal ideation: Testing an integrative model in referred and non-referred adolescents (Manuscript submitted for publication).

Nishimura, T., & Suzuki, T. (2016). Basic psychological need satisfaction and frustration in Japan: Controlling for the Big Five personality traits. *Japanese Psychological Research*, *58*, 320–331. https://doi.org/10.1111/jpr.12131

Nolen-Hoeksema, S., & Watkins, E. R. (2011). A heuristic for developing transdiagnostic models of psychopathology: Explaining multifinality and divergent trajectories. *Perspectives on Psychological Science*, *6*(6), 589–609. https://doi.org/10.1177/1745691611419672

Olafsen, A. H., Niemiec, C. P., Deci, E. L., Halvari, H., Nilsen, E. R., & Williams, G. C. (2021). Mindfulness buffers the adverse impact of need frustration on employee outcomes: A self-determination theory perspective. *Journal of Theoretical Social Psychology*. Advance online publication. https://doi.org/10.1002/jts5.93

Olafsen, A. H., Niemiec, C. P., Halvari, H., Deci, E. L., & Williams, G. C. (2017). On the dark side of work: A longitudinal analysis using self-determination theory. *European Journal of Work and Organizational Psychology*, *26*(2), 275–285. https://doi.org/10.1080/1359432X.2016.1257611

Oliver, E. J., Markland, D., Hardy, J., & Petherick, C. (2008). The effects of autonomy-supportive and controlling environments on self-talk. *Motivation and Emotion*, *32*(3), 200–212. https://doi.org/10.1007/s11031-008-9097-x

Patall, E. A., Sylvester, B. J., & Han, C.-W. (2014). The role of competence in the effects of choice on motivation. *Journal of Experimental Social Psychology*, *50*(1), 27–44. https://doi.org/10.1016/j.jesp.2013.09.002

Pavey, L. J., Grietemeyer, T., & Sparks, P. (2011). Highlighting relatedness promotes prosocial motives and behavior. *Personality and Social Psychology Bulletin*, *37*(7), 905–917. https://doi.org/10.1177/0146167211405994

Piaget, J. (1952). *The origins of intelligence in children*. International Universities Press.

Philippe, F. L., Koestner, R., Beaulieu-Pelletier, G., Lecours, S., & Lekes, N. (2012). The role of episodic memories in current and future well-being. *Personality and Social Psychology Bulletin*, *38*(4), 505–519. https://doi.org/10.1177/0146167211429805

Quested, E., Bosch, J. A., Burns, V. E., Cumming, J., Ntoumanis, N., Duda, J. L. (2011). Basic psychological need satisfaction, stress-related appraisals, and dancers' cortisol and anxiety responses. *Journal of Sport and Exercise Psychology*, *33*(6), 828–846. https://doi.org/10.1002/ejsp.98

Quested, E., Thøgersen-Ntoumani, C., Uren, H., Hardcastle, S. J., & Ryan, R. M. (2018). Community gardening: Basic psychological needs as mechanisms to enhance individual and community well-being. *Ecopsychology*, *10*(3), 173–180. https://doi.org/ 10.1089/eco.2018.0002

Radel, R., Pelletier, L., Sarrazin, P., & Milyavskaya, M. (2011). Restoration process of the need for autonomy: The early alarm stage. *Journal of Personality and Social Psychology*, *101*, 919–934. https://doi.org/10.1037/a0025196

Radel, R., Sarrazin, P., & Pelletier, L. (2009). Evidence of subliminally primed motivational orientations: The effects of unconscious motivational processes on the performance of a new motor task. *Journal of Sport and Exercise Psychology*, *31*(5), 657–674. https://doi.org/10.1123/jsep.31.5.657

Ratelle, C. F., & Duchesne, S. (2014). Trajectories of psychological need satisfaction from early to late adolescence as a predictor of adjustment in school. *Contemporary Educational Psychology*, *39*(4), 388–400. https://doi.org/10.1016/j.cedpsych.2014.09.003

Reeve, J. (2013). How students create motivationally supportive learning environments for themselves: The concept of agentic engagement. *Journal of Educational Psychology*, *105*(3), 579–595. https://doi.org/10.1037/a0032690

Reeve, J., & Nix, G. (1997). Expressing intrinsic motivation through acts of exploration and facial displays of interest. *Motivation and Emotion*, *21*(3), 237–250. https://doi.org/10.1023/A:1024470213500

Reeve, J., Ryan, R. M., & Deci, E. L. (2018). Sociocultural influences on student motivation as viewed through the lens of self-determination theory. In G. A. D. Liem & D. M. McInerney (Eds.), *Big theories revisited 2* (pp. 31–60). Information Age Press.

Reeve, J., & Tseng, C. M. (2011). Cortisol reactivity to a teacher's motivating style: The biology of being controlled versus supporting autonomy. *Motivation and Emotion*, *35*, 63–74.

Reinboth, M., Duda, J., & Ntoumanis, N. (2004). Dimensions of coaching behavior, need satisfaction, and the psychological and physical welfare of young athletes. *Motivation and Emotion*, *28*(3), 297–313. https://doi.org/10.1023/B:MOEM.0000040156.81924.b8

Rodrigues, F., Teixeira, D. S., Neiva, H. P., Cid, L., & Monteiro, D. (2020). The bright and dark sides of motivation as predictors of enjoyment, intention, and exercise persistence. *Scandinavian Journal of Medicine and Science in Sports*, *30*(4), 787–800. https://doi.org/10.1111/sms.13617

Rodriguez-Meirinhos, A., Antolín-Suárez, L., Brenning, K., Vansteenkiste, M., & Oliva, A. (2019). A bright and a dark path to adolescents' functioning: The role of need satisfaction and need frustration across gender, age, and socioeconomic status. *Journal of Happiness Studies*, *21*(1), 95–116. https://doi.org/10.1007/s10 902-018-00072-9

Roth, G., Vansteenkiste, M., & Ryan, R. M. (2019). Integrative emotion regulation: Process and development from a self-determination theory perspective. *Development and Psychopathology*, *31*(3), 945–956. https://doi.org/10.1017/S0954579419000403

Rouse, P. C., Turner, P. J., Siddall, A. G., Schmid, J., Standage, M., & Bilzon, J. L. (2020). The interplay between psychological need satisfaction and psychological need frustration within a work context: A variable and person-oriented approach. *Motivation and Emotion*, *44*(2), 175–189. https://doi.org/10.1007/s11 031-019-09816-3

Rowe, C. A., Walker, K. L., Britton, P., & Hirsch, J. (2013). The relationship between negative life events and suicidal behavior: Moderating role of basic psychological needs. *Crisis*, *34*(4), 233–241. https://doi.org/10.1027/0227-5910/a000173

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, *63*(3), 397–427. https://doi.org/10.1111/j.1467-6494.1995.tb00501.x

Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic-dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3–33). University of Rochester Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., & Deci, E. L. (2019). Brick by brick: The origins, development, and future of self-determination theory. *Advances in Motivation Science*, *6*, 111–156. https://doi.org/10.1016/bs.adms.2019.01.001

Ryan, R. M., Deci, E. L., Grolnick, W. S., & La Guardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Theory and method* (pp. 795–849). John Wiley & Sons.

Ryan, R. M., Deci, E. L., & Vansteenkiste, M. (2016). Autonomy and autonomy disturbances in self-development and psychopathology: Research on motivation, attachment, and clinical process. In D. Cicchetti (Ed.), *Developmental psychopathology* (Vol. 1, pp. 385–438). John Wiley & Sons.

Ryan, R. M., Donald, J., & Bradshaw, E. L. (2021). Mindfulness and motivation: A process view using self-determination theory. *Current Directions in Psychological Science*, *30*(4), 300–306. https://doi.org/10.1177/09637214211009511.

Ryan, R. M., La Guardia, J. G., Solky-Butzel, J., Chirkov, V., & Kim, Y. (2005). On the interpersonal regulation of emotions: Emotional reliance across gender, relationships, and cultures. *Personal Relationships*, *12*(1), 145–163. https://doi.org/10.1111/j.1350-4126.2005.00106.x

Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, *30*(4), 347–363. https://doi.org/10.1007/s11031-006-9051-8

Ryan, R. M., Soenens B., & Vansteenkiste, M. (2019). Reflections on self-determination theory as an organizing framework for personality psychology: Interfaces, integrations issues, and unfinished business. *Journal of Personality*, *87*(1), 115–145. https://doi.org/10.1111/jopy.12440

Ryan, W. S., & Ryan, R. M. (2019). Toward a social psychology of authenticity: Exploring within-person variation in autonomy, congruence, and genuineness using self-determination theory. *Review of General Psychology*, *23*(1), 99–112. https://doi.org/10.1037/gpr0000162

Sailer, M., Hense, J. U., Mayr, S. K., & Mandl, H. (2017). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in Human Behavior*, *69*, 371–380. https://doi.org/10.1016/j.chb.2016.12.033

Salazar-Ayala, C., Gastélum, G., Elisa, H., Núñez Enríquez, O., Luján, J., & Moreno-Murcia, J. (2021). Individualism, competitiveness, and fear of negative evaluation in pre-adolescents: Does the teacher's controlling style matter? *Frontiers in Psychology*, *12*, 1276. https://doi.org/10.3389/fpsyg.2021.626786

Sarrazin, P., Vallerand, R., Guillet, E., Pelletier, L., Cury, F. (2002). Motivation and dropout in female handballers: A 21-month prospective study. *European Journal of Social Psychology*, *32*(3), 395–418. https://doi.org/10.1002/ejsp.98

Schrooyen, C., Soenens, B., Waterschoot, J., Vermote, B., Morbée, S., Beyers, W., Brenning, K., Dieleman, L., Van der Kaap-Deeder, J., & Vansteenkiste, M. (2021). At home with the kids during the COVID-19 lockdown: A party or a prison? Parental identity as a resource for parental adaptation through basic psychological need satisfaction. *Journal of Family Psychology,* 35(8), 1053–1064.

Schüler, J., Brandstäter, V., & Sheldon, K. M. (2013). Do implicit motives and basic psychological needs interact to predict wellbeing and flow? Testing a universal hypothesis and a matching hypothesis. *Motivation and Emotion*, *37*, 480–495. https://doi.org/10.1111/jopy.12402

Sedikides, C., Ntoumanis, N., & Sheldon, K. M. (2019). I am the chosen one: Narcissism in the back-drop of self-determination theory. *Journal of Personality*, *87*(1), 70–81. https://doi.org/10.1111/jopy.12402

Selvi, K., & Bozo, Ö. (2020). The dark side of bodybuilding: The role of bodybuilding activities in compensation of frustrated basic psychological needs. *Motivation and Emotion*, *44*(2), 190–208. https://doi.org/10.1007/s11031-019-09805-6

Senko, C., & Freund, A. M. (2015). Are mastery-avoidance achievement goals always detrimental? An adult development perspective. *Motivation and Emotion*, *39*(4), 477–488. https://doi.org/10.1007/s11031-015-9474-1

Sheldon, K. M. (2011). Integrating behavioral-motive and experiential-requirement perspectives on psychological needs: A two process model. *Psychological Review*, *118*(4), 552–569. https://doi.org/10.1037/a0024758

Sheldon, K. M., & Bettencourt, B. A. (2002). Psychological need-satisfaction and subjective well-being within social groups. *British Journal of Social Psychology*, *41*(1), 25–38. https://doi.org/10.1348/014466602165036

Sheldon, K. M., Corcoran, M., & Titova, M. (2020). Supporting one's own autonomy may be more important than feeling supported by others. *Motivation Science*, *7*(2), 176–186. https://doi.org/10.1037/mot0000215

Sheldon, K. M., & Gunz, A. (2009). Psychological needs as basic motives, not just experiential requirements. *Journal of Personality*, *77*(5), 1467–1492. https://doi.org/10.1111/j.1467-6494.2009.00589.x

Sheldon, K. M., & Krieger, L. S. (2004). Understanding the negative effects of legal education on law students: A longitudinal test of self-determination theory. *Personality and Social Psychology Bulletin*, *33*(6), 883–897. https://doi.org/10.2139/ssrn.913824

Shiffrin, H. H., Batte-Futrel, M. L., Boigegrain, N. M., Cao, C. N., & Whitesell, E. R. (2021). Relationships between helicopter parenting, psychological needs satisfaction and prosocial behaviors in emerging adults. *Journal of Child and Family Studies*, *30*(4), 1–12. https://doi.org/10.1007/s10826-021-01925-3

Skinner, E. A., & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology*, *58*(1), 119–144. https://doi.org/10.1146/annurev.psych.58.110405.085705

Smith, C. V. (2008). In pursuit of "good" sex: Self-determination and the sexual experience. *Journal of Social and Personal Relationships*, *24*(1), 69–85.

Soenens, B., Park, S. Y., Mabbe, E., Vansteenkiste, M., Chen, B., Van Petegem, S., & Brenning K. (2018). The moderating role of vertical collectivism in South-Korean adolescents' perceptions of and responses to autonomy-supportive and controlling parenting. *Frontiers in Psychology*, *9*, 1080. https://doi.org/10.3389/fpsyg.2018.01080

Soenens, B., Vansteenkiste, M., & Van Petegem, S. (2015). Let us not throw out the baby with the bathwater: Applying the principle of universalism without uniformity to autonomy-supportive and controlling parenting. *Child Development Perspectives*, *9*(1), 44–49. https://doi.org/10.1111/cdep.12103

Spadafora, N., Murphy, E., Molnar, D., & Zinga, D. (2020). Test anxiety in first-generation students: An examination of the role of psychological needs. *Journal of Teaching and Learning*, *14*(2), 33–49. https://doi.org/10.22329/jtl.v14i2.6202

Steel, R. P., Bishop, N. C., & Taylor, I. M. (2021). The relationship between multidimensional motivation and endocrine-related responses: A systematic review. *Perspectives on Psychological Science*, *16*(3), 614–638. https://doi.org/10.1177/1745691620958008

Tang, M., Wang, D., & Guerrien, A. (2020). A systematic review and meta-analysis on basic psychological need satisfaction, motivation, and well-being in later life: Contributions of self-determination theory. *PsyCh Journal*, *9*(1), 5–33. https://doi.org/10.1002/pchj.293

Toyama, H., Upadyaya, K., & Salmela-Aro, K. (2020). Job crafting and well-being among school principals: The role of basic psychological need satisfaction and frustration. Manuscript submitted for publication.

Unanue, W., Rempel, K., Gómez, M. E., & Van den Broeck, A. (2017). When and why does materialism relate to employees' attitudes and well-being: The mediational role of need satisfaction and need frustration. *Frontiers in Psychology*, *8*, 1755. https://doi.org/10.3389/fpsyg.2017.01755

Uysal, A., Aykutoglu, B., & Ascigil, E. (2020). Basic psychological need frustration and health: Prospective associations with sleep quality and cholesterol. *Motivation and Emotion,* *44*(7), 209–225. https://doi.org/10.1007/s11031-019-09806-5

Vahlstein, T. J., Mutter, E. R., Oettingen, G., & Gollwitzer, P. M. (2020). Relatedness needs and negative fantasies as the origins of obsessive thinking in romantic relationships. *Motivation and Emotion*, *44*(2), 226–243. https://doi.org/10.1007/s11031-019-09802-9

Van Assche, J., Van der Kaap-Deeder, J., Audenaert, E., De Schryver, M., & Vansteenkiste, M. (2018). Are the benefits of autonomy satisfaction and the costs of autonomy frustration dependent on individuals' autonomy strength? *Journal of Personality*, *86*(6), 1017–1036. https://doi.org/10.1111/jopy.12372

Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the Work-Related Basic Need Satisfaction Scale. *Journal of Occupational and Organizational Psychology*, *83*(4), 981–1002. https://doi.org/10.1348/096317909X481382

Vandenkerckhove, B., Brenning, K., Vansteenkiste, M., Luyten, P., & Soenens, B. (2019). The explanatory role of basic psychological need experiences in the relation between dependency, self-criticism and psychopathology in adolescence. *Journal of Psychopathology and Behavioral Assessment*, *41*(11), 574–588. https://doi.org/10.1007/s10862-019-09719-0

Vandenkerckhove, B., Soenens, B., Van der Kaap-Deeder, J., Brenning, K., Luyten, P., & Vansteenkiste, M. (2019). The role of weekly need-based experiences and self-criticism in predicting weekly academic (mal)adjustment. *Learning and Individual Differences*, *69*, 69–83. https://doi.org/10.1016/j.lindif.2018.11.009

Van der Kaap-Deeder, J., Soenens, B., Mabbe, E., Dieleman, L., Mouratidis, T., Campbell, R., & Vansteenkiste, M. (2019). From daily need experiences to autonomy-supportive and psychologically controlling

parenting via psychological availability and stress. *Parenting*, *19*(3), 177–202. https://doi.org/10.1080/15295192.2019.1615791

Van der Kaap-Deeder, J., Soenens, B., Van Petegem, S., Neyrinck, B., De Pauw, S. S. W., Raemdonck, E., & Vansteenkiste, M. (2020). Live well and die with inner peace: The importance of retrospective need-based experiences, ego integrity and despair for late adults' death attitudes. *Archives of Gerontology and Geriatrics*, *91*, 104184. https://doi.org/10.1016/j.archger.2020.104184

Van Hiel, A., & Vansteenkiste, M. (2009). Ambitions fulfilled? The effects of intrinsic and extrinsic goal attainment on older adults' ego-integrity and death attitudes. *International Journal of Aging and Human Development*, *68*(1), 27–51. https://doi.org/10.2190/AG.68.1.b

Van Hooff, M., & Geurts, S. (2014). Need satisfaction during free evening hours: Examining its role in daily recovery. *Stress and Health: Journal of the International Society for the Investigation of Stress*, *30*(3), 198–208. https://doi.org/10.1002/smi.2595

Van Petegem, S., Beyers, W., Vansteenkiste, M., & Soenens, B. (2012). On the association between adolescent autonomy and psychosocial functioning: Examining decisional independence from a self-determination theory perspective. *Developmental Psychology*, *48*(1), 76–88. https://doi.org/10.1037/a0025307

Van Petegem, S., Soenens, B., Vansteenkiste, M., & Beyers, W. (2015). Rebels with a cause? Adolescent defiance from the perspective of reactance theory and self-determination theory. *Child Development, 86*(3), 903–918. https://doi.org/10.1111/cdev.12355

Vansteenkiste, M., Aelterman, N., De Muynck, G.-J., Haerens, L., Patall, E. A., & Reeve, J. (2018). Fostering personal meaning and self-relevance: A self-determination theory perspective on internalization. *Journal of Experimental Education*, *86*(1), 30–49. doi:10.1080/00220973.2017.1381067

Vansteenkiste, M., Lens, W., Soenens, B., & Luyckx, K. (2006). Autonomy and relatedness among Chinese sojourners and applicants: Conflictual or independent predictors of well-being and adjustment? *Motivation and Emotion*, *30*(4), 273–282. https://doi.org/10.1007/s11031-006-9041-x

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*(3), 263–280. https://doi.org/10.1037/a0032359

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, *44*(2), 1–31. https://doi.org/10.1007/s11031-019-09818-1

Vansteenkiste, M., Simons, J., Lens, W., Soenens, B., & Matos, L. (2005). Examining the motivational impact of intrinsic versus extrinsic goal framing and autonomy-supportive versus internally controlling communication style on early adolescents' academic achievement. *Child Development. 76*(2), 483–501. https://doi.org/10.1111/j.1467-8624.2005.00858.x

Vansteenkiste, M., & Soenens, B. (2022). How to foster motivation? The need-based motivating compass as a source of inspiration. In M. Bong, S. Kim, & J. Reeve (Eds.), *Motivation science: Controversies and insights*. Oxford University Press, in press.

Vansteenkiste, M., Soenens, B., & Duriez, B. (2008). Presenting a positive alternative to materialistic strivings and the thin-ideal: Understanding the effects of extrinsic relative to intrinsic goal pursuits. In S. J. Lopez (Ed.), *Positive psychology: Exploring the best in people* (Vol. 4, pp. 57–86). Westport, CT: Greenwood Publishing Company.

Verstuyf, J., Vansteenkiste, M., Soenens, B., Boone, L., & Mouratidis, A. (2013). Daily ups and downs in women's binge eating symptoms: The role of basic psychological needs, general self-control, and emotional eating. *Journal of Social and Clinical Psychology*, *32*(3), 335–361. https://doi.org/10.1521/jscp.2013.32.3.335

Verstuyf, J., Vansteenkiste, M., Soetens, B., & Soenens, B. (2016). Motivational dynamics underlying eating regulation in young and adult female dieters: Relationships with healthy eating behaviours and disordered eating symptoms. *Psychology and Health*, *31*(6), 711–729. https://doi.org/10.1080/08870446.2016.1143942

Wang, C., Hsu, H. C. K., Bonem, E. M., Moss, J. D., Yu, S., Nelson, D. B., & Levesque-Bristol, C. (2019). Need satisfaction and need dissatisfaction: A comparative study of on-line and face-to-face learning contexts. *Computers in Human Behavior*, *95*, 114–125. https://doi.org/10.1016/j.chb.2019.01.034

Waterschoot, J., Van der Kaap-Deeder, J., & Vansteenkiste, M. (2020). The role of competence-related attentional bias and resilience in restoring thwarted feelings of competence. *Motivation and Emotion*, *44*(1), 82–98. https://doi.org/10.1007/s11031-019-09776-8

Waterschoot, J., Vansteenkiste, M., & Soenens, B. (2019). The effects of experimentally induced choice on elementary school children's intrinsic motivation: The moderating role of indecisiveness and teacher-student relatedness. *Journal of Experimental Child Psychology*, *188*, 104692. https://doi.org/10.1016/j.jecp.2019.104692

Weinstein, N., Hodgins, H. S., & Ryan, R. M. (2010). Autonomy and control in dyads: Effects on interaction quality and joint creative performance. *Personality and Social Psychology Bulletin*, 36(12), 1603–1617. doi:10.1177/0146167210386385

Weinstein, N., Khabbaz, F., & Legate, N. (2016). Enhancing need satisfaction to reduce psychological distress in Syrian refugees. *Journal of Consulting and Clinical Psychology*, *84*(7), 645–650. https://doi.org/10.1037/ccp0000095

Weinstein, N., Przybylski, A., & Murayama, K. (2017). A prospective study of the motivational and health dynamics of internet gaming disorder. *PeerJ*, *5*(1), article e3838. https://doi.org/10.7717/peerj.3838

Weinstein, N., Vansteenkiste, M., & Paulmann, S. (2019). Listen to your mother: Motivating tones of voice predict adolescents' reactions to mothers. *Developmental Psychology*, *55*(12), 2534–2546. https://doi.org/10.1037/dev0000827

White, R. L., Bennie, A., Vasconcellos, D., Cinelli, R., Hilland, T., Owen, K. B., & Lonsdale, C. (2020). Self-determination theory in physical education: A systematic review of qualitative studies. *Teaching and Teacher Education*, *99*, 103247. https://doi.org/10.1016/j.tate.2020.103247

Wörtler, B., Van Yperen, N. W., & Barelds, D. P. H. (2020). Do individual differences in need strength moderate the relations between basic psychological need satisfaction and organizational citizenship behavior? *Motivation and Emotion*, *44*(2), 315–328. https://doi.org/10.1007/s11031-019-09775-9

Wuyts, D., Soenens, B., Vansteenkiste, M., & Van Petegem, S. (2018). The role of observed autonomy support, reciprocity, and need satisfaction in adolescent disclosure about friends. *Journal of Adolescence*, *65*, 141–154. https://doi.org/ 10.1016/j.adolescence.2018.03.012

Yu, S., Levesque-Bristol, C., & Maeda, Y. (2018). General need for autonomy and subjective well-being: A meta-analysis of studies in the US and East Asia. *Journal of Happiness Studies*, *19*, 1863–1882. https://doi.org/10.1007/s10902-017-9898-2

Zeijen, M. E., Petrou, P., Bakker, A., & Gelderen, B. V. (2020). Dyadic support exchange and work engagement: An episodic test and expansion of self-determination theory. *Journal of Occupational and Organizational Psychology*, *93*(3), 687–671. https://doi.org/10.1111/joop.12311

Zhou, N., Lam, S.-F., & Chan, K. C. (2012). The Chinese classroom paradox: A cross-cultural comparison of teacher controlling behaviors. *Journal of Educational Psychology*, *104*(4), 1162–1174. https://doi.org/10.1037/A0027609

# Causality Orientations Theory: SDT's Forgotten Mini-Theory

Richard Koestner *and* Shelby L. Levine

### Abstract

This chapter reviews causality orientations theory (COT) and highlights its contributions toward understanding integrated human functioning. The chapter explores why COT has been neglected relative to the other mini-theories in SDT. Three main reasons are proposed: (1) a paradigm shift in personality psychology away from general, noncontextualized scales; (2) the emergence of new SDT mini-theories that caught researchers' imagination; and (3) problems in how efficiently the General Causality Orientation Scales might be used in research. We suggest that interest in causality orientations could be renewed by exploring the place of COT in current models of personality. SDT researchers might use COT to explore important questions regarding development and change in personality and asking whether causality orientation will impact major life outcomes such as marriage, work, and health.

**Key Words:** Key terms: causality orientations, personality, motivation, integration, self-determination theory, social relations

Causality orientations was the second formal mini-theory to emerge from self-determination theory (SDT). It extended the analysis of the motivational effects of autonomy and control from the social psychological perspective outlined in cognitive evaluation theory to a personality psychology framework that explored individual differences in people's tendencies to orient toward environments and regulate behavior in various ways (Deci & Ryan, 1985).

Causality orientations reflect characteristic adaptations (McAdams & Pals, 2006), which generally indicate how much an individual will orient toward motivational cues in their environment. This mini-theory distinguishes three broad classes of behavior and motivationally relevant psychological processes: autonomy orientation, controlled orientation, and impersonal orientation (Deci & Ryan, 1985; Ryan & Deci, 2017).

The *autonomy orientation* describes the degree to which behaviors are initiated and regulated by choices that are based on an awareness of one's needs and integrated goals. People with a high autonomy orientation seek out choice and experience their behavior as self-initiated. The *controlled orientation* describes the degree to which behaviors are initiated and regulated by controls in the environment such as reward structures or by

internally controlling imperatives indicating how one "should" or "must" behave. People high in control orientation tend to seek out controls and to interpret their environment as controlling. The *impersonal orientation* describes a general tendency to lack intentionality, initiative, or sense of control. People with an impersonal orientation believe that they cannot control their behavior and consequently cannot obtain desired outcomes; their behavior can generally be described as amotivated or helpless. Individuals high in impersonal orientation are often overwhelmed by their environment, inner drives, and emotions.

Causality orientation theory (COT) proposes that these motivational orientations reflect global individual difference factors that everyone possesses (to varying degrees), that influence how we experience and interact with the world from a motivational perspective. This theory does not suggest that we are one orientation or another, but rather that each orientation is measured on a continuum and that we are all directed by a combination of these three motivational orientations.

The General Causality Orientations Scale (GCOS; Deci & Ryan, 1985) was developed to measure individual differences in people's orientation toward autonomous, control-determined, and impersonal functioning. The 36-item self-report questionnaire was "constructed to be a general scale, one that cuts across domains and includes a wide range of responses and reactions" (p. 130). It was later expanded to 52 items so that behavioral tendencies in social contexts could be assessed in addition to achievement situations (Ryan, 1989). The GCOS yields separate subscale scores for each of the three orientations. The autonomy and impersonal subscales are negatively related; the controlled and impersonal subscales are positively related; and the autonomy and control subscales are unrelated to each other (Deci & Ryan, 1985). Gender is significantly related to the autonomy and control orientations, with women scoring higher on autonomy and men scoring higher on control (Blustein, 1988; Deci & Ryan, 1985). All three subscales have demonstrated good internal and test-retest reliability (Blustein,1988; Deci & Ryan, 1985Vallerand et al., 1992).

COT presents a perspective on individuals' general motivational orientations that is complimentary to the more domain-specific approach of the Self-Regulation Questionnaires (e.g., Ryan & Connell, 1989; Zuroff et al., 2007), which consider reasons for behaviors in a specified goal domain such as doing well at school or making progress in psychotherapy. Many studies have included measures of both the GCOS and domain-specific scales assessing academic, health, or work motivation. A recent meta-analysis indicated that the relations between general measures of autonomy, control, and impersonal orientation and more domain-specific assessments are significant, equivalent to a Pearson correlation of .30 (Hagger & Hamilton, 2020). This shows the consistency across SDT and the importance that general causality may have in this field, as it is a consistent stable predictor of motivational tendencies and environmental perceptions of support and obstacles across domains. Autonomy orientation and autonomous motivation are both stable predictors of positive health outcomes (Hagger & Hamilton, 2020),

and identifying people's autonomy orientation at the start of an intervention may help to determine who is in need of more autonomy support to bolster their integration and internalization of the program. Some research has found that an autonomy orientation can buffer against ineffective motivational strategies (i.e., reward) and intrinsic motivation can remain high (Hagger & Chatzisarantis, 2011). Conversely, those higher in control orientation experience reduced intrinsic motivation when feeling controlled. Future research is needed to further integrate motivation, causality orientations, and environmental pressures to be able to help individuals internalize change.

### Integrated Functioning Can Be Explained by Causality Orientations

Causality orientations have been examined in relation to integrated functioning across three important life areas: personality, emotions, and social connections. "Integration" refers to coherence and unity in one's personality and experience and is a hallmark of autonomous functioning. Integration derives from being aware and nondefensive about one's emotions, needs, and personality (Hodgins & Knee, 2002). Controlled regulation is thought to reflect discordance in various aspects of personality and behavior, whereas impersonal regulation is thought to denote a lack of organization in personality and behavior.

The association of causality orientations with personality integration has been shown in terms of attitude behavior, trait behavior, and implicit/explicit motive consistency (i.e., Olesen, Thomsen, & O'Toole, 2015; Reeve, Jang, & Jang, 2018; Vallerand et al., 1987). Research with the GCOS indicated that the autonomy orientation is associated with higher levels of self-awareness, as reflected in positive correlations with measures of self-actualization, ego development, private self-consciousness, openness to experience, and acceptance of one's feelings (Deci & Ryan, 1985; Scherhorn & Grunert, 1988; Vallerand et al., 1987). The relation of autonomy and control orientations to attitude behavior consistency was demonstrated by Koestner, Bernieri, and Zuckerman (1992). These researchers classified participants as higher or lower in autonomy orientation or control orientation based on their responses to the GCOS before assessing their level of behavioral and attitudinal intrinsic motivation in an experimental setting where they solved interesting puzzles. Autonomy-oriented participants were shown to display significantly higher attitude-behavior correlations than those classified as control-oriented. The same authors conducted an experiment in which autonomy-oriented participants showed greater consistency between self-descriptions of trait conscientiousness and a behavioral criterion reflecting conscientious behavior than control-oriented subjects. Thrash and Elliot (2002) reported that explicit achievement motives of individuals high in autonomy-orientation were more related to their deeply rooted implicit need for achievement. This pattern was presumed to emerge because an orientation toward autonomy leads individuals to detect and use affect-based inclinations as a guide when developing explicit motives (Thrash, Elliot, & Schultheiss, 2007). Together, these studies suggest that an autonomous causality

orientation promotes greater congruence between psychological variables and actions, reflecting higher levels of personality integration.

The association of causality orientations with emotional integration has been shown in terms of acceptance of negative life experiences, negative aspects of oneself, and negative aspects of one's cultural group. In a set of five studies that made use of both the GCOS and priming methodology, Weinstein, Deci, and Ryan (2011) showed that individuals who were more autonomous were more likely to accept both the positive and negative aspects of their past selves. In contrast, those who were controlled accepted only the positive aspects and minimized the negative aspects, not being willing to acknowledge that those experiences were part of themselves. Relatedly, Knee and Zuckerman (1996) found that people high in autonomy and low in control orientation were more balanced in taking responsibility for personal failures as well as successes. More recently, Legault, Weinstein et al (2017) reported three experiments in which participants' in-group experiences were manipulated by having participants reflect on their in-group stereotypes. Results showed that those higher in autonomy were more likely to recognize and integrate both positive and negative in-group qualities. In contrast, those lower in autonomy were more likely to resist negative in-group attributes and to accept only positive group qualities.

The association of causality orientations with social integration has been shown in research designed to debunk the popular notion that autonomy and relatedness are somehow meant to be in opposition to one another (i.e., falsely equating autonomy and independence). Hodgins, Koestner, and Duncan. (1996) used the Rochester Interaction Record, an event-contingent sampling procedure, to examine the relations of autonomy and controlled causality orientations to various features of university students' social life. The results indicated that high levels of autonomy allowed for more frequent, more open, and more meaningful interpersonal experiences. Thus, autonomous students had a greater number of social interactions over the week, and the interactions were judged to be more pleasant. Importantly, these researchers focused particular attention on the intimacy of social interaction because the experience of intimacy is central to feeling connected to others. Hodgins et al. (1996) found that autonomous orientation was significantly related to greater self-disclosure during interactions but, also, that this self-disclosure was well moderated so that autonomous individuals matched their level of self-disclosure to how close they were to their interaction partner (e.g., good friend, acquaintance, stranger) and to how much their partner self-disclosed. Autonomous individuals were also more honest in their conversations.

In other studies, Hodgins and colleagues showed that people high in autonomy accepted greater personal responsibility for interpersonal conflicts and were less blaming of others (Hodgins & Liebeskind, 2003; Hodgins, Liebeskind, & Schwartz, 1996). Specifically, those young adults higher in autonomy acknowledged when they had caused harm to others, using fewer lies in explaining their behaviors that had upset others and providing thoughtful, complex apologies. The studies by Hodgins and colleagues show

that autonomy and relatedness are not only compatible but that they tend to co-occur and influence each other. Further, individuals higher in impersonal and controlled orientations are more likely to feel shame and depressive symptoms because of their sensitivity to rewards and criticism (Young et al., 2016).

*Reflective versus Reactive Autonomy Orientation*

Autonomy has sometimes been defined (wrongly, according to SDT) in terms of independence and nonreliance on others (Murray, 1938). Scales purporting to assess autonomy, such as the Adjective Checklist (Gough & Heilbrun, 1983) were found to be associated with interpersonal difficulties, dislike of settings that encourage teamwork, and a resistance to interpersonal influence. In a series of studies, Koestner and Losier (1996) showed that whereas the GCOS measure of autonomy was related to positive social interactions among university students, the Adjective Checklist measure of "reactive" autonomy was associated with neutral social interactions with peers and negative ones with authority figures such as parents or teachers. In a follow-up, Koestner et al. (1999) showed that whereas the SDT measure of "reflective" autonomy was associated with relying on the advice of credible experts when trying to win money at a prediction game, those who were high in a reactive form of autonomy actually made decisions that were in opposition to credible experts, apparently confusing anticonformity with reflective autonomy. Together, these studies show that when autonomy is defined in terms of behaving with a sense of volition, willingness, and congruence, it is reliably associated with positive, mutually rewarding social interactions that foster a strong sense of social integration and connection.

## The Forgotten Mini-Theory?

Why do we suggest that COT, which was first formally described in 1985 by Deci and Ryan, has been forgotten? Let us answer this by referring to Table 5.1, which shows the number of Google Scholar citations that include the term "causality orientations theory" over three time periods: since 1985, since 2010, and since 2020.

The table also includes the number of citations for the other three original mini-theories, as well as goal contents theory (GCT), which emerged somewhat later. (Relationship motivation theory was formally added to the canon only in 2017, so we do

**Table 5.1** Number of Google Citations for the Five Main SDT Mini-Theories

|  | Since 1985 | Since 2010 | Since 2020 |
| --- | --- | --- | --- |
| Cognitive evaluation theory | 12,700 | 4,250 | 1,170 |
| Organismic integration theory | 34,200 | 1,510 | 458 |
| Basic needs theory | 2,890 | 1,060 | 262 |
| **Causality orientations theory** | **1,080** | **440** | **120** |
| Goal contents theory | 809 | 420 | 129 |

not include it.) The table suggests that cognitive evaluation theory is the superstar of the mini-theories, having accumulated the most citations and showing no signs of fading over the past 10 years or over the last year. By contrast, COT has never come close to garnering the scientific attention of cognitive evaluation theory; in fact, its influence has recently been outstripped by *all* four of the other mini-theories.

What accounts for this lower engagement with COT? We offer three possible explanations. The first is that COT may have been an accidental victim of a dramatic shift in personality psychology that began in the 1980s in which researchers moved away from general individual-difference measures, such as locus of control (Rotter, 1966) and achievement motivation (McClelland et al., 1989), toward more limited, context-specific indicators of personality. Outside of the Big Five trait framework, which emerged as a widely accepted way to organize general individual differences in social and emotional behavior, there seemed to be little interest in individual-difference measures that purported to explain behavior across multiple domains. (The relations of the Big Five traits to general causality orientations will be discussed later in this chapter.)

The decline of COT may also be connected to the emergence of an SDT mini-theory that was well suited to the shift in personality psychology to contextual and domain-specific measures. SDT's third mini-theory, organismic integration theory (OIT), drew many SDT researchers to focus on issues of autonomy versus control in specific domains such as education, health, and relationships. OIT highlighted the context-specificity of the way most individuals initiate and regulate their behavior. Indeed, the first author of this chapter shifted from exploring COT in the early 1990s to trying to distinguish the impact of autonomous and controlled motivation in academic, sports, political, and social contexts. Eventually, the shift to specific contexts went a step further and culminated in a 20-year program of research that examined how individuals regulate their behavior in relation to specific personal goals (see Holding & Koestner, this volume). We mention this personal example because we believe many SDT researchers who might have championed COT followed the general trends in the field of personality psychology to shift their attention to contextual variables. Indeed, the pattern that seemed to emerge is that most first-generation SDT researchers selected a content area that interested them—school (Vallerand et al., 1992, 1997), relationships (Blais et al., 1990), sports (Pelletier et al., 1995), or health (Williams et al., 1996)—and then explored important context-relevant questions in these areas (e.g., Why do students drop out of school?) by measuring motivation in terms of the self-regulation subscales developed by OIT, ranging from external regulation and introjection to identified, integrated, and intrinsic motivation.

Interestingly, many researchers included the GCOS along with the context-specific scales in early studies (e.g., Williams et al., 1996). In almost all cases, these researchers found significant correlations between autonomy and control orientation at the general level, and autonomy and control assessed in the specific context. However, the context-specific motivation measures were more highly related to important context-specific

outcomes, such as improved health behaviors. The general measures failed to display incremental validity relative to context-specific motivation, and thus proved less useful in such studies.

The relations between motivation at the general, contextual, and situational levels were well explained by Vallerand's (1997) hierarchical theory of motivation. The theory outlined interesting hypotheses regarding top-down versus bottom-up effects, but it seems that the field primarily focused its attention on motivation at the contextual level, where the greatest percentage of variance in context-specific outcomes could be explained.

A second explanation for the waning influence of COT concerns the relative difficulty of administering the GCOS. The current recommended version of the GCOS includes 17 hypothetical scenarios for which participants rate their level of agreement with three possible responses. For example, the first scenario is the following:

"You have been offered a new position in a company where you have worked for some time.
   The first question that is likely to come to mind is . . .":
I wonder if the new work will be interesting? (Autonomy)
Will I make more money at this position? (Controlled)
What if I can't live up to the new responsibility? (Impersonal)

Participants use a 7-point Likert scale to rate the likelihood that they have each thought presented. From the participant's point of view, judgment requires imagining a hypothetical situation (e.g., most university students never worked for a company "for some time"). Reading the scenario also requires processing time. Selecting which response best applies would be relatively easy, but rating all three is a more nuanced process. Because there are 17 scenarios to read and 52 items to rate, administration of the GCOS can require up to 20 minutes for some participants. For the typical personality psychology study, which includes many scales, it is difficult to rationalize the inclusion of a 15- to 20-minute scale that yields only one or two variables that will be useful in the central analyses. However, this scale has been adapted to specific contexts (e.g., the workplace), and this adaptation may help make this scale easier to use in organizational contexts (Halvari & Olafsen, 2020).

In response to practical concerns about the administration of the GCOS, researchers began to develop more efficient measures to assess the specific causality orientation that they most cared about—which was the autonomous orientation. Two promising brief scales to assess autonomy as a general disposition are the Index of Autonomous Functioning (IAF; Weinstein, Przybylski, & Ryan, 2012), and the Assisted and Asserted Autonomy Satisfaction Scale (Legault, Ray et al., 2017). There are also generalized autonomy scales that have been derived by aggregating across motivation for personal goals (Levine et al., 2020). Given the difficulty of administering the GCOS, it is perhaps not surprising that more economical scales have emerged to replace it.

The IAF was proposed to measure behaviors associated with autonomous functioning (Weinstein et al., 2012). It is a 15-item scale with three subscales based on the main facets of autonomous functioning: authorship/self-congruence, interest-taking, and susceptibility to control. Authorship/self-congruence describes the tendency for those high in autonomy to be the author of their own story and volitionally engage in their action. Interest-taking is a more experimental subscale, defined by reflecting and self-understanding and a more integrated style of behavioral regulation. The third subscale, susceptibility to control, is a reverse-loading scale that reflects an individual's tendency to view behavior as a response to self-imposed and external pressures. The brief IAF has been cited hundreds of times since its initial publication and has been popularly used in modern causality orientation research. The limitation of this scale is that it does not include a scale tapping impersonal orientations. Future research could expand on the IAF to create a general causality orientation scale that is briefer and easier to use.

The Assisted and Asserted Autonomy Satisfaction Scale (Legault, Ray et al., 2017) suggests that autonomy can be satisfied through either asserted or assisted orientations. Asserted autonomy striving is defined as the personal claiming of autonomy through one's independence and force (Legault, Ray et al., 2017). Conversely, assisted autonomy striving is more cooperative and is characterized as searching for autonomy while engaging with others and one's environment. These facets of autonomy striving have unique antecedents and outcomes. For example, asserted autonomy striving is associated with growing up with authoritarian parenting, integration of negative life events, and assertive negation styles. Conversely, assisted autonomy striving is associated with having authoritative parenting and acquiescent coping styles. This scale integrates both general causality orientation and basic psychological need theory and suggests one way to understand how autonomously individuals perceive and engage with their environment. This scale has been cited frequently since its initial publication and provides further evidence that brief measures of causality orientation might be a viable future direction for this mini-theory. Again, this scale does not include a controlled or impersonal orientation subscale, and perhaps this scale could be expanded to include those motivational dimensions.

General autonomy orientation has also been measured across an individual's personal goals (Levine et al., 2020, 2021). Averaging across an individual's self-selected most important goals allows us to understand their general tendency toward autonomous motivation. Individuals higher in general autonomy were more likely to perceive autonomy support from their closest peers and were more likely to experience positive affect and goal progress over the academic year (Levine et al., 2020). Secure attachment has also been associated with general autonomy, suggesting that developmental factors might be an antecedent of this general measure of autonomy (Levine et al., 2021). Measuring autonomous motivation across goals or domains might be another way of getting at an individual's general level of autonomy, or how they generally perceive and interact with their environment in an autonomous manner. This method has not been studied extensively

and has not yet been compared with the GCOS or the IAF, but it may be a future avenue of research and could be expanded to include controlled and impersonal measures.

A third explanation for the decline in researchers' use of COT is the emergence of two highly popular SDT mini-theories that drew attention to *a different set of individual difference measures based on SDT*: GCT and basic needs theory. GCT outlined the antecedents and consequences of endorsing intrinsic and extrinsic life goals or aspirations. Extrinsic life goals include a focus on wealth, attractiveness, and popularity. Intrinsic life goals include cultivating a sense of community connectedness, personal relationships, and personal development. The theory posits that intrinsic goals will usually lead to greater well-being (Niemiec et al., 2009; Martela et al., 2019). Recent evidence suggests that intrinsic life goals also fuel autonomous contextual motivation and basic need satisfaction (Hope et al., 2019). GCT has sparked a great deal of attention because it challenges consumerist cultural beliefs, which highlight the attainment of extrinsic life values as the path to well-being (e.g., the American Dream).

Basic psychological needs theory asserts that successful human development requires that we satisfy the three basic needs of autonomy, relatedness, and competence. Need satisfaction is associated with well-being, whether it is measured generally, contextually, or situationally. Need frustration is linked with ill-being and the development of psychopathology. Basic needs theory has emerged as the most popular mini-theory because it has strong implications for education, management, psychology, and even social policies, which should aim to ensure all three of these needs are met for general social well-being (Vansteenkiste, Ryan, & Soenens, 2020). Indeed, a recent article provided a list of several empirically validated techniques for enhancing the satisfaction of each of the three needs (Teixeira et al., 2020).

## Implications and Future Directions for COT

How can SDT researchers renew interest in COT? We believe the most important step is to clearly articulate how COT can contribute to current models of personality, such as McAdams's (2015) three-layer model of personality, which includes dispositional traits, characteristic adaptations, and narrative identity. McAdams argues that beyond dispositional traits, it is important to consider motives and values (and related constructs), and life stories as central components of personality, and ones that are more individuating than the Big Five traits. There are three successively emerging layers of personality development. He described his developmental theory of personality as follows:

> We begin life as social actors, endowed with the temperamental tendencies that will eventually morph into the dispositional traits that so strongly shape social performance while also comprising the first layer of personality. A second layer begins to take form in the elementary school years, when children become self-consciously motivated agents who set forth goals, projects, and value-driven programs for their lives, and direct their behavior

accordingly. As Layers 1 (dispositional traits; the self as actor) and 2 (personal goals and their motivational accoutrements; the self as agent) continue to develop over time, a third layer eventually emerges when the young adult confronts the identity challenges of his or her society and begins to author a narrative identity. As we move through adulthood, personality continues to develop, with life stories layered over goals and motives, which are layered over dispositional traits. (p. 25)

Causality orientations would most naturally fit into layer 2 of McAdams's model, characteristic adaptations which concern the self as a motivated agent. This layer of personality asks what people value, and it focuses attention on aspects of individuality that describe motivational and developmental challenges that are often contextualized by time, place, or social role. Characteristic adaptations are thought to appear in mid- to late childhood, and they may change notably over the life course.

Importantly, Olesen (2011) tested the overlap between causality orientations and the Big Five traits in a sample of Danish adults. Results indicated that all three causality orientations were distinct from but related to traits. Specifically, autonomy was positively associated with extroversion, agreeableness, and openness to experience; controlled orientation was negatively associated with agreeableness and openness to experience; the impersonal orientation was associated with neuroticism and low extroversion. Additionally, Olesen and colleagues (2015) found that autonomy orientation predicted subjective well-being beyond trait extroversion and neuroticism. Across both studies, Olesen concluded that from an integrative personality psychology perspective, general causality orientations can be conceived of as characteristic adaptations, which should be influenced by both dispositional traits and contingencies in psychosocial contexts.

It is also interesting to consider whether causality orientations fit into the third layer of McAdams's model of personality: life narrative. A recent longitudinal study suggests that it might be possible to assess an orientation toward autonomy in a person's narrative identity (Weinstein et al., 2019). Essays from the 1930s by participants in the Nun Study were coded for indicators of autonomy orientation. Specifically, the 176 essays were coded for the propensity for choice in action, susceptibility to pressure, self-reflection, integration of experiences, and parental support for autonomy. These coded variables were then used to predict age of death with linear regression. Choiceful behavior, self-reflection, and parent autonomy support were each found to predict longevity, suggesting that there are long-term health benefits associated with an autonomous causality orientation operationalized at the level of life narrative.

*Situating COT Squarely in the Currents of Modern Personality Psychology*
We encourage SDT researchers to strive to find a place for COT in resolving the important questions of modern personality research. For example, some of the most compelling questions in the research have concerned how various aspects of personality

develop and change over time. Such change can occur normatively as individuals move into new life stages (e.g., increases in young adults' level of agreeableness and conscientiousness reflect social maturity arising from assuming adult roles), or it may occur because of specific life experiences, such as having a first love or succeeding at a first job (Neyer & Lehnart, 2007; Lehnart, Neyer, & Eccles, 2010). There is evidence that psychotherapy and psychoeducation can result in lasting changes to the Big Five traits of extroversion and neuroticism. Most interesting, there is emerging evidence that volitional personality change can occur wherein individuals actively change their own personality traits (Hudson & Fraley, 2017; Moore et al., 2021). Another important longitudinal question pursued by personality psychologists is whether personality factors can be used to predict important life outcomes such as work achievement, marital success, and health outcomes. Roberts and colleagues (2007) showed that the Big Five traits can explain as much of the variance in these outcomes as socio-demographic and cognitive variables. Head-to-head comparisons or competitions for variance in major life outcomes have, so far, not included causality orientations, except for one study that found causality orientation was a greater predictor of well-being than extroversion and neuroticism when these individual-difference factors were directly compared (Olesen et al., 2015).

SDT researchers know relatively little about development and change in causality orientations. Sheldon and Salisbury (2017) found that controlled and impersonal orientations both decreased significantly over the four-year college career, reflecting the positive development that universities advertise. Interestingly, autonomy orientation increased only for those students who engaged in many extracurricular activities. The authors noted that these students were apparently going "beyond the classroom" for their education, an exploratory process that helped them to mature in ways that their peers did not.

We know of no studies that have explored the impact of specific life events on causality orientations; for example, has the uncertainty of the COVID-19 pandemic increased the impersonal orientation in many people? No one has yet explored whether volitional motivation change is possible regarding causality orientations; can someone who is control-motivated actively strive to become more autonomy-oriented? Perhaps SDT techniques used to generally enhance motivation and behavior change could lead to greater internalization and development of autonomy orientation over time (Teixeira et al., 2020).

An effort to examine development and change in causality orientations would be facilitated if the standard GCOS could be administered to younger populations, perhaps starting in elementary school. Interestingly, researchers have adapted and abbreviated the well-validated GCOS for use with people with severe mental disorders (GCOS-clinical populations; Cooper, Lavaysse, & Gard, 2015). The new scale includes only

eight scenarios, and the items are written in simple, everyday language that allows for easy comprehension. The scale showed excellent convergent and discriminant validity in university and psychiatric samples. We encourage researchers to test this scale with younger populations so that development of the causality orientations might be carefully examined. This efficient and easy-to-complete new scale may also be useful for research with older populations who suffer cognitive impairments. In elderly populations some preliminary evidence suggests that causality orientation can interact with support to predict health outcomes and further implicates the importance of studying COT across the lifespan (Souesme et al., 2020). Using life narratives may be another way to measure causality orientation across life stages and its impact on health and mortality (Weinstein et al., 2019).

## Conclusion

The present chapter argued that COT not only occupies an important place in the evolution of SDT, but it has also contributed toward our understanding of long-standing issues in personality psychology, such as the extent to which people's behavior is influenced by situational versus dispositional factors, as well as the correspondence between explicit and implicit motives. We explored the question of why COT has been neglected relative to the other mini-theories in SDT. We reviewed the historical shift toward context-specific motivation measures and the development of several brief measures of a general orientation toward autonomy (alternatives to the GCOS). We suggested that interest in causality orientations could be sparked by exploring the place of COT in current models of personality, such as McAdams's (2015) three-layer model. We encouraged researchers to use COT to explore questions regarding development and change in personality across the lifespan. Adoption of an abbreviated and easy-to-complete adaptation of the GCOS may facilitate research in this direction. An economical GCOS might also revive interest in assessing *all three* causality orientations, as was originally intended by Deci and Ryan (1985).

## References

Blais, M. R., Sabourin, S., Boucher, C., & Vallerand, R. J. (1990). Toward a motivational model of couple happiness. *Journal of Personality and Social Psychology*, *59*(5), 1021.

Blustein, D. L. (1988). The relation between motivational processes and career exploration. *Journal of Vocational Behavior*, *32*, 345–357.

Cooper, S., Lavaysse, L. M., & Gard, D. E. (2015). Assessing motivation orientations in schizophrenia: Scale development and validation. *Psychiatry Research*, *225*(1–2), 70–78.

Deci, E. L., & Ryan, R. M. (1985). The General Causality Orientations Scale: Self-determination in personality. *Journal of Research in Personality*, *19*, 109–134.

Gough, H., & Heilbrun, A. L. (1983*). The Revised Adjective Checklist Manual*. Consulting Psychologists Press.

Hagger, M. S., & Chatzisarantis, N. L. (2011). Causality orientations moderate the undermining effect of rewards on intrinsic motivation. *Journal of Experimental Social Psychology*, *47*(2), 485–489.

Hagger, M. S., & Hamilton, K. (2020). General causality orientations in self-determination theory: Meta-analysis and test of a process model. *European Journal of Personality*. doi:0890207020962330

Halvari, H., & Olafsen, A. (2020). Causality Orientations in the Work Setting: Scale development and validation. *Scandinavian Journal of Work and Organizational*

Hodgins, H. S., & Knee, C. R. (2002). The integrating self and conscious experience. In E. L. Deci &R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 87–100). University of Rochester Press.

Hodgins, H. S., Koestner, R., & Duncan, N. (1996). On the compatibility of autonomy and relatedness. *Personality and Social Psychology Bulletin*, 22, 227–237.

Hodgins, H. S., & Liebeskind, E. (2003). Apology versus defense: Antecedents and consequences. *Journal of Experimental Social Psychology*, *39*(4), 297–316.

Hodgins, H. S., Liebeskind, E., & Schwartz, W. (1996). Getting out of hot water: Facework in social predicaments. *Journal of Personality and Social Psychology*, *71*(2), 300.

Hope, N., Holding, A., Sheldon, K., Koestner, R. (2019). The path from intrinsic aspirations to well-being is mediated by changes in basic psychological need satisfaction and autonomous motivation: A large prospective test. *Motivation and Emotion*, *43*, 232–241.

Holding, A., & Koestner, R. (2020). The lifecycle of personal goals: A self-determination theory perspective. *The Oxford Handbook of Educational Psychology*, 400.

Hudson, N. W., & Fraley, R. C. (2017). Volitional personality change. In *Personality development across the lifespan* (pp. 555–571). Academic Press.

Knee, C. R., & Zuckerman, M. (1996). Causality orientations and the disappearance of the self-serving bias. *Journal of Research in Personality*, *30*(1), 76–87.

Koestner, R., Bernieri, R., & Zuckerman, M. (1992). Self-determination and consistency between attitudes, traits and behaviors. *Personality and Social Psychology Bulletin*, *18*, 52–59.

Koestner, R., Gingras, I., Abutaa, R., Losier, G. F., DiDio, L., & Gagné, M. (1999). To follow expert advice when making a decision: An examination of reactive versus reflective autonomy. *Journal of Personality*, *67*, 851–873.

Koestner, R., & Losier, G. (1996). Distinguishing reactive vs reflective autonomy. *Journal of Personality*, *64*, 465–494.

Legault, L., Ray, K., Hudgins, A., Pelosi, M., & Shannon, W. (2017). Assisted versus asserted autonomy satisfaction: Their unique associations with wellbeing, integration of experience, and conflict negotiation. *Motivation and Emotion*, *41*(1), 1–21.

Legault, L., Weinstein, N., Mitchell, J., Inzlicht, M., Pyke, K., & Upal, A. (2017). Owning up to negative ingroup traits: How personal autonomy promotes the integration of group identity. *Journal of Personality*, *85*(5), 687–701.

Lehnart, J., Neyer, F. J., & Eccles, J. (2010). Long-term effects of social investment: The case of partnering in young adulthood. *Journal of Personality*, *78*(2), 639–670.

Levine, S. L., Holding, A., Milyavskaya, M., Powers, T., & Koestner, R. (2020). Collaborative autonomy: The dynamic relations between goal autonomy and perceived autonomy support in emerging adulthood. *Motivation Science*, *6*, 306–320.

Levine, S. L., Milyavskaya, M., Powers, T. A., Holding, A. C., & Koestner, R. (2021). Autonomous motivation and support flourishes for individuals higher in collaborative personality factors: Agreeableness, assisted autonomy striving and secure attachment. *Journal of Personality*. doi:10.1111/jopy.12622

Martela, F., Bradshaw, E. L., & Ryan, R. M. (2019). Expanding the map of intrinsic and extrinsic aspirations using network analysis and multidimensional scaling: Examining four new aspirations. *Frontiers in Psychology*, *10*, 2174.

McClelland, D. C., Koestner, R., & Weinberger, J. (1989). How do self-attributed and implicit motives differ? *Psychological Review*, *96*(4), 690.

McAdams, D. P. (2015). *The art and science of personality development*. Guilford.

McAdams, D. P., & Pals, J. L. (2006). A new Big Five: Fundamental principles for an integrative science of personality. *American Psychologist*, *61*(3), 204.

Moore, A. M., Holding, A. C., Buchardt, L., & Koestner, R. (2021). On the efficacy of volitional personality change in young adulthood: Convergent evidence using a longitudinal personal goal paradigm. *Motivation and Emotion*, 1–15.

Murray, H. A. (1938). *Explorations in personality: A clinical and experimental study of fifty men of college age* Oxford University Press.

Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The path taken: Consequences of attaining intrinsic and extrinsic aspirations in post-college life. *Journal of Research in Personality, 43*(3), 291–306.

Neyer, F. J., & Lehnart, J. (2007). Relationships matter in personality development: Evidence from an 8-year longitudinal study across young adulthood. *Journal of Personality*, *75*, 535–568.

Olesen, M. H. (2011). General causality orientations are distinct from but related to dispositional traits. *Personality and Individual Differences*, *51*(4), 460–465.

Olesen, M. H., Thomsen, D. K., & O'Toole, M. S. (2015). Subjective well-being: Above neuroticism and extraversion, autonomy motivation matters. *Personality and Individual Differences*, *77*, 45–49.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., Tuson, K. M., Briere, N. M., & Blais, M. R. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale. *Journal of Sport and Exercise Psychology*, 17, 35–53.

Reeve, J., Jang, H. R., & Jang, H. (2018). Personality-based antecedents of teachers' autonomy-supportive and controlling motivating styles. *Learning and Individual Differences*, *62*, 12–22.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, *80*, 1–28.

Ryan, R. M. (1989). *The revised General Causality Orientations Scale*. Unpublished manuscript, University of Rochester.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*, 749–761.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Publications.

Scherhorn, G., & Grunert, S. C. (1988). Using the causality orientation concept in consumer behavior research. *Journal of Consumer Psychology*, *13*, 33–39.

Sheldon, K. M., & Salisbury, M. (2017). *Initial intrinsic values and extracurricular experiences best predict personality development during the college years*. Unpublished manuscript.

Souesme, G., Martinent, G., Akour, D., Giraudeau, C., & Ferrand, C. (2020). Causality orientations and supportive/controlled environment: Understanding their influence on basic needs, motivation for health and emotions in French hospitalized older adults. *Frontiers in Psychology*, *11*, 3463.

Teixeira, P. J., Marques, M. M., Silva, M. N., Brunet, J., Duda, J. L., Haerens, L., Laguardia, J. & Hagger, M. S. (2020). Classification of techniques used in self-determination theory-based interventions in health contexts: An expert consensus study. *Motivation Science*.

Thrash, T. M., & Elliot, A. J. (2002). Implicit and self-attributed achievement motives: Concordance and predictive validity. *Journal of Personality*, *70*(5), 729–756.

Thrash, T. M., Elliot, A. J., & Schultheiss, O. C. (2007). Methodological and dispositional predictors of congruence between implicit and explicit need for achievement. *Personality and Social Psychology Bulletin*, *33*(7), 961–974.

Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 271–360). Academic Press.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., &Vallieres, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, *52*, 1003–1017.

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, *44*(1), 1–31.

Weinstein, N., Deci, E. L., & Ryan, R. M. (2011). Motivational determinants of integrating positive and negative past identities. *Journal of Personality and Social Psychology*, *100*(3), 527.

Weinstein, N., Legate, N., Ryan, W. S., & Hemmy, L. (2019). Autonomous orientation predicts longevity: New findings from the Nun Study. *Journal of Personality*, *87*(2), 181–193.

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2012). The Index of Autonomous Functioning: Development of a scale of human autonomy. *Journal of Research in Personality*, *46*(4), 397–413.

Williams, G. C., Grow, V. M., Freedman, Z., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight loss maintenance. *Journal of Personality and Social Psychology*, *70*, 115–126.

Young, C. M., Neighbors, C., DiBello, A. M., Traylor, Z. K., & Tomkins, M. (2016). Shame and guilt-proneness as mediators of associations between general causality orientations and depressive symptoms. *Journal of Social and Clinical Psychology, 35*(5), 357–370.

Zuroff, D., Koestner, R., Moskowitz, D., McBride, C., Marshall, M., & Bagby, M. R. (2007). Autonomous motivation for therapy: A new common factor in brief treatments for depression. *Psychotherapy Research, 17*, 137–147.

# Causes, Costs, and Caveats: Reflections and Future Directions for Goal Contents Theory

Emma L. Bradshaw

## Abstract

Goal contents theory (GCT) is the fifth of SDT's mini-theories and describes the associations between the content of people's life aspirations and their well-being, the links between which are understood to be mediated by basic psychological need satisfactions and frustrations. Intrinsic aspirations—typically for personal growth, affiliation, community giving, and physical health—inherently satisfy basic psychological needs and, therefore, bolster wellness. Conversely, extrinsic aspirations—most commonly for wealth, fame, and beauty—do not directly satisfy needs and, in some cases, actively frustrate them, thus compromising well-being. This chapter reviews the eight basic propositions and evidence base of GCT, with an emphasis on recent investigations. It introduces seven additional "candidate" propositions, or ideas that have emerged in the GCT literature, the generalizability and universality of which remain to be comprehensively tested. The chapter concludes by detailing some caveats of which researchers should be cognizant, while highlighting important future directions for this universally relevant and highly reliable theory.

**Key Words:** strivings, values, prosocial, materialism, wellness, integrative span, autonomy support, self-determination theory

## Introduction

It has been three decades since the first studies underlying what would become self-determination theory's fifth mini-theory, goal contents theory (GCT), appeared (Kasser & Ryan, 1993). This early research and the subsequent tenets of GCT describe how people's life aspirations vary in the degree to which they are intrinsically or extrinsically oriented and show that intrinsic aspirations are typically better at fulfilling basic psychological needs and thus enhancing well-being (Kasser, 2002). Since that time research probing the theory's claims has been abundant. Cross-cultural evidence gathered since, in a variety of age groups, countries, and contexts, has broadly supported the claims of GCT.

It is perhaps not surprising that this research emerged when and where it did. During the 1980s the United States was epitomized by ambition, boldness, and big egos. Indeed, the period is often referred to as "the decade of materialism" (McKeage, 1992, p. 140).

After emerging from a recession at the start of the 1980s, inflation rates remained low in the United States, ushering in a capitalistic marketing and advertising boom. The resulting "culture of consumption" (Fox & Lears, 1983, p. x) was arguably driven in part by the increasing utility of television as an effective advertising medium, which led to an emphasis on money and things as symbols of success and status and, ultimately, paths to "the American dream" (Kasser & Ryan, 1993, p. 410). While many subscribed to the culture of consumption, there was a concurrent backlash against materialism. Public interest in conservation and the environment increased during the 1970s, reflected in the creation of both the Environmental Protection Agency and Greenpeace. Accordingly, by the 1980s and through to the early 1990s, people's self-transcendent and prosocial values had also grown (Dunlap & Mertig, 2014; Wray-Lake, Flanagan, & Osgood, 2010). Against the backdrop of these emerging and contrasting trends, in 1993 SDT began its account of what people value and strive for and the psychological impact of those strivings on individual wellness.

In addition to the social context of the time, some of the core concepts from SDT's preceding mini-theories pointed to the importance of addressing questions related to the *what* of striving and doing, in addition to the *why*. For example, from organismic integration theory we know that when behaviors are extrinsically motivated—as they often are—actions that are more relatively autonomous are of a higher quality and are more easily sustained (Ryan & Deci, 2017). Further, from basic psychological need theory (see Vansteenkiste, Soenens, & Ryan, this volume) we know that the reason increasingly autonomous forms of motivation contribute to preferable outcomes is because autonomous motivations are aligned with humans' organismic tendencies toward self-expansion and integration and support experiences of autonomy, competence, and relatedness (Ryan & Deci, 2017). Knitting these theoretical tenets together, one could conclude that an individual could strive for and be satisfied by the attainment of any potential goal, so long as it was need-fulfilling. Yet it is obvious too that people can embrace and succeed at goals that do not fulfill basic needs, suggesting that the content—the *what*—of one's aspirations may contain unique and meaningful information about the extent to which varied goal pursuits contribute to well-being.

Central to SDT's formulation of goals is the claim that focusing on materialistic, extrinsically oriented goals deters well-being insofar as such goals predominate over—or crowd out—more nonmaterialistic, intrinsic aspirations. This hypothesis hinges on several SDT-based propositions, each of which is now backed by a considerable evidence base:

*Proposition 1:* Intrinsic aspirations reflect humans' innate tendencies toward growth and integration with others and the environment and are manifest in goals related to personal growth, relationships, community contribution, and physical health, among others. Extrinsic aspirations focus on instrumental outcomes and are reflected in goals for wealth,

fame, and physical beauty, among others. These individual goals are thought to array along a continuum from intrinsic to extrinsic.

The first studies of intrinsic and extrinsic aspirations conceived of personal growth, affiliation, and community contribution as intrinsic goals, because their pursuit was thought to directly satisfy the three basic psychological needs (Kasser & Ryan, 1993). Physical health was later included as an intrinsic aspiration (Kasser & Ryan, 1996). Aspiring for financial success was considered the prototypical extrinsic aspiration, given its dependence on external inputs, but later aspirations for social recognition and an attractive appearance were also included (Kasser & Ryan, 1996). All seven aspirations have tended to be positively correlated because, regardless of their content, each captures a general striving component (Bradshaw et al., in press). However, within-category (i.e., intrinsic or extrinsic goal types) correlations are usually higher than cross-category correlations (Bradshaw et al., 2021), meaning the aspirations within each category are more alike than aspirations in the other. Also, factor analyses of the Aspiration Index reliably derive two factors (Kasser & Ryan, 1996), one intrinsic and one extrinsic, and circumplex modeling based on data from participants across 15 countries found that specific within-category aspirations are congruent with each other but are in conflict with cross-category aspirations (Grouzet et al., 2005). Taken together, these results suggest that the four intrinsic and three extrinsic aspirations reliably fit the theorized structure. However, the seven aspirations measured on this early Aspiration Index are by no means all-inclusive.

Inspired by Schwartz (1992), Grouzet et al. (2005) added safety, spirituality, hedonism, and conformity to their analysis of aspirations. Safety and, to a lesser extent, spirituality were found to be relatively intrinsic, while conformity was strongly extrinsic. Hedonism was positioned at the center of the intrinsic-extrinsic continuum, and together, the novel aspirations contributed to the appearance of an orthogonal axis that arrayed self-transcendent goals through to goals that were focused on the physical self.

More recently, Martela, Bradshaw, and Ryan (2019) further expanded the map of intrinsic and extrinsic aspirations by examining self-expression, mastery, and power goals. Martela et al. produced a circumplex model of aspirations that was very similar to that derived by Grouzet et al. (2005) and, consistent with expectations, found that self-expression and mastery were relatively intrinsic goals, while power was a strongly extrinsic aspiration. In addition to reproducing the circumplex model of aspirations and testing the intrinsic/extrinsic qualities of novel aspirations, Martela et al. (2019) also examined the structure of aspirations using multiple statistical methodologies. Each of the approaches reproduced the intrinsic/extrinsic dimension and the aspirations contained within each. In summary, the theorized structure of intrinsic and extrinsic aspirations is consistent across cultures, countries, and quantitative methods.

*Proposition 2:* A relative emphasis on intrinsic or extrinsic aspirations will have contrasting effects on individual well-being. A more intrinsic aspirational focus will benefit wellness, while focusing primarily on extrinsic aspirations will deter well-being and promote ill-being.

*Proposition 3:* The mechanism underpinning the differential links between intrinsic and extrinsic aspirations and well-being is the satisfaction and frustration of basic psychological needs. Intrinsic pursuits inherently satisfy basic psychological needs, thus boosting well-being. In contrast, extrinsic aspirations undermine need satisfactions and may actively frustrate psychological needs, thereby inducing ill-being.

Individual studies conducted across a wide variety of cultures, contexts, and age groups have provided support for the second proposition, finding that intrinsic aspirations predict the satisfaction of basic psychological needs and autonomous forms of motivation (Sibley & Bergman, 2018), as well as a wide variety of outcomes related to well-being, including meaning in life (Zhang, Chen, Chen, & Schlegel, 2019), life satisfaction (Martela et al., 2019), vitality (Unanue, Dittmar, Vignoles, & Vansteenkiste, 2014), mindfulness (Brown & Kasser, 2005), physical activity (Sebire, Standage, & Vansteenkiste, 2009), and pro-environment and prosocial behaviors (Fu, Liu, Yang, Zhang, & Kou, 2018; Unanue, Vignoles, Dittmar, & Vansteenkiste, 2016). Meanwhile, extrinsic aspirations are associated with controlled motivation (Jeno, Danielsen, & Raaheim, 2018), basic psychological need frustration (Bradshaw et al., 2021; Nishimura, Bradshaw, Deci, & Ryan, 2021), and numerous ill-being indicators across multiple countries and contexts (Kasser et al., 2014; Ryan et al., 1999; Schmuck, Kasser, & Ryan, 2000).

Beyond individual studies, cross-cultural meta-analyses have shown that intrinsic aspirations link positively to wellness (Bradshaw et al., in press) and that extrinsic aspirations weakly relate either positively or negatively to well-being (Bradshaw et al., in press; Dittmar, Bond, Hurst, & Kasser, 2014). Indeed, when the general "striving" element that is shared across intrinsic and extrinsic aspirations is taken out (by controlling for or subtracting the mean across all aspirations), extrinsic aspirations reliably link with outcomes in detrimental directions, and the effects are not meaningfully moderated by region (Bradshaw et al., in press). So, although some studies find positive correlations between extrinsic aspirations and well-being at the zero-order level (Bradshaw et al., 2021; Martela et al., 2019; Nishimura et al., 2021), at the meta-analytic level there appear to be few, if any, exceptions to the negative impact of focusing on materialistic goals at the cost of intrinsic ones (Bradshaw et al., in press).

Support for GCT's third proposition has also been demonstrated meta-analytically. Dittmar et al.'s (2014) meta-analysis of the effects of materialism found that poor satisfaction of each of the three basic psychological needs accounted in part for the negative link between extrinsic aspiring and well-being. However, claims of mediation are best tested using longitudinal data, which is pertinent to the fourth GCT proposition:

*Proposition 4:* Goal progress and achievement will be more psychologically beneficial if goals are primarily intrinsic rather than extrinsic in nature. These effects are also mediated by basic psychological need satisfaction.

Some evidence suggests that when people perceive their extrinsic aspirations as attainable, the negative association between extrinsic goals and well-being is attenuated (Bradshaw et al., in press). However, these results are based primarily on data collected at a single point in time. Where matters of future states, such as attainment, are concerned, data across multiple time points is necessary. In longitudinal data, Niemiec, Ryan, and Deci (2009) found that while intrinsic and extrinsic aspirers were equally likely to achieve their goals, only the attainment of intrinsic goals led to gains in well-being. More recently, evidence has suggested that people may be more likely to persist with and achieve intrinsic goals rather than extrinsic ones (Hope, Milyavskaya, Holding, & Koestner, 2016). Further, making progress on intrinsic goals leads to more zest for the goal(s) than does progress made on extrinsic aspirations (Hope et al., 2016).

When considered together, the evidence related to goal progress and attainment suggests that part of the reason intrinsic goals contribute to wellness is because they generate more enthusiasm and are therefore easier to pursue and achieve. In addition, GCT proposition 4 holds that the pursuit and attainment of intrinsic aspirations best serve wellness because intrinsic goals satisfy basic psychological needs. If someone aspires to have deep and meaningful relationships, striving for that goal will involve connecting to and engaging with others, which will likely boost relatedness. If someone strives to learn to play a musical instrument (i.e., a personal growth aspiration), choosing to practice and experiencing growth in the skill will result in autonomy and competence satisfactions. These boosts in basic psychological needs lead to wellness, thus accounting for the positive link between intrinsic striving and well-being.

Indeed, evidence supports the claim that the differential effects of intrinsic and extrinsic goal pursuit and progress are mediated largely by changes in basic psychological need satisfaction. Using a pooled longitudinal data set comprising five waves, Hope et al., (2019) found that a relative emphasis on intrinsic aspirations predicted later need satisfaction and, in so doing, also predicted future wellness. Relatively intrinsic goal striving is positively associated with more autonomous goal motivation, and in the pursuit of intrinsic goals individuals become more autonomously motivated over time. Together, basic psychological need satisfactions and autonomous motivation account for the prospective positive link between intrinsic striving and wellness.

*Proposition 5:* Experiences of control and basic psychological need frustration during development are conducive to the endorsement of extrinsic aspirations, which is related to compromised wellness.

Some environmental characteristics appear to contribute to the development of aspiration orientations. In particular, while individuals should be primarily drawn to aspirations that are intrinsically oriented (Kasser, 2002), under controlling conditions intrinsic motivation is undermined, prompting an orientation toward external rewards and recognition. Thus, controlling conditions that thwart basic psychological needs bolster extrinsic, materialistic striving, while autonomy-supportive conditions promote the development of healthier, nonmaterialistic aspirations. Autonomy support is thought to facilitate the internalization of healthy values, thereby promoting intrinsic aspiring. It is also likely that, rather than being unidirectional, autonomy support and intrinsic aspiring are synergistically and reciprocally linked (Jang, 2019; Jang & Reeve, 2021; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004).

The role of autonomy support and control in the development of aspiration orientations appears particularly robust in the parent-child dyad. From adolescence (Nishimura et al., 2021) through to early adulthood (Williams, Hedberg, Cox, & Deci, 2000), and across cultures (Lekes, Gingras, Philippe, Koestner, & Fang, 2010), parental autonomy support, warmth, and nurturance are linked with children's endorsement of healthy, intrinsically motivated values and aspirations (Kasser, Koestner, & Lekes, 2002; Kasser, Ryan, Zax, & Sameroff, 1995). Meanwhile, children's materialistic aspirations are related to cold, controlling parenting styles and anxious parental attachments, because people seek material things to supplant their insecure interpersonal bonds (Kasser et al., 2002; Norris, Lambert, DeWall, & Fincham, 2012).

*Proposition 6:* Goals framed in intrinsic terms will be more easily sustained and thus lead more readily to well-being than goals that are framed extrinsically.

Although aspirations are self-selected and personally maintained, there are many times in life when a goal may be set by someone else. The sixth GCT proposition holds that the terms in which goals are conveyed—or framed—affect the likelihood that the goal will be pursued, maintained, and ultimately lead to well-being. Specifically, goals framed using intrinsic language should conduce to autonomous motivation, and thus goal engagement, and subsequent wellness. Meanwhile, extrinsically framed goals should compromise autonomous motivation and frustrate basic psychological needs, undermining goal pursuit and well-being.

Alternative claims, based on expectancy-value theory, would suggest that intrinsic goals are more readily pursued only because they are usually rated as more important than extrinsic aspirations (Eccles & Wigfield, 2002). In other words, the amount—rather than the type—of value attached to a goal is what matters. By this logic, goals with an intrinsic *and* an extrinsic framing should press both people's intrinsic and extrinsic buttons, triggering the greatest overall amount of valuing and thus favorable outcomes. Similarly, an extrinsic goal framing should induce extrinsic valuing which should be better than no framing—and therefore no value induction. But evidence has not supported these expectancy-value-based

claims. Vansteenkiste, Lens, and Deci (2006) compared participants' learning for tasks framed intrinsically or extrinsically or framed in both terms simultaneously. Concordant with GCT, learners given the intrinsic goal-framing outperformed those for whom goals were given the simultaneous framing. Additionally, when goals were framed extrinsically, performance was undermined compared to the no-goal-framing condition. That is worth restating: to maximize performance, no goal framing is better than an extrinsic goal framing.

The theory supposes that intrinsically framed goals are more enthusiastically pursued and result in better outcomes because such a framing enhances autonomous motivation. Vansteenkiste, Simons, Soenens, and Lens (2004) randomly offered students either an intrinsic, extrinsic, or no-goal rationale for engaging in physical activity. When analyzed by condition, persistence was correlated with autonomous motivation only in the intrinsic goal framing condition. Similarly, Jang and Reeve (2021) found that when teachers were given intrinsic goals for teaching others (i.e., promote skill development in your students), they used more autonomy-supportive strategies compared to those in a neutral comparison condition (i.e., teach your students).

> *Proposition 7:* To the degree that a specific goal or aspiration satisfies basic psychological needs, so too will it contribute to well-being.

The dichotomous framing of intrinsic and extrinsic aspirations has proved fruitful for demonstrating that intrinsic aspirations best satisfy basic psychological needs and, in so doing, support individual wellness. However, aspirations that appear prosocial or materialistic could have a combination of intrinsic and extrinsic motivational foundations. A goal that appears manifestly extrinsic, for example, could have both intrinsic and extrinsic underpinnings. If an apparently extrinsic goal is driven by some intrinsic motives, its pursuit and attainment may contribute to, as opposed to detract from, basic psychological need satisfaction and therefore be beneficial.

For example, people tend not to think of acquisitiveness and profits as "good" for society (Bhattacharjee, Dana, & Baron, 2017). But of course, striving for and acquiring wealth are some of the most important ways people contribute to their communities. A successful local business can support the basic needs of multiple people and families (both physical and psychological). Even conglomerates—which are often demonized (Bhattacharjee et al., 2017)—provide individuals with vital incomes. (Working conditions are another matter.) Incomes stimulate local economies, and taxes on incomes provide government funding, thereby facilitating social services to those who need it most (in most of the democratized West, at least). In fact, wealth and safety aspirations are more closely associated in poorer countries than they are in wealthier countries (Kasser, 2016), suggesting that, for many, wealth is a matter of basic survival, not greed. For such individuals, striving for financial success may reflect intrinsic motivations such as protecting one's family. The pursuit of wealth for the purposes of supporting individuals and the

community would likely contribute to individuals' experiences of competence and relatedness, and may thus be less detrimental, or even beneficial, to wellness.

Similarly, wealth aspirations can also be motivated by benevolence. There is a small (but growing) contingent of people who are "earning to give" (Singer, 2015, p. 192). Motivated by altruism, those earning to give seek high wages from for-profit organizations and then donate the vast majority of their incomes to charities and nonprofits. Earning to give is an apt example of how an ostensibly materialistic aspiration can have truly intrinsic foundations. Conversely, behaviors that appear intrinsic or prosocial can be driven by extrinsic motives. For example, Griskevicius, Tybur, and Van den Bergh (2010, p. 392) activated participants' motivation for status, which resulted in their being more likely to desire ecofriendly "green" products.

Earning to give and Griskevicius et al.'s (2010, p. 392) link between status motives and "green" consumption are arguably examples of "pure and impure altruism" (Ottoni-Wilhelm, Vesterlund, & Xie, 2017, p. 3617), respectively. Pure altruism is wholly utilitarian. In the context of charitable donations, pure altruists give because they seek to increase the charity's output and the good that output does for others. Impure altruists are not entirely *un*utilitarian; rather, the donation is additionally motivated by some added benefit experienced by the donor, separate from the charitable recipient. As an example, in addition to status (Griskevicius et al., 2010), Andreoni (1989, p. 464) referred to the "warm glow"—or feeling of "goodness"—associated with giving as an impure altruistic motivation. In a similar vein, a profile analysis of the seven primary intrinsic and extrinsic aspirations revealed a group of "community aspirers" (Bradshaw et al., 2021, p. 252) for whom contributing to the community was of paramount importance. For the community aspirers, image aspirations were also above average, suggesting that people with an aspiration to make the world a better place may simultaneously strive to create and maintain a positive public image. Possibly, concurrent interests in giving to the community and bolstering one's image work in synergy to serve prosocial aims.

Within SDT, impure altruistic motives would likely represent more controlled forms of motivation (e.g., external regulation or introjection), whereas pure altruism would be relatively autonomous (e.g., regulated by identified value or value integration). This means specific aspirations could be multiply informed by motives that are more (or less) autonomous. To the degree that a goal is primarily intrinsically motivated (or more autonomously motivated), it will satisfy basic psychological needs, and it is via that pathway that all goals have the potential to enhance wellness, though some more than others.

*Proposition 8:* Increases in mindfulness will be accompanied by an increased focus on intrinsic aspirations because both support humans' integrative nature.

Given that intrinsic aspiring and mindfulness are psychological phenomena that support integrative functioning, it is intuitive that they be positively linked. Accordingly,

self-reported mindfulness tends to be positively correlated with importance ratings for the four specific intrinsic aspirations, and negatively correlated with the three extrinsic aspirations (Bradshaw et al., 2021). In addition, intervening on mindfulness has proved to be an effective means of lessening psychological states that conduce to extrinsic aspiring. Specifically, mindfulness training decreases the discrepancy between the amount of wealth people have and the amount they want (Brown, Kasser, Ryan, Linley, & Orzech, 2009). In other words, when given the skills to mindfully reflect on and attend to the present moment, people become happier with "their lot." Experiencing acceptance of and contentment with one's current circumstances allows people to orient toward healthy fulfilments rather than supplant unmet needs with material goods and external validation. Indeed, mindfulness equips individuals with a broad set of beneficial skills. When honed, mindfulness is reflected in enhanced self-regulation and improved awareness, both of which are considered—along with intrinsic goals—to be elements of full and healthy functioning (Ryan, Huta, & Deci, 2008).

## Candidate Propositions

As demonstrated above, the core GCT propositions have broad empirical support. Yet evidence also suggests that the relations between aspirations and individual wellness may be just the tip of the iceberg in terms of the light intrinsic and extrinsic values can shine on various aspects of experience. In particular, a growing evidence base suggests that the differential effects of relative intrinsic and extrinsic aspiring appear to "reach" considerably further than just the individual aspirer. One's own aspiration orientation appears transmissible to others, as may be the consequences of one's own aspirations. If focusing on materialistic or extrinsic pursuits negatively affects the individual aspirer as well as others, those consequences may extend to communities at large. By further examining the effects of individual aspiring on close others and perhaps even on groups and the wider community, GCT research may provide a gateway to understanding some of the essential questions of our time, including how to promote social cohesion, prosociality, and environmental awareness, in addition to individual wellness.

Given the costs of extrinsic aspiring to the self, and possibly to close others, communities, and the natural world, people should arguably be steered away from their extrinsically oriented foci. However, a number of questions follow from the possibility of intervening on people's aspiration orientations. For example, rather than affecting people's materialism later in life, can we stunt its initial development? Do we know *how* aspirations develop? Do we know how to reorient extrinsically oriented people toward healthier aspirations? Further to these questions about the development of intrinsic and extrinsic aspiring, greater specificity about the function and phenomenology of specific aspirations across individuals, groups, and communities would be useful. It seems that aspirations—for wealth in particular—may represent different things to different people across varying contexts (Grouzet et al., 2005; Kasser, 2016).

Next I expand on these questions regarding the causes and costs of intrinsic and extrinsic aspiring by way of outlining several novel candidate GCT propositions based on emerging evidence. Also discussed are some caveats of which researchers should be cognizant as we look to the future of GCT research.

## Causes of Aspirational Orientations

### The Contagion of Intrinsic and Extrinsic Aspiring

*Candidate Proposition 1:* Because individuals' aspirations are often observable, there will be some degree of "spread" or "contagion" of aspiration orientations in close relationships.

Despite the abundant evidence regarding the variables predicted by aspiration orientations (e.g., basic psychological need satisfaction, well-being, academic and work engagement, and more), we know relatively little about how aspiration orientations form and are shaped over time. Recent evidence attempting to address the dearth of information about the development of aspiration orientations has found that social environments play a role. In particular, there appear to be meaningful associations between one's own values and aspirations and those of close others, particularly in the family home (Henderson-King & Brooks, 2009; Kasser et al., 1995; Khanh, Van Luot, & Różycka-Tran, 2015; Moulton, Flouri, Joshi, & Sullivan, 2015; Nishimura et al., 2021). Whether parents and caregivers primarily endorse intrinsic or extrinsic aspirations, their children tend to aspire similarly: if one is materialistic, it is likely that one's parents and possibly close others are similarly inclined; likewise, if one contributes to the community and values relationships, one's parents and close others probably also aspire intrinsically.

The contagion of values in families is consistent with claims from SDT—among other theories—that humans grow to endorse ambient values (Grusec, 1997; Kuczynski, Marshall, & Schell, 1997; Nishimura et al., 2021). If individuals' behaviors are consistent with their values—which, evidence suggests, they often are (for a brief summary see Kasser, 2016)—it is sensible that those values are observable and therefore transmissible. Even when parents' intrinsic and extrinsic aspirations were not directly measured, behaviors consistent with materialism predicted child extrinsic aspiring. For example, mothers who seek popularity or whose own self-regard is contingent on their child's success tend to raise more extrinsically oriented children (Moulton et al., 2015; Soenens, Wuyts, Vansteenkiste, Mageau, & Brenning, 2015). Fathers may play a role too, though. For example, some research has found that appearance-focused dads have more extrinsically oriented kids (Henderson-King & Brooks, 2009).

Evidently, ambient aspirations tend to be mutually endorsed by individuals in familial and commonly shared environments. However, the degree of that endorsement may be affected by how authentically caregivers hold their own aspirations (Yu, Assor, & Liu,

2015). Effective communication of values and goals involves more than just conveying content. Individuals demonstrating goals to others need to consistently behave in ways that reflect the embodiment and full integration of the value, as well as show that its enactment is linked with a sense of innate worth and enjoyment (Assor, 2012). They need to walk the talk. Doing so allows others to observe the true merit of the goal or value, and thus autonomously select it for themselves. Within SDT, this type of goal communication is termed an *intrinsic* or *inherent value demonstration* (Assor, 2012; Assor et al., 2021; Yu et al., 2015).

Clearly, intrinsic goals should be more conducive to inherent value demonstrations than extrinsic aspirations because the pursuit of the former has innate merit. An inherent value demonstration of the importance of creating and maintaining close relationships would involve demonstrating care toward and enjoying time with others. One could attempt to convey the joy of valuing wealth by taking someone else shopping, but that is not a demonstration of the goal, it is a demonstration of one possible outcome of the goal. People appear quite sensitive to whether a goal or value is communicated in ways that are authentic and intrinsic versus when they are not. Even when the known role of perceived parental autonomy support is accounted for, inherent value demonstrations still promote healthy, authentic valuing in others (Yu et al., 2015).

> *Candidate Proposition 2:* To the degree that aspiration orientations are shared among close others, the differential consequences of intrinsic and extrinsic aspiring will also extend to close others, and possibly the broader community.

In addition to the contagion of aspiration orientations, the benefits and consequences of one's own intrinsic and extrinsic goals appear to extend to others (Leung & Law, 2019; Nishimura et al., 2021). On the one hand, this means that one's own intrinsic aspiring may boost the well-being of one's family and friends. On the other, it means that the deleterious effects of one's own relative extrinsic aspiring could deter the well-being of others. As people invest less time in their relationships and communities in favor of money and status, they experience less care and connectedness, but they also *convey* less relatedness, thus compromising others' wellness. Moreover, as I will discuss in more detail later, people's own extrinsic aspirations might also have far-reaching consequences for others because extrinsic strivings are associated with increases in antisocial behaviors such as aggression, social dominance, and Machiavellianism (Duriez, Vansteenkiste, Soenens, & De Witte, 2007; Kasser & Ryan, 1993, 1996; McHoskey, 1999; Roets, Van Hiel, & Cornelis, 2006).

## Indirect Sources of Aspiration Information

> *Candidate Proposition 3:* Ambient information of an intrinsic or extrinsic nature is positively associated with the endorsement of aspirations that are similarly oriented.

When it comes to the development of values, the socializing impact of parents and caregivers should not be underestimated. However, it would be remiss to conceive of caregivers as the only locus of information about values and goals. Values communicated in the media (Ashikali & Dittmar, 2012), in classrooms (Ku, Dittmar, & Banerjee, 2014), and in various other situations (Bauer, Wilkie, Kim, & Bodenhausen, 2012) also prime individuals' orientations toward life goals that are more (or less) materialistic. For example, exposure to advertising and admiration of celebrities are associated with materialistic values in children (Dávila, Casabayó, & Singh, 2017). Simply being primed to think of money can increase materialism and decrease interpersonal connectedness, prosociality, and warmth (Vohs, 2015), with analogous effects seen in children as young as five (Gasiorowska, Zaleskiewicz, & Wygrab, 2012).

Images of money and luxury goods (Bauer et al., 2012) clearly have a powerful ability to directly activate materialism, though an extrinsic focus can also be induced more implicitly. As Kasser (2016) outlines, semantic content such as being referred to as a "consumer" rather than a "citizen" can lead to values consistent with materialism (Bauer et al., 2012, p. 518), as can being primed to think of "time in terms of money" (Pfeffer & DeVoe, 2009, p. 500). The ease and subtlety with which materialism can be primed and activated is problematic not only because such an orientation is bad for individual well-being but because materialistic primes also lead people to act less healthfully (Vansteenkiste, Matos, Lens, & Soenens, 2007), to be less prosocial (Vohs, Mead, & Goode, 2006), and to hoard environmental resources (Bauer et al., 2012).

### Values Originate from the Self

> *Candidate Proposition 4:* Because intrinsic aspirations reflect need satisfactions, they will develop and emerge from within the person in a process called "value origination." Meanwhile, extrinsic aspirations develop primarily via direct transmission from external sources because they are often instrumental in focus and only indirectly satisfy needs, or sometimes actively induce need frustration.

The transmissibility of ambient values and the roles of autonomy support and control in the development of aspirations are examples of what SDT researchers refer to, respectively, as the *direct* and *indirect transmission* of values (Ahn & Reeve, 2020). The evidence reviewed above clearly indicates that the direct and indirect transmission of values takes place in the family home and beyond. However, a myopic focus on the evidence for direct and indirect transmission could imply that values emerge only as a function of socialization processes; positioning humans as blank canvases upon which the values of society are painted. In contrast, SDT contends that—under need-supportive conditions—values are not only transmitted to individuals but ideally emerge *from* individuals, in a process called *value origination* (Ahn & Reeve, 2020; Grolnick, Deci, & Ryan, 1997).

In theory, value origination is distinct from direct and indirect transmission because forms of "transmission" conceive of values as cognitive entities (Ahn & Reeve, 2020). Values can be transmitted because they are directly observed, and those values become internalized to a greater or lesser extent based on conditions of autonomy support and control. However, as individuals have consistent and ongoing experiences of autonomy, competence, and closeness with others, they more reliably express values consistent with those satisfactions. In contrast, when people's needs are chronically thwarted, they acquire less information about what actions and values are intrinsically beneficial to the self. In the absence of that information, need-thwarted individuals turn to external sources of worth to compensate for need satisfactions. Using a longitudinal sample comprising Korean children and their mothers, Ahn and Reeve demonstrated that preadolescents' intrinsic values develop according to the hypothesized value origination pathway, while extrinsic aspirations developed following direct transmission. Consistent with theory, these results suggest that healthy values reflect children's experiences of need satisfaction, while extrinsic aspirations do not.

### Intrinsic Aspiring, Integrative Span, and Wellness

*Candidate Proposition 5:* A pattern of relatively intrinsic aspirations, with an emphasis on community giving, is demonstrative of an expansive scope of concern for others or a wider integrative span. As integrative span grows, well-being increases.

Intrinsic aspirations are generally thought to be more other-oriented than extrinsic aspirations, which are often framed as being self-focused and egoistic (Kasser, 2002). Recently, it has been demonstrated that the degree, or breadth, of other-orientedness represented in patterns of aspiring may enhance the individual benefits of focusing on intrinsic goals (Bradshaw et al., 2021).

Profile analyses of the seven intrinsic and extrinsic aspirations—conducted using data provided by more than 11,000 individuals from three countries—found that there are three reliable patterns of aspiring. Across the three patterns, there was a progressive increase in aspirations for social connection: from a profile of people characterized by below-average aspirations for social connection (Profile 1), to a profile of individuals focused on connecting with family and close others (Profile 2), through to a profile typified by a higher interest in community relationships than closer interpersonal connections (Profile 3). These differences in the degree of other-interest were interpreted as representing expanding spheres of concern for increasingly distal others, or a broadening "integrative span" (Bradshaw et al., 2021, p. 251), from Profile 1 to Profile 3. Importantly, this research also demonstrated that people with a wider integrative span had more well-being. Even when the individual aspirations—which clearly have their own independent links to

well-being—were controlled for, people with the broadest integrative span (Profile 3) still had the most well-being. It seems that the wider our concern for people beyond ourselves, and beyond our closest family and friends, the better off we may be. Future research in this area might illuminate benefits for even broader spheres of concern. Beyond caring for people in our communities, caring for generations to come, nonhuman animals, and the natural world could also bolster well-being.

### Socio-demographic Predictors of Intrinsic and Extrinsic Aspiring

*Candidate Proposition 6:* Socioeconomic hardship is positively associated with extrinsic aspiring, because such circumstances frustrate basic psychological needs.

In addition to conditions of autonomy support and control, proximal aspirations, and ambient values, socio-demographic factors appear to play a role in people's intrinsic and extrinsic aspiring. Richins (2017, p. 480) refers to a cycle of materialistic aspiring called "the reinforcement model," in which people who are more materialistic are particularly susceptible to daily threats and frustrations and tend to lean on possessions to assuage resulting discomfort. Acquisitions do little to attenuate daily emotional and psychological vulnerabilities, and so the cycle repeats. This paradoxically reinforcing yet, ultimately, dissatisfactory cycle of materialistic aspiring may be particularly detrimental for individuals already experiencing socioeconomic disadvantage. For example, adults with materialistic values report having experienced more food insecurity during their youth (Allen & Wilson, 2005). Similarly, children exposed to divorce are more likely to be materialistic (Rindfleisch, Burroughs, & Denton, 1997), and in general, socioeconomic status tends to be negatively correlated with extrinsic aspiring: as financial security goes down, one's interest in material things goes up (Kasser et al., 1995).

Inglehart's (1981) definition of materialism may be pertinent to the link between economic hardship and extrinsic striving. Richins (2017) and Belk (1985) position materialistic and extrinsic striving as acquisitiveness for the sake of gaining external rewards and approval from others. Instead, Inglehart (1981) frames materialism in sociopolitical terms. By his definition, materialism is rooted in survival insecurity and doubt about economic stability. Across generations, if financial prosperity improves, people are thought to move into a postmaterialistic state which provides the freedom to focus primarily on values like self-expression and self-actualization. Arguably, the reinforcement model (Richins, 2017) and Inglehart's (1981) conceptions of materialism and postmaterialism can be explained according to SDT in terms of frustrated and satisfied basic psychological needs (Kasser & Ryan, 1993, 1996, 2001; Kasser, Ryan, Couchman, & Sheldon, 2004).

Experiences of need frustration lead individuals to seek the temporary satisfaction often experienced from the attainment of material goods. But, as we know, that satisfaction

is ephemeral and will generally not satisfy basic psychological needs over the long term, failing to provide a boost to individual wellness. Evidently, there is a triadic interplay of important variables at work in socioeconomically disadvantaged contexts: experiences of insecurity or threat frustrate basic psychological needs, and those experiences tend to be caused and/or exacerbated by social disadvantage, and both need frustration and social disadvantage are associated with a focus on materialistic aspirations. The interaction of these variables clearly has consequences for people's well-being, as well as costs that extend beyond them to their families and communities.

## Costs

### The Compounding Impact of Materialism in Disadvantaged Groups

*Candidate Proposition 7:* Low socioeconomic groups and people are especially susceptible to extrinsic aspiring and its consequences because of the interaction between materialistic aspirations, socioeconomic status, basic psychological need frustration, and antisociality.

People born into, or otherwise experiencing, low socioeconomic circumstances experience financial strain and, often, concerns about food security, familial instability, and physical safety (Allen & Wilson, 2005; Chen, Voisin, & Jacobson, 2016; McMahon et al., 2013; Voisin & Neilands, 2010). Clearly, these circumstances threaten basic psychological needs. Chronically thwarted basic psychological needs can also conduce to antisociality. The link between physical and psychological insecurity and antisociality is evident in low socioeconomic status communities. Poorer communities report low neighborhood involvement and are at increased risk of violence and gang activity (Chen et al., 2016; McMahon et al., 2013; Voisin & Neilands, 2010). Problematically, similar forms of aggression and antisociality are also associated with extrinsic aspiring (Duriez et al., 2007; Kasser & Ryan, 1993, 1996; McHoskey, 1999; Roets et al., 2006). Thus, antisociality becomes an additional node in the interaction of variables that predict materialistic aspirations: being of low socioeconomic status frustrates basic psychological needs; both low socioeconomic status and need frustration are associated with aggression and antisociality; and economic disadvantage, basic psychological need frustration, and antisociality all predict materialistic aspiring. In short, the circumstantial pressures that direct individuals' life goals in low socioeconomic status communities have the ability to both compound their own existing disadvantage and subsequent ill-being as well as compromise the welfare of other community members in the forms of physical and psychological harm.

Individuals' extrinsic life goals might also impact the well-being of others indirectly. Extrinsic life goals are related to overconsumption, the hoarding of resources, and less care for the environment (Joye, Bolderdijk, Köster, & Piff, 2020; Unanue et al., 2016). People with materialistic aspirations make more detrimental decisions for our already

fragile Earth, the cost of which may be paid by others now and into the future. In contrast, a focus on intrinsic aspirations appears to predict a host of prosocial values and behaviors (Fu et al., 2018; Sheldon & Kasser, 1995).

Future GCT research may be well served by assessing the degree to which aspirations act as mechanisms in the links between, for example, socioeconomic status and aggression. Ideally, the link between economic hardship and antisociality would be attenuated via the establishment of autonomy-supportive, basic psychological need-satisfying environments. However, as the evidence above suggests, the provision of such circumstances may be difficult in low socioeconomic status communities, given the variety of embedded situational pressures. In contrast, evidence suggests that aspiration orientations can be meaningfully affected using relatively brief interventions. For example, having experiences in nature has been shown to increase intrinsic aspiring (Joye et al., 2020; Weinstein et al., 2015; Weinstein, Przybylski, & Ryan, 2009). Moreover, simply being invited to conjure and reflect upon one's own intrinsic aspirations promotes future intrinsic aspiring (Lekes, Hope, Gouveia, Koestner, & Philippe, 2012), which, in turn, increases well-being. If aspiration orientations can be intervened upon with relative ease, they could be useful target mechanisms at the heart of some important causal links. Orienting individuals toward their intrinsic aspirations will satisfy basic psychological needs, facilitating value origination and future intrinsic aspiring, and likely reducing the incidence of antisociality. Thus the subsequent benefits of these interventions could be evident beyond individuals, to the level of groups and even whole communities.

## Summary

The very concept of intrinsic aspirations suggests they represent goals of inherent worth. Thus, as Kasser (2002) argued, humans should have a natural tendency to prioritize intrinsic aspirations. Reassuringly, the evidence suggests that, most often, they do; the organism is on its own side. However, popular culture and capitalism in general do not make it easy to live in ways that are consistent with intrinsic values. The message that money, beauty, power, and popularity are paths to joy is contagious, pervasive, and, often, rather compelling. Succumbing to the appeal of materialism can be costly for individuals, and it appears those costs reach close others and, possibly, the wider community. In short, the potential utility of elaborating upon GCT research could be substantial. Brief interventions can conduce to healthy aspiring. If these effects endure, short interventions to affect aspirations have the potential to reduce unhealthy aspiring and the ill-being associated with it, as well as improve family cohesion, increase people's use of autonomy support and their experiences of basic psychological need satisfaction, and diminish tendencies toward and exposure to antisociality and aggression. Subsequent benefits may be especially salient in disadvantaged communities, for whom the appeal and consequences of materialistic aspiring appear particularly potent.

After nearly three decades of research, the initial aim to demonstrate that prioritizing materialism forestalls happiness has been largely achieved. What could prove useful

in future research is an even deeper dive into the nuances of the theory. First, the specific aspirations could be examined in more detail across a variety of contexts. The various "mapping" strategies that have been used to model aspirations indicate that specific aspirations may have distinct meanings and outcomes in different groups. Second, the interface between GCT and other elements of SDT could also be expanded. Many theoretical links have been drawn between the mini-theories, which would benefit from quantitative, longitudinal exploration. Third, the ability of brief interventions to impact aspiring, and the benefits of so doing, should be examined. Exploring the possible benefits of these interventions may be useful to those in our communities who need it most.

It is incumbent upon scholars to seek answers to vital and universally relevant questions concerning the support of community harmony, the promotion of collaboration and cooperation across and within groups, the reduction of suffering in general and especially for disadvantaged groups and people, and how we might come together as a global population to save the future of Earth. My hope is that the evidence reviewed here demonstrates that GCT may be a useful framework for solving some of humanity's most important problems. Even if this claim seems audacious, I propose we choose to "go boldly" into future research.

## References

Ahn, J. S., & Reeve, J. (2020). Developmental pathways of preadolescents' intrinsic and extrinsic values: The role of basic psychological needs satisfaction. *European Journal of Personality*, *35*(2), 151–167. https://doi.org/10.1002/per.2274

Allen, M. W., & Wilson, M. (2005). Materialism and food security. *Appetite*, *45*(3), 314–323. https://doi.org/10.1016/j.appet.2005.06.005

Andreoni, J. (1989). Giving with impure altruism: Applications to charity and Ricardian equivalence. *Journal of Political Economy*, *97*(6), 1447–1458. https://doi.org/10.1086/261662

Ashikali, E. M., & Dittmar, H. (2012). The effect of priming materialism on women's responses to thin-ideal media. *British Journal of Social Psychology*, *51*(4), 514–533. https://doi.org/10.1111/j.2044-8309.2011.02020.x

Assor, A. (2012). Allowing choice and nurturing an inner compass: Educational practices supporting students' need for autonomy. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 421–439). Springer.

Assor, A., Benita, M., Shi, Y., Goren, R., Yitshaki, N., & Wang, Q. (2021). The Authentic Inner Compass as a well-being resource: Predictive effects on vitality, and relations with self-esteem, depression and behavioral self-realization. *Journal of Happiness Studies*, *22*, 3435–3455. https://doi.org/10.1007/s10902-021-00373-6

Bauer, M. A., Wilkie, J. E., Kim, J. K., & Bodenhausen, G. V. (2012). Cuing consumerism: Situational materialism undermines personal and social well-being. *Psychological Science*, *23*(5), 517–523. https://doi.org/10.1177/0956797611429579

Belk, R. W. (1985). Materialism: Trait aspects of living in the material world. *Journal of Consumer Research*, *12*(3), 265–280. https://doi.org/10.1086/208515

Bhattacharjee, A., Dana, J., & Baron, J. (2017). Anti-profit beliefs: How people neglect the societal benefits of profit. *Journal of Personality and Social Psychology*, *113*(5), 671–696. https://doi.org/10.1037/pspa0000093

Bradshaw, E. L. Conigrave, J. H., Steward, B. A., Ferber, K. A., Parker, P. D., & Ryan, R. M. (in press). A meta-analysis of the dark side of the American dream: Evidence for the universal wellness costs of prioritizing extrinsic over intrinsic goals. *Journal of Personality and Social Psychology*. https://doi.org/10.1037/pspp0000431

Bradshaw, E. L., Sahdra, B. K., Ciarrochi, J., Parker, P. D., Martos, T., & Ryan, R. M. (2021). A configural approach to aspirations: The social breadth of aspiration profiles predicts well-being over and above the intrinsic and extrinsic aspirations that comprise the profiles. *Journal of Personality and Social Psychology*, *120*(1), 226–256. https://doi.org/10.1037/pspp0000374

Brown, K. W., & Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Social Indicators Research*, *74*(2), 349–368. https://doi.org/10.1007/s11205-004-8207-8

Brown, K. W., Kasser, T., Ryan, R. M., Linley, P. A., & Orzech, K. (2009). When what one has is enough: Mindfulness, financial desire discrepancy, and subjective well-being. *Journal of Research in Personality*, *43*(5), 727–736. https://doi.org/10.1016/j.jrp.2009.07.002

Chen, P., Voisin, D. R., & Jacobson, K. C. (2016). Community violence exposure and adolescent delinquency: Examining a spectrum of promotive factors. *Youth & Society*, *48*(1), 33–57. https://doi.org/10.1177/0044118X13475827

Dávila, J. F., Casabayó, M., & Singh, J. J. (2017). A world beyond family: How external factors impact the level of materialism in children. *Journal of Consumer Affairs*, *51*(1), 162–182. https://doi.org/10.1111/joca.12103

Dittmar, H., Bond, R., Hurst, M., & Kasser, T. (2014). The relationship between materialism and personal well-being: A meta-analysis. *Journal of Personality and Social Psychology*, *107*(5), 879–924. https://doi.org/10.1037/a0037409

Dunlap, R. E., & Mertig, A. G. (2014). *American environmentalism: The US environmental movement, 1970–1990*. Taylor & Francis.

Duriez, B., Vansteenkiste, M., Soenens, B., & De Witte, H. (2007). The social costs of extrinsic relative to intrinsic goal pursuits: Their relation with social dominance and racial and ethnic prejudice. *Journal of Personality*, *75*(4), 757–782. https://doi.org/10.1111/j.1467-6494.2007.00456.x

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, *53*(1), 109–132. https://doi.org/10.1146/annurev.psych.53.100901.135153

Fox, R. W., & Lears, T. J. (1983). *The culture of consumption: Critical essays in American history, 1880–1980*. Pantheon.

Fu, X., Liu, X., Yang, Y., Zhang, M., & Kou, Y. (2018). The role of relative intrinsic aspirations in Chinese adolescents' prosocial behaviors. *Youth & Society*, *50*(1), 75–92. https://doi.org/10.1177/0044118X15588552

Gasiorowska, A., Zaleskiewicz, T., & Wygrab, S. (2012). Would you do something for me? The effects of money activation on social preferences and social behavior in young children. *Journal of Economic Psychology*, *33*(3), 603–608. https://doi.org/10.1016/j.joep.2011.11.007

Griskevicius, V., Tybur, J. M., & Van den Bergh, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology*, *98*(3), 392–404. https://doi.org/10.1037/a0017346

Grolnick, W. S., Deci, E. L., & Ryan, R. M. (1997). Internalization within the family: The self-determination theory perspective. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 135–161). John Wiley & Sons.

Grouzet, F. M., Kasser, T., Ahuvia, A., Dols, J. M. F., Kim, Y., Lau, S., Ryan, R. M., Saunders, S., Schmuck, P., & Sheldon, K. M. (2005). The structure of goal contents across 15 cultures. *Journal of Personality and Social Psychology*, *89*(5), 800–816. https://doi.org/10.1037/0022-3514.89.5.800

Grusec, J. E. (1997). A history of research on parenting strategies and children's internalization of values. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 3–22). Wiley.

Henderson-King, D., & Brooks, K. D. (2009). Materialism, sociocultural appearance messages, and paternal attitudes predict college women's attitudes about cosmetic surgery. *Psychology of Women Quarterly*, *33*(1), 133–142. https://doi.org/10.1111/j.1471-6402.2008.01480.x

Hope, N. H., Milyavskaya, M., Holding, A. C., & Koestner, R. (2016). The humble path to progress: Goal-specific aspirational content predicts goal progress and goal vitality. *Personality and Individual Differences*, *90*, 99–107. 10.1016/j.paid.2015.10.038

Hope, N. H., Holding, A. C., Verner-Filion, J., Sheldon, K. M., & Koestner, R. (2019). The path from intrinsic aspirations to subjective well-being is mediated by changes in basic psychological need satisfaction and autonomous motivation: A large prospective test. *Motivation and Emotion*, *43*(2), 232–241. https://doi.org/10.1007/s11031-018-9733-z

Inglehart, R. (1981). Post-materialism in an environment of insecurity. *American Political Science Review*, *75*(4), 880–900. https://doi.org/10.2307/1962290

Jang, H.-R. (2019). Teachers' intrinsic vs. extrinsic instructional goals predict their classroom motivating styles. *Learning and Instruction*, *60*, 286–300. https://doi.org/10.1016/j.learninstruc.2017.11.001

Jang, H.-R., & Reeve, J. (2021). Intrinsic instructional goal adoption increases autonomy-supportive teaching: A randomized control trial and intervention. *Learning and Instruction*, *73*, 101415. https://doi.org/10.1016/j.learninstruc.2020.101415

Jeno, L. M., Danielsen, A. G., & Raaheim, A. (2018). A prospective investigation of students' academic achievement and dropout in higher education: A self-determination theory approach. *Educational Psychology*, *38*(9), 1163–1184. https://doi.org/10.1080/01443410.2018.1502412

Joye, Y., Bolderdijk, J. W., Köster, M. A., & Piff, P. K. (2020). A diminishment of desire: Exposure to nature relative to urban environments dampens materialism. *Urban Forestry & Urban Greening*, *54*, 126783. https://doi.org/10.1016/j.ufug.2020.126783

Kasser, T. (2002). Sketches for a self-determination theory of values. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 123–140). University of Rochester Press.

Kasser, T. (2016). Materialistic values and goals. *Annual Review of Psychology*, *67*, 489–514. https://doi.org/10.1146/annurev-psych-122414-033344

Kasser, T., Koestner, R., & Lekes, N. (2002). Early family experiences and adult values: A 26-year, prospective longitudinal study. *Personality and Social Psychology Bulletin*, *28*(6), 826–835. https://doi.org/10.1177/0146167202289011

Kasser, T., Rosenblum, K. L., Sameroff, A. J., Deci, E. L., Niemiec, C. P., Ryan, R. M., Árnadóttir, O., Bond, R., Dittmar, H., Dungan, N. & Hawks, S. (2014). Changes in materialism, changes in psychological well-being: Evidence from three longitudinal studies and an intervention experiment. *Motivation and Emotion*, *38*(1), 1–22. https://doi.org/10.1007/s11031-013-9371-4

Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, *65*(2), 410–422. https://doi.org/10.1037/0022-3514.65.2.410

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*(3), 280–287. https://doi.org/10.1177/0146167296223006

Kasser, T., & Ryan, R. M. (2001). Be careful what you wish for: Optimal functioning and the relative attainment of intrinsic and extrinsic goals. In P. Schmuck & K. Sheldon (Eds.), *Life goals and well-being: Towards a positive psychology of human striving* (pp. 116–131). Pabst Science Publishers.

Kasser, T., Ryan, R. M., Couchman, C. E., & Sheldon, K. M. (2004). Materialistic values: Their causes and consequences. In T. Kasser & A. D. Kanner (Eds.), *Psychology and consumer culture: The struggle for a good life in a materialistic world* (Vol. 1, pp. 11–28). American Psychological Association.

Kasser, T., Ryan, R. M., Zax, M., & Sameroff, A. J. (1995). The relations of maternal and social environments to late adolescents' materialistic and prosocial values. *Developmental Psychology*, *31*(6), 907–914. https://doi.org/10.1037/0012-1649.31.6.907

Khanh, H., Van Luot, N., & Różycka-Tran, J. (2015). Similarities and differences in values between Vietnamese parents and adolescents. *Health Psychology Report*, *3*(4), 281–291. https://doi.org/10.5114/hpr.2015.51933

Ku, L., Dittmar, H., & Banerjee, R. (2014). To have or to learn? The effects of materialism on British and Chinese children's learning. *Journal of Personality and Social Psychology*, *106*(5), 803. https://doi.org/10.1037/a0036038

Kuczynski, L., Marshall, S., & Schell, K. (1997). Value socialization in a bidirectional context. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 23–50). John Wiley & Sons Inc.

Lekes, N., Gingras, I., Philippe, F. L., Koestner, R., & Fang, J. (2010). Parental autonomy-support, intrinsic life goals, and well-being among adolescents in China and North America. *Journal of Youth and Adolescence*, *39*(8), 858–869. https://doi.org/10.1007/s10964-009-9451-7

Lekes, N., Hope, N. H., Gouveia, L., Koestner, R., & Philippe, F. L. (2012). Influencing value priorities and increasing well-being: The effects of reflecting on intrinsic values. *Journal of Positive Psychology*, *7*(3), 249–261. https://doi.org/10.1080/17439760.2012.677468

Leung, A. N. M., & Law, W. (2019). Do extrinsic goals affect romantic relationships? The role of basic psychological need satisfaction. *Motivation and Emotion*, *43*(6), 857–873. https://doi.org/10.1007/s11031-019-09804-7

Martela, F., Bradshaw, E. L., & Ryan, R. M. (2019). Expanding the map of intrinsic and extrinsic aspirations using network analysis and multidimensional scaling: Examining four new aspirations. *Frontiers in Psychology*, *10*, 1–21. https://doi.org/10.3389/fpsyg.2019.02174

McHoskey, J. W. (1999). Machiavellianism, intrinsic versus extrinsic goals, and social interest: A self-determination theory analysis. *Motivation and Emotion*, *23*(4), 267–283. https://doi.org/10.1023/A:1021338809469

McKeage, K. K. R. (1992). Materialism and self-indulgences: Themes of materialism in self-gift giving. In F. W. Rudmin & M. L. Richins (Eds.), *Meaning, measure, and morality of materialism* (pp. 140–148). University of Massachusetts Press.

McMahon, S. D., Todd, N. R., Martinez, A., Coker, C., Sheu, C.-F., Washburn, J., & Shah, S. (2013). Aggressive and prosocial behavior: Community violence, cognitive, and behavioral predictors among urban African American youth. *American Journal of Community Psychology*, *51*(3–4), 407–421. https://doi.org/10.1007/s10464-012-9560-4

Moulton, V., Flouri, E., Joshi, H., & Sullivan, A. (2015). The role of aspirations in young children's emotional and behavioural problems. *British Educational Research Journal*, *41*(6), 925–946. https://doi.org/10.1002/berj.3188

Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The path taken: Consequences of attaining intrinsic and extrinsic aspirations in post-college life. *Journal of Research in Personality*, *43*(3), 291–306. https://doi.org/10.1016/j.jrp.2008.09.001

Nishimura, T., Bradshaw, E. L., Deci, E. L., & Ryan, R. M. (2021). Satisfaction of basic psychological needs in an interdependence model of fathers' own aspirations and those of their adolescent children. *Social Development*, *30*(1), 293–310. https://doi.org/10.1111/sode.12473

Norris, J. I., Lambert, N. M., DeWall, C. N., & Fincham, F. D. (2012). Can't buy me love? Anxious attachment and materialistic values. *Personality and Individual Differences*, *53*(5), 666–669. https://doi.org/10.1016/j.paid.2012.05.009

Ottoni-Wilhelm, M., Vesterlund, L., & Xie, H. (2017). Why do people give? Testing pure and impure altruism. *American Economic Review*, *107*(11), 3617–3633. https://doi.org/10.1257/aer.20141222

Pfeffer, J., & DeVoe, S. E. (2009). Economic evaluation: The effect of money and economics on attitudes about volunteering. *Journal of Economic Psychology*, *30*(3), 500–508. https://doi.org/10.1016/j.joep.2008.08.006

Richins, M. L. (2017). Materialism pathways: The processes that create and perpetuate materialism. *Journal of Consumer Psychology*, *27*(4), 480–499. https://doi.org/10.1016/j.jcps.2017.07.006

Rindfleisch, A., Burroughs, J. E., & Denton, F. (1997). Family structure, materialism, and compulsive consumption. *Journal of Consumer Research*, *23*(4), 312–325. https://doi.org/10.1086/209486

Roets, A., Van Hiel, A., & Cornelis, I. (2006). Does materialism predict racism? Materialism as a distinctive social attitude and a predictor of prejudice. *European Journal of Personality*, *20*(2), 155–168. https://doi.org/10.1002/per.573

Ryan, R. M., Chirkov, V. I., Little, T. D., Sheldon, K. M., Timoshina, E., & Deci, E. L. (1999). The American dream in Russia: Extrinsic aspirations and well-being in two cultures. *Personality and Social Psychology Bulletin*, *25*(12), 1509–1524. https://doi.org/10.1177/01461672992510007

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development and wellness*. Guilford Press.

Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies*, *9*, 139–170. doi:10.1007/s10902-006-9023-4

Schmuck, P., Kasser, T., & Ryan, R. M. (2000). Intrinsic and extrinsic goals: Their structure and relationship to well-being in German and US college students. *Social Indicators Research*, *50*(2), 225–241. https://doi.org/10.1023/A:1007084005278

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology*, *25*, 1–65. https://doi.org/10.1016/S0065-2601(08)60281-6

Sebire, S. J., Standage, M., & Vansteenkiste, M. (2009). Examining intrinsic versus extrinsic exercise goals: Cognitive, affective, and behavioral outcomes. *Journal of Sport and Exercise Psychology*, *31*(2), 189–210. https://doi.org/10.1123/jsep.31.2.189

Sheldon, K. M., & Kasser, T. (1995). Coherence and congruence: Two aspects of personality integration. *Journal of Personality and Social Psychology*, *68*(3), 531–543. https://doi.org/10.1037/0022-3514.68.3.531

Sibley, B. A., & Bergman, S. M. (2018). What keeps athletes in the gym? Goals, psychological needs, and motivation of CrossFit™ participants. *International Journal of Sport and Exercise Psychology*, *16*(5), 555–574. https://doi.org/10.1080/1612197X.2017.1280835

Singer, P. (2015). *The most good you can do: How effective altruism is changing ideas about living ethically*. Yale University Press.

Soenens, B., Wuyts, D., Vansteenkiste, M., Mageau, G. A., & Brenning, K. (2015). Raising trophy kids: The role of mothers' contingent self-esteem in maternal promotion of extrinsic goals. *Journal of Adolescence*, *42*, 40–49. https://doi.org/10.1016/j.adolescence.2015.04.001

Unanue, W., Dittmar, H., Vignoles, V. L., & Vansteenkiste, M. (2014). Materialism and well-being in the UK and Chile: Basic need satisfaction and basic need frustration as underlying psychological processes. *European Journal of Personality*, *28*(6), 569–585. doi:10.1002/per.1954

Unanue, W., Vignoles, V. L., Dittmar, H., & Vansteenkiste, M. (2016). Life goals predict environmental behavior: Cross-cultural and longitudinal evidence. *Journal of Environmental Psychology*, *46*, 10–22. https://doi.org/10.1016/j.jenvp.2016.02.001

Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist*, *41*(1), 19–31. https://doi.org/10.1207/s15326985ep4101_4

Vansteenkiste, M., Matos, L., Lens, W., & Soenens, B. (2007). Understanding the impact of intrinsic versus extrinsic goal framing on exercise performance: The conflicting role of task and ego involvement. *Psychology of Sport and Exercise*, *8*(5), 771–794. https://doi.org/10.1016/j.psychsport.2006.04.006

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology*, *87*(2), 246–260. https://doi.org/10.1037/0022-3514.87.2.246

Vansteenkiste, M., Simons, J., Soenens, B., & Lens, W. (2004). How to become a persevering exerciser? Providing a clear, future intrinsic goal in an autonomy-supportive way. *Journal of Sport and Exercise Psychology*, *26*(2), 232–249. https://doi.org/10.1123/jsep.26.2.232

Vohs, K. D. (2015). Money priming can change people's thoughts, feelings, motivations, and behaviors: An update on 10 years of experiments. *Journal of Experimental Psychology: General*, *144*(4), e86–e93. https://doi.org/10.1037/xge0000091

Vohs, K. D., Mead, N. L., & Goode, M. R. (2006). The psychological consequences of money. *Science*, *314*(5802), 1154–1156. https://doi.org/10.1126/science.1132491

Voisin, D. R., & Neilands, T. B. (2010). Community violence and health risk factors among adolescents on Chicago's Southside: Does gender matter? *Journal of Adolescent Health*, *46*(6), 600–602. https://doi.org/10.1016/j.jadohealth.2009.11.213

Weinstein, N., Balmford, A., Dehaan, C. R., Gladwell, V., Bradbury, R. B., & Amano, T. (2015). Seeing community for the trees: The links among contact with natural environments, community cohesion, and crime. *BioScience*, *65*(12), 1141–1153. https://doi.org/10.1093/biosci/biv151

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2009). Can nature make us more caring? Effects of immersion in nature on intrinsic aspirations and generosity. *Personality and Social Psychology Bulletin*, *35*(10), 1315–1329. https://doi.org/10.1177/0146167209341649q

Williams, G. C., Hedberg, V. A., Cox, E. M., & Deci, E. L. (2000). Extrinsic life goals and health-risk behaviors in adolescents. *Journal of Applied Social Psychology*, *30*(8), 1756–1771. https://doi.org/10.1111/j.1559-1816.2000.tb02466.x

Wray-Lake, L., Flanagan, C. A., & Osgood, D. W. (2010). Examining trends in adolescent environmental attitudes, beliefs, and behaviors across three decades. *Environment and Behavior*, *42*(1), 61–85. https://doi.org/10.1177/0013916509335163

Yu, S., Assor, A., & Liu, X. (2015). Perception of parents as demonstrating the inherent merit of their values: Relations with self-congruence and subjective well-being. *International Journal of Psychology*, *50*(1), 70–74. https://doi.org/10.1002/ijop.12074

Zhang, H., Chen, K., Chen, C., & Schlegel, R. (2019). Personal aspirations, person-environment fit, meaning in work, and meaning in life: A moderated mediation model. *Journal of Happiness Studies*, *20*(5), 1481–1497. https://doi.org/10.1007/s10902-018-0005-0

# Relationships Motivation Theory

C. Raymond Knee *and* Lindsay Browne

## Abstract

Although self-determination theory (SDT) originally emphasized individual well-being, it has also been described as a theory of optimal relationship development and functioning. SDT's sixth mini-theory, relationships motivation theory (RMT), elaborates the mutual roles of close relationships in supporting self-development, and how motivation can support the development of flourishing close relationships. This chapter examines how SDT's unique concepts of the continuum of self-determined motivation, basic psychological needs, and the noncontingent self offer a novel and integrative perspective on optimal relationship development. It first presents SDT's motivation continuum in the close relationships domain, then discusses the mutuality of basic psychological need fulfillment and frustration in close relationships, followed by an integration of these concepts with regard to internalization, identity, and true-self involvement, along with their downstream relationship dynamics and benefits. The chapter illustrates ways in which several major concepts and theoretical perspectives in the close relationships literature can be folded into RMT.

**Key Words:** close relationships, romantic relationships, motivation, self-determination, needs, true self, identity, dynamic, mutual, development

Although self-determination theory (SDT) originally emphasized individual well-being, it has also been described as a theory of optimal relationship development and functioning (Deci & Ryan, 2014; Knee et al., 2013; La Guardia & Patrick, 2008; Ryan & Deci, 2017). Indeed, SDT's sixth mini-theory, relationships motivation theory (RMT), elaborates the mutual roles of close relationships in supporting self-development and how motivation can support the development of flourishing close relationships. In this chapter, we examine how SDT's unique concepts of the continuum of self-determined motivation, basic psychological needs, and the noncontingent self offer a novel and integrative perspective on optimal relationship development. We first present SDT's motivation continuum in the close relationships domain. We then discuss the mutuality of basic psychological need fulfillment and frustration in close relationships, followed by an integration of these concepts with regard to internalization, identity, and true-self involvement, along with their downstream relationship dynamics and benefits. Finally, we illustrate ways in

which several major concepts and theoretical perspectives in the close relationships literature can be folded into RMT.

## The Motivation Continuum in Close Relationships

A key principle of SDT is that not all enacted behaviors are motivated by the true, authentic, core self. Behaviors can be placed along a regulation continuum, from those that are almost entirely not regulated by the true self to those that are almost entirely determined by the self. The distinction at the various levels concerns the degree to which the regulated behavior has become integrated. At the far end of the continuum, behaviors can lack intention, reflecting amotivation. These are behaviors for which people do not know why they do them—they just go through the motions. With regard to romantic relationships, for example, perhaps one does not know why one is in the relationship and there is no longer anything motivating one to remain in the relationship. At the next step, behaviors that are engaged because of threats, rewards, and demands are externally regulated. For example, perhaps one is in the relationship because important others have said how proud they are of one's relationship and one would not want to disappoint them. Behaviors that are enacted out of internal pressures and expectations are one step more internalized within the true self because the expectations are now largely "in one's head," but the origin of regulation still remains outside the true self. These "introjected" behaviors are enacted out of guilt or to satisfy ego-related concerns about one's image, popularity, or worth. For example, perhaps one would feel guilty and lose self-respect if one were not in the relationship, or perhaps one is in the relationship because it validates one's sense of self-worth.

Behaviors become more reflective and expressive of true self to the degree that they involve valuing and accepting the behavior as being important. For example, perhaps one is in the relationship because it allows one to fulfill chosen life goals and experiences. Behaviors can be further integrated into one's true self when they resonate with higher-order or overarching identities. For example, perhaps being in a romantic relationship is a key to eventually having a family, which is a higher goal. Finally, behaviors can be regulated by the true self in the fullest, most unobtrusive sense when the motivation for them is intrinsic, meaning that they are simply enjoyable and enacted only for the spontaneous positive feelings that are not separable from the behavior itself. For example, perhaps one is in the relationship because of the stimulating, exciting moments and experiences one has with the partner. One's motivation for being in the relationship would then be intrinsically motivated. Thus, according to SDT, not all forms of motivation for one's activities, including one's relationships, are equally satisfying or functional (Deci & Ryan, 2008). Indeed, a key proposition of RMT is that autonomous motivation contributes to the satisfaction and psychological wellness of both partners in the dyad. Further, those pursuits in which one can be more fully self-aware, self-expressive, and true-self-involved come with a number of advantages (Hodgins & Knee, 2002; Sheldon et al., 2004), and this includes investment in one's relationships (Deci & Ryan, 2014; Knee et al., 2013).

Self-determined motivation has been operationalized at various levels of abstraction: general disposition (such as trait autonomy); situational, domain-specific levels (such as relationship autonomy); and event-specific levels (autonomy with regard to a particular task). These levels can influence each other in predicting behavior (Vallerand, 1997). A growing body of research suggests that self-determined motivation is important for understanding the development and maintenance of optimal relationships, fostering positive outcomes for both oneself and one's partner (Knee et al., 2013; Ryan & Deci, 2017, Chapter 12). For instance, in one of the first investigations of relationship-specific autonomy, Blais et al. (1990) assessed couples' reasons for being in the relationship, their perceptions of agreement on a variety of issues, and their satisfaction in the relationship. Path analyses supported a model in which relative autonomy toward the relationship predicted perceived agreement, which in turn predicted relationship satisfaction for both men and women. Relationship motivation is also important at task levels of specificity. Gaine and La Guardia (2009) examined motivation toward specific relationship activities such as physical intimacy, self-disclosure, and social support. Results showed that motivation for specific relationship activities uniquely predicted relationship well-being beyond reasons for being in the relationship, which together accounted for 80% of the variance in relationship well-being.

Research has suggested at least two potential mechanisms between self-determined motivation and optimal relationship development. First, research has linked both trait-level autonomy and relationship-specific autonomy with more flexible, less defensive approaches to the relationship. This can be reflected in an openness and acceptance of differences, whether those differences come in the form of the qualities one seeks in an ideal partner or one's current partner's different perceptions and expectations of the relationship. For example, when one is dispositionally autonomy-oriented (Koestner & Levine, this volume), conflicts and differences in perspective become opportunities for learning and development rather than threats to one's self-concept. Knee et al. (2002) examined perceptions of current partners and ideal partners, and then videotaped couples during a semi-structured interview designed to emphasize differences in how partners view the relationship. Results showed that although people generally tended to prefer an ideal partner who was highly similar to themselves, this tendency was weaker when oriented toward autonomy. These more autonomously motivated individuals were more accepting of potential partner differences. Further, an autonomous orientation was associated with more relationship-maintaining coping strategies, less negative emotion, and more positive behaviors as determined by trained coders, whereas a less self-determined orientation was associated with more denial (Knee et al., 2002).

Self-determined motivation has also been shown to play a central role in how fulfillment of basic psychological needs regulates responses to daily relationship disagreements and conflicts. Patrick et al. (2007, Study 2) had individuals in romantic relationships report disagreements over a 10-day period. Disagreements were defined as involving at

least some discussion over a difference in opinion that includes some sort of interaction, including minor differences as well as major conflicts. Along with each disagreement, participants reported their levels of relationship satisfaction and commitment. Each person recorded an average of 5.43 disagreements (908 total) over the 10 days, averaging 21 minutes each. Multilevel modeling showed that those who had greater need fulfillment felt more satisfied and committed to their relationship after disagreements, relative to other participants, especially with regard to relatedness. However, self-determined motivation for the relationship mediated the association such that people whose basic needs were more fulfilled felt more intrinsically motivated to be in the relationship, and in turn felt more satisfied and more committed following disagreements, relative to other participants.

Relationship-specific autonomy is also associated with less defensive responses to relationship conflict. Knee et al. (2005) studied understanding and defensive coping responses to reported, daily experienced, and laboratory-induced conflicts in romantic relationships. First, diary data showed that trait autonomy, assessed by the Self-Determination Scale (Sheldon, Ryan, & Reis, 1996) predicted relationship autonomy, which in turn predicted relative satisfaction after disagreements. Second, trait autonomy predicted relationship autonomy, which was associated with less defensive and more understanding responses to conflict. Third, the partner's relationship autonomy uniquely predicted reported and observed behavior during conflict. Autonomous reasons for being in the relationship (of both self and partner) predicted both reported and observed responses to conflict and feelings of satisfaction. In other words, not only is one's own autonomy for being in a relationship associated with more understanding, less defensiveness, and higher satisfaction, but having one's partner autonomously motivated also contributes to one's own more positive relationship outcomes.

Additionally, evidence points to the causal role of autonomy in fostering open, non-defensive interactions. For example, Niemiec and Deci (2012) studied zero-acquaintance individuals whose task was to build a relationship. Participants were primed with autonomy (relative to two other conditions) using a scrambled sentence task and engaged in a self-disclosure task designed to increase intimacy. Results showed that autonomously primed individuals felt more satisfaction with the relationship, more positive affect, more relatedness need satisfaction, and greater well-being, and displayed greater behavioral closeness. We suggest that primed autonomy reduced people's anxiety and defensiveness toward the interaction and allowed them to openly express themselves and be open to each other, seeing the discussion as an opportunity to learn about their task partner and build a relationship.

A second mechanism by which self-determined motivations may facilitate optimal relationships is via pro-partner orientations. Specifically, according to RMT (Deci & Ryan, 2014; Knee et al., 2013; Ryan & Deci, 2017, Chapter 12), self-determined motivations promote interest in partners' perspectives and well-being and facilitate the energy and

desire to empathize with close others. In all, such an orientation should promote attention to and care for one's partner's needs, resulting in behaviors such as support provision and sacrifice that foster relationship development. For example, Weinstein, Hodgins, and Ryan (2010) primed autonomy in a portion of the participants using a scrambled sentences task, and then dyad members were videotaped as they jointly performed two tasks requiring creative thinking and persistence. Ratings of the interactions showed that dyads primed with autonomy were more emotionally and cognitively attuned to one another and more empathic with and encouraging of each other, thus indicating more care for their partner's needs and perspectives. Further, the dyads primed with autonomy were more engaged with the tasks, performed more effectively, and reported more closeness.

Relationship-specific autonomy is also associated with more support of partners (Hadden, Rodriguez et al., 2015). Hadden et al. examined whether relationship autonomy is associated with reports of general, daily, and partner-reported support provision that is attentive to a partner's needs. Relationship autonomy predicted being available to help one's partner, being encouraging of the partner's independent goal pursuits, and being emotionally responsive. Additionally, relationship autonomy was associated with less intrusiveness, suggesting that higher relationship autonomy is associated not with hypervigilance and being overbearing but simply with attention to the partner's needs. Relationship autonomy also predicted the partner's receipt of support for autonomy, competence, and relatedness.

Further evidence that self-determined motivation for being committed in one's relationship facilitates pro-relationship behaviors comes from Hadden, Baker, and Knee (2018). Four studies examined the degree to which self-determined relationship motivation was associated with the pro-relationship behaviors of forgiveness and accommodation in response to transgressions. Study 1 employed a cross-sectional design and found that self-determined relationship motivation predicted a greater tendency to forgive for both general and specific relationship transgressions. Further, with regard to accommodation, self-determined relationship motivation predicted fewer destructive responses of exit and neglect as well as the more active constructive response of voicing concerns. Associations between relationship motivation and transgression responses were significant beyond the known associations with commitment to the relationship. Study 2 employed a weekly diary design to test associations between relationship motivation and pro-relationship responses to everyday transgressions over five weeks. Multilevel models found that both weekly and averaged levels of relationship motivation predicted a greater tendency to forgive partners. These associations were also significant beyond the known predictive effect of commitment to the relationship. Studies 3 and 4 employed a dyadic design in which both relationship partners of a combined 475 couples were assessed on relationship motivation and pro-relationship responses to transgressions. Actor-partner interdependence models showed that one's own degree of forgiveness of and accommodation to transgressions was simultaneously predicted by one's own as well as one's partner's level

of self-determined relationship motivation. These associations remained when controlling for the effects of commitment to the relationship. Accordingly, although commitment to the relationship is already known to facilitate pro-relationship responses to transgressions, it is self-determined motivation (a specific kind of commitment) that uniquely predicts these beneficial behaviors, for both partners in a relationship.

Evidence also points to the benefits of task-specific motivation for caregiving. For instance, people feel more gracious toward a hypothetical helper if they think the helper was motivated to help for self-determined reasons (Weinstein, DeHaan, & Ryan, 2010). Within close relationships specifically, self-determined motivation for sacrificing for romantic partners is associated with reports of higher relationship quality by both the one who sacrificed and the partner (Patrick, 2007). We interpret these findings as suggesting that recipients of caregiving perceive that those with self-determined motivations to help genuinely care for the recipient, bolstering gratitude and relationship quality.

In sum, self-determined motivation in close relationships can be supported or frustrated at various levels: at the level of the individual, the situation or context of the relationship, and the unique interaction dynamic between the particular people in the particular context. At all levels, fulfillment of one's needs and self-determined motivations promote optimal relationships by reducing defensiveness and fostering pro-partner orientations.

## Mutuality of Basic Psychological Need Fulfillment

In SDT, needs specify psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being (Deci & Ryan, 2000). According to SDT, optimal psychological health and well-being emerge from the satisfaction of basic psychological needs for autonomy, competence, and relatedness. Need for autonomy reflects the need to feel that one's behavior is personally endorsed and initiated, reflecting one's true self. In a close relationship, this means being autonomously motivated to be involved in the relationship, being present and engaged with a partner volitionally, and feeling free to express who one truly is, without avoiding or concealing core aspects of oneself from that person.

Need for competence reflects the need to feel competent and effective at what one does. A broad literature has supported the importance of ongoing feelings of competence for optimal functioning and well-being (Bandura, 1977; Carver & Scheier, 1990; White, 1959). In a close relationship, this means feeling capable and effective when with the partner, having the ability to effectively express one's thoughts and needs, and feeling capable of negotiating challenges when they arise. Competence in close relationships is conceptually similar to relationship efficacy (Fincham, Harold, & Gano-Phillips, 2000; Lopez, Morua, & Rice, 2007).

Need for relatedness reflects the need to experience a sense of belonging, attachment, and intimacy with others (Deci & Ryan, 2000). Baumeister and Leary (1995) referred to this as the need to belong and reviewed extensive evidence on belongingness as a vital human motivation. Need for relatedness also derives from perspectives on intimacy

and closeness (Reis & Patrick, 1996). For example, Reis and Patrick defined intimacy in terms of reciprocal responsiveness to feeling understood, validated, and cared for; experiencing these ingredients of intimacy results in optimal psychological and relationship functioning.

Fulfillment of relatedness needs might seem most obviously important to optimal close relationships, given that it embodies intimacy, closeness, and connection. Indeed, of the three needs, relatedness fulfillment is the strongest predictor of relationship quality indicators such as satisfaction, closeness, and commitment, although autonomy and competence play significant and unique roles in predicting these indicators as well (Patrick et al., 2007). According to RMT, satisfaction of all three needs contributes to and defines high-quality relationships, whereas frustration of all three contributes to dysfunction, dissatisfaction, and ill-being. It is also important to note that needs for autonomy and relatedness, as defined by SDT, are complementary. Experiencing autonomy allows one to connect and relate authentically and meaningfully with close others and is associated with more positive and honest social interactions (Hodgins, Koestner, & Duncan, 1996; Koestner & Losier, 1996).

Support of these basic psychological needs facilitates development of self-determined motivation. Individuals' caregivers, romantic partners, teachers, friends, families, and larger social ties may provide ongoing support for these needs to varying degrees. These social supports, and individuals' negotiation among them for psychological need fulfillment, come to define the degree of self-determined motivation for activities and determine where one's behavior falls along the motivation continuum.

Empirical support for this process comes from studies indicating that, for example, people are more securely attached to and more likely to emotionally rely on those who meet their needs for autonomy, competence, and relatedness (La Guardia et al., 2000; Ryan et al., 2005) and that fulfillment of these psychological needs predicts general well-being (Reis et al., 2000; Sheldon et al., 1996), and relational well-being (Patrick et al., 2007). Additionally, individuals' perceptions that their friends support their autonomy strivings predict greater overall need satisfaction and positive relationship quality (Deci et al., 2006). Both partners' levels of need fulfillment uniquely predict one's own relationship functioning and well-being, attesting to the mutuality of need fulfillment (Patrick et al., 2007).

The mutuality of need fulfillment is an especially important dynamic in close relationships. A key proposition in RMT is that the greater the mutuality in autonomy support, the greater the relationship satisfaction, attachment security, and well-being of partners. The benefits of need fulfillment derive uniquely from both giving and receiving psychological need support. One of the first empirical investigations of this came from Deci et al. (2006), in which pairs of close friends reported the autonomy support they received, along with several dimensions of relationship quality. First, evidence emerged indicating that autonomy support was highly mutual between friends, such that when one friend

was more autonomy-supportive, their partner was more autonomy-supportive as well. Further, when the shared dyadic variance was partitioned into its components, it became clear that several aspects of relationship quality were predicted not merely by the degree of autonomy support received but also simultaneously and uniquely by the degree of autonomy support given. Thus, the degree of autonomy support received was significantly related to the degree of autonomy support given, and also to attachment security, emotional reliance, and dyadic adjustment. Further, giving autonomy support was positively related to nearly every measure of relationship quality and well-being in the study, and uniquely beyond the amount of autonomy support received.

Evidence of mutuality in psychological need support also emerged in Patrick et al. (2007). Study 1 examined how autonomy, competence, and relatedness need fulfillment in romantic relationships related to both individual and relationship well-being in several samples. Results showed that need fulfillment was associated with greater individual well-being (i.e., higher self-esteem, more positive affect, less negative affect, greater vitality), more secure attachment, better relationship quality, less perceived conflict, and more adaptive responses to conflict. Additional analyses indicated that, although each of the basic psychological needs contributed in different ways to the indicators of individual well-being, relatedness was the strongest unique predictor of well-being and relationship functioning. Study 2 focused specifically on the potential mutuality of need fulfillment in couples by gathering data from partners and employing the actor-partner interdependence model (Campbell & Kashy, 2002; Kashy & Kenny, 2000) to simultaneously estimate the role of both partners' need fulfillment in relationship functioning and well-being. Results indicated that the benefits of need fulfillment, especially with regard to relationship functioning and well-being, are not limited to one's own need fulfillment but carry over to one's partner as well. Thus, one's own relationship satisfaction, commitment, perceived conflict, and defensive responses to conflict were simultaneously and uniquely predicted by one's own need fulfillment as well as the partner's need fulfillment. Further evidence of mutuality emerged in that levels of relatedness interacted such that individuals experienced better relationships in terms of greater satisfaction, less perceived conflict, and less defensive responses to conflict when both partners were higher in relatedness.

Recent evidence suggests that the benefits of giving and receiving need support extend even to the close relationship we have with our pets. Kanat-Maymon et al. (2021) surveyed dog-owners for 21 days, recording psychological need support given and received, along with well-being, distress, and closeness. Multilevel models showed that receiving need support from one's dog contributed favorably to all three outcomes. Importantly, giving need support to the dog independently contributed to all three outcomes as well, beyond the support received. Thus, when it comes to the benefits of mutual need fulfillment, it seems that the term "close other" generalizes beyond the more typical human-human relationships.

For close relationships, this mutual psychological need fulfillment perspective suggests that optimal close relationships involve more than simply feeling satisfied. Relational well-being is thought to emerge when the relationship dynamic supports the basic needs of both partners, promoting autonomous motivation for being in the relationship, which in turn facilitates how the couple approaches and manages threats, disagreements, and conflicts and promotes understanding, nondefensiveness, and partner support. Fulfillment of basic needs promotes self-determined motivation and true-self involvement, and these are what allow optimal relationship development and more effective relationship mechanisms and processes.

### The True Self in Close Relationships

A key proposition of RMT is that autonomy support facilitates authenticity and true-self expression. When basic psychological needs for autonomy, competence, and relatedness are fulfilled over time, an authentic, noncontingent, optimal sense of self-esteem that is based on "being who one is rather than what one does" is promoted (Hodgins, 2008). When these basic psychological needs are thwarted over time, a defensive, contingent, suboptimal sense of self-esteem evolves. There is more to self-esteem than whether it is simply high or low (Kernis, Granneman, & Barclay, 1989). For example, research on stability of self-esteem has shown that people with high self-esteem that is unstable over time are more angry and aggressive than people with low self-esteem (Kernis & Waschull, 1995; see Kernis, 2003 for review). Self-esteem that is unstable over time is likely to be contingent (Deci & Ryan, 1995), which refers to feelings about oneself that result from and are dependent on matching standards or living up to expectations (of either oneself or others). As articulated by Deci and Ryan, contingent self-esteem has one "anxiously focused on one's own agenda, whether that agenda is being feminine, famous, fashionable, fabulously wealthy, or far out" (p. 32).

The pursuit of self-esteem for its own sake is thought to be harmful for the creation and maintenance of close relationships, mainly because focusing on outcomes for oneself interferes with the ability to focus on the needs of others (for reviews, see Crocker & Park, 2004; Park, Crocker, & Vohs, 2006). It can also lead to behaviors that lead others to distance themselves and thus undermine close relationships. For example, individuals are less supportive toward partners when they receive negative feedback only if their self-esteem is tied to the feedback (Park & Crocker, 2005), and this process tends to lead to expectations and heightened sensitivity to rejection (Downey & Feldman, 1996). In contrast to the benefits of noncontingent self-esteem, when self-worth is contingent within a particular domain, success or failure in that domain, or even cues that might imply success or failure, can result in intense affect and extreme fluctuations in self-esteem that carry over to evaluations of the self as "good" or "bad." In relationship-contingent self-esteem, one's self-esteem is closely tied to one's success or failure in one's romantic relationship (Knee et al., 2008). When higher in relationship-contingent self-esteem, one is more reactive in

response to disagreements and conflicts, even small, insignificant ones, because of what those events imply about the self. In some cases of relationship-contingent self-esteem, the perceived value of being in that relationship with that partner becomes glorified evidence of one's worth as a person.

One reason that self-determination is useful in understanding contingent or noncontingent self-esteem is the theory's ability to explain why contingencies develop. Essentially, need fulfillment supports autonomous motivations in which people engage in activities for their own sake, trusting that their needs will be met, whereas a lack of need fulfillment produces behavior driven by contingencies and acting in controlled ways. Thus relationship-contingent self-esteem is thought to partly derive from a lack of autonomy and personal endorsement of one's involvement in the relationship, a lack of feeling competent in one's relationship, and a lack of feeling genuinely validated, cared for, and understood by one's partner. When these three basic needs are thwarted, one becomes defensive in relationship interactions as one's sense of worth is threatened by negative evaluation and feedback (Patrick et al., 2007).

Support for these notions comes from four studies conducted by Knee and his colleagues (2008) that assessed relationship-contingent self-esteem and examined daily reports of emotions and self-esteem over time as a function of positive and negative events in the relationship. Study 1 found that people who were higher in relationship-contingent self-esteem were also higher in other domains of contingent self-esteem, self-consciousness, social anxiety, attachment anxiety, manic and selfless love styles, and negative affect, and tended to view situations as more controlling and hopeless. Studies 2 and 3 employed an event-contingent diary procedure to examine reports of self-esteem as a function of everyday relationship events. Results showed a stronger association between the valence of relationship events (positive versus negative) and changes in daily self-esteem, among those higher in relationship-contingent self-esteem. In other words, when one's self-esteem is highly contingent on the relationship, one's self-esteem fluctuates more wildly with daily positive and negative relationship experiences. When self-esteem is contingent on one's relationship, emotions related to those events and outcomes are experienced *reflex*ively, without much intention and volition, rather than *reflect*ively and, in turn, can carry over to affect one's view of oneself as "good" or "bad." This is not to imply that some moderate amount of relationship-contingent self-esteem is a good thing. To the contrary, no evidence emerged for quadratic associations with outcomes such that a moderate amount would be associated with benefits whereas too little or too much would predict detriments (Knee et al., 2008). We also do not suggest that the essential problem with contingent self-esteem is overgeneralization of negative outcomes that carry over to influence self-worth. Rather, the issue is that contingent self-esteem has one focused on one's own agenda, and the outcomes become all that matters rather than the process of relating and connecting interdependently in a manner that is mutually need-fulfilling.

The interpersonal dynamics that evolve when relatedness is fulfilled in the absence of autonomy can go beyond merely having one's self-esteem contingent on one's relationship. One of RMT's propositions is that when basic needs are turned against each other, poorer relationship quality and wellness result. For example, conditional regard refers to the belief that the regard of another person depends on whether one complies with the other's expectations (Assor, Roth, & Deci, 2004). This concept was further differentiated into conditional positive regard and conditional negative regard (Kanat-Maymon, Argaman, & Roth, 2017). Conditional positive regard involves showing much more affection and acceptance than usual only when the partner fulfills a particular expectation; conditional negative regard is akin to love withdrawal.

Whereas the negative consequences of conditional positive and negative regard have been well-established in parent-child relationships (Assor, Kanat-Maymon, & Roth, 2014), more recent research has examined romantic relationships as well. In three studies, Kanat-Maymon, Roth, Assor, and Raizer (2016) tested whether conditional positive regard impairs relationship quality by undermining fulfillment of autonomy. Across studies, conditional positive regard predicted poorer relationship quality between different types of relationships, between people, and between dyadic partners. Studies 2 and 3 specifically examined need fulfillment as a potential mediator of these associations and found evidence that dissatisfaction of autonomy (and not relatedness) was responsible for the effects. The findings from a study employing a daily diary design were more nuanced (Kanat-Maymon & Roth, 2017). The study examined both conditional negative and positive regard in relation to romantic relationship satisfaction. Multilevel analyses found that both conditional positive and negative regard predicted lower relationship satisfaction at the between-person level. However, at the within-person level, conditional positive regard was positively linked to daily satisfaction, whereas conditional negative regard was negatively linked. The authors inferred that conditional positive regard may be satisfying in the short term, but controlling and undermining in the long term.

The research on relationship-contingent self-esteem and conditional regard makes it clear that all forms of relatedness fulfillment are not equal. When relatedness is accompanied by the thwarting of one's autonomy, such as when love and caring come with the cost of stifling one's true self and feelings, then relational well-being and functioning will likely suffer. Ideally, relatedness fulfillment can be simultaneously accompanied by the recognition, appreciation, and support of one's autonomous self. Even though fulfillment of relatedness is the most obvious essential component in the relational domain, research has clearly shown support for the unique contributions of all three basic psychological needs (Patrick et al., 2007). Recent evidence suggests that the dynamics of need fulfillment may even go beyond simple additive contributions. In three studies, Kluwer et al. (2020) examined potential interaction between relatedness and autonomy fulfillment with regard to reports of pro-relationship behaviors such as voicing relationship concerns when they arise. They reasoned that partners are more motivated and capable of

relationship maintenance when they feel related to their partner and, at the same time, maintain a sense of autonomy. The first two samples examined cross-sectional associations between reported need fulfillment and accommodation tendencies, defined as the ability to react constructively rather than destructively to a partner's negative behavior. Results showed that relatedness was positively associated with greater accommodation, but especially (or only) when participants reported higher, relative to lower, autonomy. In the third sample, autonomy was experimentally manipulated by randomly assigning people to write about either (1) when their relationship made them feel authentic and able to express their true self or (2) when their relationship made them feel controlled and unable to express their true self. Results showed that the association between relatedness and greater accommodation was stronger in the autonomy condition than in the controlled condition, primarily with regard to voicing concerns about the relationship when they arise. Across studies, these interactions between relatedness and autonomy were mediated by differentiation, a concept from family systems theory, defined as the ability to balance the drive for togetherness with the drive for individuality (Schnarch, 1997). Thus, the combination of higher relatedness and higher autonomy seems especially beneficial for responding more constructively to negative partner behavior.

**Expressing as opposed to concealing one's true self also has important health implications.** Concealing distressing or negative aspects of oneself can have negative effects on health and well-being over time (Kelly, 2002). Uysal, Lin, and Knee (2010) reasoned that this may in large part be due to reduced opportunities for receiving autonomy, competence, and relatedness support from close others. In two studies, they found support for mediation models in which self-concealment predicted the thwarting of basic needs for autonomy, competence, and relatedness, which then resulted in negative psychological outcomes. Importantly, results emerged at both between- and within-person levels, suggesting a similar process for both trait tendencies to self-conceal as well as daily variations in self-concealment across social interactions. Uysal and his colleagues (2012) examined these processes in romantic relationships as well. In Study 1, self-concealment from one's partner was associated with lower relationship satisfaction and commitment, and this link was mediated by autonomy and relatedness needs. In Study 2, couples completed records for 14 days. Multilevel analyses indicated that daily self-concealment from one's partner was associated with lower daily relationship satisfaction, commitment, and greater conflict. Lagged analyses also showed that self-concealment from one's partner predicted lower relationship well-being on the following day. Moreover, thwarted basic needs mediated the association between daily self-concealment and relationship well-being. Actor-partner interdependence models over time indicated that, apart from one's own self-concealment, one's partner's self-concealment was associated negatively with one's own relationship well-being.

When relational environments are perceived as autonomy-supportive, people are more likely to experience and express their true identity (Ryan & Deci, 2017; Ryan &

Ryan, 2019). In contrast, when relational environments are perceived as controlling and judgmental, people are more likely to conceal their true self and selectively express and present what they feel will be accepted (Legate, Ryan, & Weinstein, 2012). Being oneself can be especially challenging for those in stigmatized relationships. Legate, Ryan, and Rogge (2017) had lesbian, gay, and bisexual individuals report on their social interactions several times a day over a two-week period. Multilevel models revealed several important findings, clarifying and integrating prior research on the benefits and detriments of being open with others about one's sexual identity. First, variability in disclosure was related to greater psychological well-being and fewer physical symptoms, suggesting that selective self-expression can have benefits. Importantly, perceiving autonomy support in social interactions predicted more disclosure, which in turn predicted greater need satisfaction and well-being and fewer symptoms. Thus, daily disclosure opportunities come with the potential for greater need satisfaction, health, and well-being, but not all relational environments are equally supportive of such self-expression and accompanying benefits.

## Integrating RMT with Existing Close Relationship Theories and Dynamics

SDT's perspective on self-determined motivation for behaviors, mutual basic psychological need fulfillment, and the importance of true-self involvement can be integrated with a number of major relationship theories, concepts, and mechanisms that have been shown to promote satisfying, lasting, close relationships. We discuss a mere sampling of those major theories and perspectives here, with an emphasis on what is similar and what is unique about RMT.

### Attachment Theory

One of the most widely investigated theories on close relationships is attachment theory (Bowlby, 1969; Mikulincer & Shaver, 2007), which considers felt security a key factor in the development of harmonious, stable relationships. Attachment theory (Bowlby, 1969) incorporates situational, individual, and interactional influences on the development of felt security in relation to close others. Its concept of working models explains how past relational experiences become incorporated into the person cognitively and emotionally and, in turn, guide and influence relationship experiences. SDT's emphasis on the fundamental need for relatedness dovetails with the attachment view, but as Ryan, Brown, and Creswell (2007) pointed out, SDT sees high-quality relatedness as entailing more than security and safe haven in terms of active facilitation and care for the self or the other in the form of autonomy support. In this way, SDT is closer to the view of Winnicott (1965) than of Bowlby (1969), both British "object relations" theorists. Whereas attachment theory has traditionally emphasized felt security and responsiveness, especially in times of stress, Winnicott's emphasis was on active autonomy support in facilitating self-development and relatedness. That said, later attachment theorists stressed that *sensitivity*, defined as contingent, autonomy-supportive responsiveness to signals, is crucial to

security (e.g., Bretherton, 1987). Notably, recent work in adult relationships similarly suggests that felt security emerges from interpersonal support that promotes opportunities for growth and exploration (Feeney & Collins, 2015). Specifically, in addition to providing a "safe haven" for romantic partners, in which one is responsive during stressful times, romantic partners can promote security by providing a "secure base," in which they help partners to flourish and explore by, first, being available when their partner needs help and, second, by encouraging partners to pursue personal goals and not interfering with such goal pursuits (Feeney & Collins, 2015; Feeney & Thrush, 2010).

Thus, although secure base support and psychological need support arise from distinct theories, there is considerable overlap between constructs. First, both RMT and attachment theory emphasize the partner's role in promoting growth and development (Knee et al., 2013; Ryan & Deci, 2017). Further, central to both perspectives is the notion that partners can encourage growth by supporting feelings of connectedness while not being overbearing or intrusive. That is, individuals should be available for romantic partners should they seek help, but optimal growth comes when individuals also simultaneously provide autonomy support by not interfering and undermining the partner's confidence (Feeney & Collins, 2015).

In this sense, RMT posits that all three basic psychological needs likely determine levels of felt security and qualities of attachment to close others. Indeed, research has shown that people are more securely attached to those who support and fulfill their basic psychological needs for autonomy, competence, and relatedness (La Guardia et al., 2000). Specifically, La Guardia and her colleagues examined the attachment security and need fulfillment of individuals across multiple close relationship partners. They predicted that, unlike some trait conceptions of attachment styles, there would be considerable variability in security of attachment across relationship partners. They expected that the degree of need fulfillment with each particular close other would predict significant variance in attachment security. Beyond relatedness need satisfaction, autonomy and competence fulfillment uniquely predicted variance in attachment security. Thus there is evidence that relationships that are experienced as fulfilling autonomy, competence, and relatedness needs result in felt security, as RMT would suggest.

Need satisfaction has been associated with secure attachment; alternatively, attachment anxiety can lead to situations in which one's needs are not fulfilled. For example, Slotter and Finkel (2009) investigated attachment anxiety and need fulfillment as predictors of commitment. In two studies, they found an interaction between attachment anxiety and fulfillment of autonomy and relatedness needs in predicting commitment. Whether attachment anxiety was primed experimentally or assessed as a trait, elevated attachment anxiety led individuals to remain committed to the relationship even when needs for relatedness and autonomy were relatively unfulfilled. In contrast, experiencing elevated attachment security led individuals to adjust their level of commitment in accord with the level of need fulfillment. Thus attachment security predicts level of commitment

primarily when people are also experiencing fulfillment of psychological needs within the relationship.

Research has also linked autonomous motivation with support-seeking behaviors. For example, Don and Hammond (2017) found that support seekers who are autonomously motivated seek support in a more direct and positive manner, which in turn promotes greater and better support from their partners. Additionally, the importance of "volitional reliance," which is people's willingness to rely on others during times of heightened emotions, has received considerable attention from a self-determination theory perspective (e.g., Lynch, La Guardia, & Ryan, 2009). The upshot here is that people are more willing to rely on another person in times of emotional arousal or distress to the degree that the other is autonomy-supportive, a finding that holds up across cultural groups (Ryan et al., 2005).

More recently, Hadden et al. (2016) explored the role of romantic partners' attachment in predicting each other's experiences of autonomy, competence, and relatedness. In two samples of couples, both partners completed measures of attachment anxiety and avoidance, along with a measure of support of basic psychological needs in the relationship. Actor-partner interdependence models were employed to partition associations between (1) one's own attachment dimensions and one's own need fulfillment (actor effects) and (2) one's partner's attachment dimensions and one's own need fulfillment (partner effects). Results showed that both dimensions of attachment have implications for the degree to which both one's own and one's partner's psychological needs are supported. Actor effects generally replicated previously reported associations between attachment security and need fulfillment, with some small exceptions. However, the partner effects were especially fascinating. Having a partner who is higher in attachment anxiety was associated with feeling that one's autonomy was undermined, while also feeling that one's relatedness was supported. On the other hand, having a more avoidant partner was associated with greater perceptions of autonomy, but also with lower levels of relatedness. Thus attachment anxiety and avoidance were differentially related to fulfillment of basic psychological needs, and in ways that are consistent with both theories.

In sum, both attachment theory and RMT emphasize the importance of the partner's support of one's growth, exploration, and connection. Attachment conceptualizes this as safe haven and secure base support, in which partners make themselves available in times of stress, and encouraging partner's independent exploration. RMT, meanwhile, suggests that individuals can promote a sense of relatedness while also supporting their partner's sense of competence and autonomy. Both approaches suggest that optimal relationships involve providing a sense of connection while encouraging partners to be who they truly are.

*Interpersonal Process Model of Intimacy*

The interpersonal process model of intimacy (Reis & Patrick, 1996; Reis & Shaver, 1988) explains the development of intimacy as the result of interactional processes. Importantly, this model includes components that capture the temporal nature of intimacy and the specific dyadic ingredients that either facilitate or inhibit self-disclosure, responsiveness, and intimacy between partners. According to the model, the intimacy process is initiated when one reveals personally relevant information to one's partner. In turn, the degree to which one's partner is responsive to self-disclosure, such that the partner feels understood, validated, and cared for, will result in stronger feelings of intimacy in an ongoing reciprocal cycle (Laurenceau et al., 2004).

The intimacy process can be integrated within the SDT framework. Specifically, the mechanism described by the interpersonal process model of intimacy is fundamentally a process through which one feels that one's needs for autonomy, competence, and relatedness are being mutually met by one's partner. The emotional disclosure process closely resembles the fulfillment of basic psychological needs for autonomy, competence, and relatedness. Being able to express one's true self supports autonomy. When that expression is validated, it supports competence. The process of reciprocal disclosure and validation of authentic self-expression supports relatedness. Indeed, research has shown that concealing the true self from relationship partners has negative consequences for health and well-being largely because of how this self-concealment can undermine autonomy, competence, and relatedness (Uysal et al., 2012). Additionally, the SDT framework can utilize the two-component model proposed by the interpersonal process model of intimacy. That is, feelings of need fulfillment arise from both self-disclosure and partner responsiveness, and both are critical to developing intimacy. The act of revealing personally relevant information increases feelings of autonomy to the extent that one is able express one's true self freely and openly.

*Self-Expansion Theory*

Self-expansion theory (Aron & Aron, 1996; Xu, Lewandowski, & Aron, 2016) contends that people are motivated to expand their resources, perspectives, and characteristics by including close others within the self-concept. The theory emphasizes that satisfying romantic relationships are those in which partners engage in novel and challenging activities to satisfy this fundamental desire to grow and expand. Sometimes, as a relationship progresses, fewer opportunities to engage in exciting experiences are available, at which point self-expansion is thwarted and feelings of boredom and dissatisfaction can emerge (Aron et al., 2000). Self-expansion theory posits that individuals assimilate the traits and characteristics of the partner into their self-concept to varying degrees, as a natural ongoing process of developing a close and intimate relationship. Indeed, several experiments have found that people allocate resources to a close other as they would to themselves

instead of as they would to a stranger, and they tend to process information about close others as if it is about themselves (Aron et al., 1991).

Self-expansion theory and RMT overlap in important ways. First, activities that support basic needs for autonomy, competence, and relatedness are likely to also facilitate true-self development and expansion. For example, RMT emphasizes that optimally challenging tasks best support one's need for competence. That is, if an activity is too easy or too difficult, people lose interest from either boredom or capitulation (Deci & Ryan, 2000). Thus, some activities might expand the self-concept more readily than others. Activities that undermine one's autonomy, thwart one's competence by being too easy or too challenging, or hinder rather than facilitate relatedness would likely result in less true self-expansion. For example, a task that one is forced to do under controlling conditions might not be as self-expanding as one that is fun, challenging, and supportive of one's autonomy.

Second, self-expansion and the sense of closeness that derives from including another within one's self-concept can reflect RMT's need for relatedness. Self-expansion theory does not directly address needs for autonomy and competence other than suggesting that challenging, novel activities promote self-expansion, which may facilitate a sense of competence. Third, not all motivations for relating and expanding one's self-concept are equal. Seeking closeness from a partner to acquire resources (e.g., fame, approval from others, monetary gains) is a less self-determined form of motivation than seeking closeness to learn new perspectives and grow with one's partner. Whereas self-expansion theory suggests that both motivations satisfy the desire for self-expansion, RMT predicts that self-determined motivations are of greater benefit than less self-determined motivations.

Recent work has specifically tested the notion that not all forms of inclusion of the other into one's self-concept are equally beneficial. Weinstein et al. (2016) examined whether individual differences in self-determined motivation moderate the effects of increasing self-other overlap on partner outcomes. Across studies, as self-determined individuals reported greater self-other overlap, their partners reported receiving more positive motivational support as well as enhanced well-being and relationship outcomes. On the other hand, when individuals were lower in self-determination, as operationalized in several ways, their partners reported either no or negative consequences from having greater self-other overlap. Further research on more versus less self-determined self-other overlap is needed.

### Interdependence Theory

One of the most significant perspectives on regulation of interpersonal conflict is interdependence theory (Kelley et al., 2003; Kelley & Thibaut, 1978), which describes how outcomes are negotiated within the interpersonal structure of dyadic situations. According to this perspective, individuals are motivated to maximize personal and relational rewards within the context of relationship decisions and behaviors. Partners transform the

C. RAYMOND KNEE AND LINDSAY BROWNE

decisions they would initially make (and ways they would initially behave) that do not consider the partner's desires into different ways of deciding and behaving that do take into account the partner's desires. Interdependence as a concept seems most fundamentally about the need for relatedness, although it also involves the negotiation between individual outcomes and relational outcomes. However, it is important to note that individual interests and motivations in interdependence theory are not equivalent to RMT's notion of autonomy. Much of the research on interdependence and transformation of motivation has focused on two pro-relationship behaviors: accommodation (choosing not to retaliate in the face of a partner's transgression) and willingness to sacrifice (forgoing one's own immediate interests to promote the well-being of one's partner or relationship). Pro-relationship behaviors have been associated with dyadic adjustment and with a greater probability of couple persistence (Van Lange et al., 1997), and when partners perceive pro-relationship behaviors, they come to trust each other and rely more on the relationship (Wieselquist et al., 1999).

Interdependence theory, with its focus on pro-relationship behaviors, does not acknowledge the possibility that not all transformations of motivation or reasons for enacting pro-relationship behaviors are equal. RMT contends that one's motivations for being in the relationship and one's reasons for engaging in pro-relationship behaviors have important implications for how beneficial these behaviors may be. Pro-relationship behaviors may be particularly beneficial when done because one truly wants to and not simply to avoid an argument or to gain the other's approval. In addition, RMT suggests that, to the extent that autonomy, competence, and relatedness needs are fulfilled, it would be easier and more natural to take into account one's partner's wishes and the relationship perspective and behave more interdependently.

*The Investment Model*

Derived from interdependence theory, the investment model of commitment (Le & Agnew, 2003; Rusbult, 1980; Rusbult, Agnew, & Arriaga, 2012) emerged over 30 years as possibly the most dominant theory of commitment in interpersonal relationships. The investment model posits that commitment is predicted by three unique factors which are thought to increase dependence on the relationship. First, satisfaction level is the result of perceiving that the rewards gained from the relationship outweigh the costs and that the relationship meets or exceeds one's expectations. Second, the perception of lower-quality alternatives to being in the relationship predicts stronger commitment. Third, one's level of investment in the relationship, including the various tangible and intangible resources that would be lost if the relationship were to end, predicts greater commitment. Thus, according to the investment model, satisfaction, alternatives, and investments create dependence, which in turn promotes commitment. Considerable empirical evidence supports the robustness of the model across populations and types of relationships (for review, see Rusbult et al., 2012).

From an RMT perspective, however, not all forms of investment and dependence are considered equal. Indeed, Hadden, Knee et al. (2015) noted that the three key predictors in the investment model conceptually vary along the motivation continuum. Specifically, satisfaction with the relationship reflects more self-determined, desired dependence, whereas perceived alternatives and investments are obligations and constraints that make one more dependent on the relationship. If one is high in self-determined relationship motivation, the factors that increase constraint dependence (i.e., low alternatives, high investments) should become less relevant. With this reasoning, Hadden, Knee et al. tested whether self-determined motivation moderated the extent to which perceived alternatives and investments predicted commitment, such that when motivation was more self-determined, obligatory forms of dependence became less relevant to commitment. Study 1 consisted of eight independent samples in which participants reported on their satisfaction, perceived alternatives, investments, and commitment, along with self-determined relationship motivation. Study 2 employed a weekly diary study to test whether baseline relationship motivation moderated weekly fluctuations in the investment model components. Results showed that when self-determined motivation was high, perceived alternatives and investments were indeed weaker predictors of commitment.

### Ideal Standards Model

The ideal standards model (Fletcher et al., 1999) states that people possess images of their ideal partner and relationship, and that those partners are evaluated against these ideals in determining satisfaction and other relationship outcomes. The model emphasizes the importance of perceiving that a partner meets one's ideal standards, and that one also feels that one meets the partner's ideal standards. An RMT perspective suggests at least two points. First, it is possible that not all ideals are equally important for optimal relationship development. Ideals that are based more closely on fulfillment of autonomy, competence, and relatedness likely have a larger impact on relationship well-being compared to ideals that are not. Second, the extent to which people evaluate their partners and relationships against these ideals, or rather, the importance of falling short of these ideals, may vary with their motivation for being in the relationship and the degree to which their needs are being met.

With regard to the first point, Rodriguez, Hadden, and Knee (2015) examined whether some attributes of the ideal standards model better reflected needs for autonomy, competence, and relatedness compared to other attributes. They defined extrinsic attributes as relatively observable and valued for their role in gaining attention, popularity, fame, and physical attraction. In contrast, intrinsic attributes were defined as less observable and were valued for their inherent benefit in developing the relationship. Results showed that satisfaction of intrinsic ideals more strongly predicted relationship quality than satisfaction of extrinsic ideals. Thus, meeting intrinsic ideals, such as being warm, compassionate, and honest, was found to be more strongly associated with satisfaction

in relationships than relatively more extrinsic ideals such as being attractive or having resources. Further, an interaction revealed that when intrinsic ideals are met, extrinsic ideals become less relevant for relationship quality. In this way, extrinsic ideals appear to be compensatory in that they become more relevant to satisfaction when intrinsic ideals are less fulfilled.

Turning to the second point—that the relevance of a partner falling short of one's ideals may be more or less relevant depending on one's motivation for being in the relationship—we know of only indirect evidence thus far. Knee and his colleagues (2002) examined autonomy orientation in relation to self-perceptions, partner ideals, and perceptions of one's partner. People generally tend to see a lot of themselves in their ideal partner. However, autonomous motivation was associated with a weaker tendency to view an ideal partner as a function of one's view of self. One way to interpret this finding is that when autonomously motivated, one is less concerned about partners matching an ideal standard, in this case, their view of themselves. This would be consistent with autonomous motivation reducing otherwise threatening experiences (Hodgins et al., 2010), reducing the tendency to evaluate others, and facilitating appreciation of others' differences (Legault & Amiot, 2014).

## Conclusion

Many existing theories and concepts on close relationships can be viewed through the lens of RMT and its motivational perspective on optimal relationships as the dynamic, ongoing, mutual fulfillment of basic psychological needs. In this way, RMT provides an integrative perspective that elaborates and defines optimal development and true-self investment in one's close relationships. According to RMT, relationships that facilitate both partners' feelings of autonomy, competence, and relatedness, and those in which partners are engaged for relatively more integrated and intrinsic reasons, will be more likely to yield open, flexible, authentic, nondefensive intimate behaviors and stances. From the RMT perspective, investing one's true self in one's relationship means engaging one's relationship in the most immersive and genuine sense, and in a way that promotes openness and authentic understanding rather than avoidance and defensiveness. The benefits of self-determined motivations extend to both oneself and one's partner, promoting gratitude and relationship quality. Thus relationship development is optimal when partners' needs are mutually fulfilled, promoting intrinsic motivation to be in the relationship, and allowing both partners' true selves to be expressed, responded to, and openly experienced in the fullest sense. The degree to which this need-fulfilled, intrinsically motivated, true-self-engaged dynamic emerges mutually, over time, is what influences how partners negotiate relationship challenges and threats, as well as how the relationship grows and flourishes.

# References

Aron, A., & Aron, E. N. (1996). Self and self-expansion in relationships. In G. O. Fletcher and J. Fitness (Eds.), *Knowledge structures in close relationships: A social psychological approach* (pp. 325–344). Lawrence Erlbaum.

Aron, A., Aron, E. N., Tudor, M., & Nelson, G. (1991). Close relationships as including other in the self. *Journal of Personality and Social Psychology*, *60*, 241–253. doi:10.1037/0022-3514.60.2.241

Aron, A., Norman, C., Aron, E., McKenna, C., & Heyman, R. (2000). Couples' shared participation in novel and arousing activities and experienced relationship quality. *Journal of Personality and Social Psychology*, *78*, 273–284. doi:10.1037/0022-3514.78.2.273

Assor, A., Kanat-Maymon, Y., & Roth, G. (2014). Parental conditional regard: Psychological costs and antecedents. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships* (pp. 215–237). Springer.

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of parents' conditional regard: A self-determination theory analysis. *Journal of Personality*, *72*(1), 47–88.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*, 191–215. doi:10.1037/0033-295X.84.2.191

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*, 497–529.

Blais, M. R., Sabourin, S., Boucher, C., & Vallerand, R. (1990). Toward a motivational model of couple happiness. *Journal of Personality and Social Psychology*, *59*, 1021–1031.

Bowlby, J. (1969). *Attachment and loss, Vol. 1: Attachment*. Basic Books.

Bretherton, I. (1987). New perspectives on attachment relations: Security, communication, and internal working models. In J. Osofsky (Ed.), *Handbook of infant development* (pp. 1061–1100). Wiley.

Campbell, L., & Kashy, D. A. (2002). Estimating actor, partner, and interaction effects for dyadic data using PROC MIXED and HLM: A user-friendly guide. *Personal Relationships*, *9*, 327–342.

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, *97*, 19–35.

Crocker, J., & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin*, *130*, 392–414.

Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the benefits of giving as well as receiving autonomy support: Mutuality in close friendships. *Personality and Social Psychology Bulletin*, *32*, 313–327. doi:10.1177/0146167205282148

Deci, E. L., & Ryan, R. M. (1995). Human autonomy: The basis for true self-esteem. In M. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 31–49). Plenum.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227–268.

Deci, E. L., & Ryan, R. M. (2008). A macrotheory of human motivation, development and health. *Canadian Psychology*, *49*, 182–185. doi:10.1037/a0012801

Deci, E. L., & Ryan, R. M. (2014). Autonomy and need satisfaction in close relationships: Relationships motivation theory. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships: Theory, research, and applications* (pp. 53–73). Springer.

Don, B. P., & Hammond, M. D. (2017). Social support in intimate relationships: The role of relationship autonomy. *Personality and Social Psychology Bulletin*, *43*(8), 1112–1124.

Downey, G., & Feldman, S. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology*, *70*, 1327–1343.

Feeney, B. C., & Collins, N. L. (2015). A new look at social support: A theoretical perspective on thriving through relationships. *Personality and Social Psychology Review*, 19, 113–147. doi:10.1177/1088868314544222

Feeney, B. C., & Thrush, R. L. (2010). Relationship influences on exploration in adulthood: The characteristics and function of a secure base. *Journal of Personality and Social Psychology*, *98*, 57–76. doi:10.1037/a0016961

Fincham, F. D., Harold, G., & Gano-Phillips, S. (2000). The longitudinal relation between attributions and marital satisfaction: Direction of effects and role of efficacy expectations. *Journal of Family Psychology*, *14*, 267–285.

Fletcher, G. J. O., Simpson, J. A., Thomas, G., & Giles, L. (1999). Ideals in intimate relationships. *Journal of Personality and Social Psychology*, *76*, 72–89.

Gaine, G. S., & La Guardia, J. G. (2009). The unique contributions of motivations to maintain a relationship and motivations toward relational activities to relationship well-being. *Motivation and Emotion*, *33*, 184–202. doi:10.1007/s11031-009-9120-x

Hadden, B. W., Baker, Z. G., & Knee, C. R. (2018). Let it go: Autonomy predicts pro-relationship responses to partner transgressions. *Journal of Personality, 86*(5), 868–887. https://doi.org/10.1111/jopy.12362

Hadden, B. W., Knee, C. R., DiBello, A. M., & Rodriguez, L. M. (2015). High alternatives, low investments, no problem: A motivation perspective on the investment model. *Motivation Science*, *4*, 244–261. http://dx.doi.org/10.1037/mot0000026

Hadden, B. W., Rodriguez, L. M., Knee, C. R., DiBello, A. M., & Baker, Z. G. (2016). An actor-partner interdependence model of attachment and need fulfillment in romantic dyads. *Social Psychological and Personality Science*, *7*, 349–357.

Hadden, B. W., Rodriguez, L. M., Knee, C. R., & Porter, B. W. (2015). Relationship autonomy and support provision in romantic relationships. *Motivation and Emotion*, *39*, 359–373.

Hodgins, H. S. (2008). Motivation, threshold for threat, and quieting the ego. In H. Wayment & J. Bauer (Eds), *Transcending self-interest: Psychological explorations of the quiet ego* (pp. 117–124). American Psychological Association.

Hodgins, H. S., & Knee, C. R. (2002). The integrating self and conscious experience. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 87–100). University of Rochester Press.

Hodgins, H. S., Koestner, R., & Duncan, N. (1996). On the compatibility of autonomy and relatedness. *Personality and Social Psychology Bulletin*, *22*, 227–237. doi:10.1177/0146167296223001

Hodgins, H. S., Weibust, K. S., Weinstein, N., Shiffman, S., Miller, A., Coombs, G., & Adair, K. C. (2010). The cost of self-protection: Threat response and performance as a function of autonomous and controlled motivations. *Personality and Social Psychology Bulletin*, *36*, 1101–1114. doi:10.1177/0146167210375618

Kanat-Maymon, Y., Roth, G., Assor, A., & Raizer, A. (2016). Controlled by love: The harmful relational consequences of perceived conditional positive regard. *Journal of Personality*, *84*, 446–460.

Kanat-Maymon, Y., Argaman, Y., & Roth, G. (2017). The association between conditional regard and relationship quality: A daily diary study. *Personal Relationships*, *24*, 27–35. doi:10.1111/pere.12164

Kanat-Maymon, Y., Wolfson, S., Cohen, R., & Roth, G. (2021). The benefits of giving as well as receiving need support in human-pet relations. *Journal of Happiness Studies*, 22, 1441–1457.

Kashy, D. A., & Kenny, D. A. (2000). The analysis of data from dyads and groups. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 451–477). Cambridge, England: Cambridge University Press.

Kelley, H. H., Holmes, J. G., Kerr, N. L., Reis, H. T., Rusbult, C. E., & Van Lange, P. A. M. (2003). *An atlas of interpersonal situations*. Cambridge University Press. doi:10.1017/CBO9780511499845

Kelley, H. H., & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence*. Wiley.

Kelly, A.E. (2002). The psychology of secrets. New York: Plenum.

Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry*, *14*, 1–26.

Kernis, M. H., Grannemann, B. D., & Barclay, L. C. (1992). Stability of self-esteem: Assessments, correlates, and excuse-making. *Journal of Personality*, *60*, 621–644.

Kernis, M. H., & Waschull, S. B. (1995). The interactive roles of stability and level of self-esteem: Research and theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 27, pp. 93–141). Academic Press. doi:10.1016/S0065-2601(08)60404-9

Kluwer, E. S., Karremans, J. C., Riedijk, L., & Knee, C. R. (2020). Autonomy in relatedness: How need fulfillment interacts in close relationships. *Personality and Social Psychology Bulletin*, *46*, 603–616. doi:10.1177/0146167219867964

Knee, C. R., Canevello, A., Bush, A. L., & Cook, A. (2008). Relationship-contingent self-esteem and the ups and downs of romantic relationships. *Journal of Personality and Social Psychology*, *95*, 608–627. doi:10.1037/0022-3514.95.3.608

Knee, C. R., Hadden, B. W., Porter, B., & Rodriguez, L. M. (2013). Self-determination theory and romantic relationship processes. *Personality and Social Psychology Review*, *17,* 307–324.

Knee, C. R., Lonsbary, C., Canevello, A., & Patrick, H. (2005). Self-determination and conflict in romantic relationships. *Journal of Personality and Social Psychology*, *89*, 997–1009.

Knee, C. R., Patrick, H., Vietor, N. A., Nanayakkara, A., & Neighbors, C. (2002). Self-determination as growth motivation in romantic relationships. *Personality and Social Psychology Bulletin*, *28*, 609–619.

Koestner, R., & Losier, G. F. (1996). Distinguishing reactive versus reflective autonomy. *Journal of Personality*, *64*, 465–494. doi:10.1111/j.1467-6494.1996.tb00518.x

La Guardia, J. G., & Patrick, H. (2008). Self-determination theory as a fundamental theory of close relationships. *Canadian Psychology*, *49*, 201–209. doi:10.1037/a0012760

La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology*, *79*, 367–384. doi:10.1037/0022-3514.79.3.367

Laurenceau, J.-P., Rivera, L. M., Schaffer, A., & Pietromonaco, P. R. (2004). Intimacy as an interpersonal process: Current status and future directions. In D. Mashek & A. Aron (Eds.), *Handbook of closeness and intimacy* (pp. 61–78). Lawrence Erlbaum.

Le, B., & Agnew, C. R. (2003). Commitment and its theorized determinants: A meta-analysis of the investment model. *Personal Relationships*, *10*, 37–57. http://dx.doi.org/10.1111/1475-6811.00035

Legate, N., Ryan, R. M., & Rogge, R. D. (2017). Daily autonomy support and sexual identity disclosure predicts daily mental and physical health outcomes. *Personality and Social Psychology Bulletin*, *43*, 860–873.

Legate, N., Ryan, R. M., & Weinstein, N. D. (2012). Is coming out always a "good thing"? Exploring the relations of autonomy support, outness, and wellness for lesbian, gay, and bisexual individuals. *Social Psychological and Personality Science*, *3*, 145–152.

Legault, L. & Amiot, C. E. (2014). The role of autonomy in intergroup processes: Toward an integration of self-determination theory and intergroup approaches. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships: Theory, research, and applications* (pp. 159–190). Springer.

Lopez, F. G., Morua, W., & Rice, K. G. (2007). Factor structure, stability, and predictive validity of college students' relationship self-efficacy beliefs. *Measurement and Evaluation in Counseling and Development*, *40*, 80–96.

Lynch, M. F., La Guardia, J. G., & Ryan, R. M. (2009). On being yourself in different cultures: Ideal and actual self-concept, autonomy support, and well-being in China, Russia, and the United States. *The Journal of Positive Psychology*, *4*, 290–304.

Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change*. Guilford Press.

Niemiec, C. P., & Deci, E. L. (2012). *The effects of provision and deprivation of autonomy on interaction quality between strangers*. Unpublished manuscript, University of Rochester.

Park, L. E., & Crocker, J. (2005). Interpersonal consequences of seeking self-esteem. *Personality and Social Psychology Bulletin*, *11*, 1587–1598. doi:10.1177/01461-67205277206

Park, L. E., Crocker, J., & Vohs, K. D. (2006). Contingencies of self-worth and self-validation goals: Implications for close relationships. In K. D. Vohs & E. J. Finkel (Eds.), *Self and relationships: Connecting intrapersonal and interpersonal processes (pp.84-103)*. Guilford Press.

Patrick, H. (2007). *Pro-relationship behaviors and self-determination: Why you do it matters as much as doing it at all*. Paper presented at the Third International Conference on Self-Determination Theory, Toronto, Ontario, Canada.

Patrick, H., Knee, C. R., Canevello, A., & Lonsbary, C. (2007). The role of need fulfillment in relationship functioning and well-being: A self-determination theory perspective. *Journal of Personality and Social Psychology*, *92*, 43–457. doi:10.1037/0022-3514.92.3.434

Reis, H. T., & Patrick, B. C. (1996). Attachment and intimacy: Component processes. In E. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 523–563). Guilford Press.

Reis, H. T., & Shaver, P. (1988). Intimacy as an interpersonal process. In S. Duck (Ed.), *Handbook of personal relationships* (pp. 367–389). Wiley.

Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality and Social Psychology Bulletin*, *26*, 419–435. doi:10.1177/0146167200266002

Rodriguez, L. M., Hadden, B. W., & Knee, C. R. (2015). Not all ideals are equal: Intrinsic and extrinsic ideals in relationships. *Personal Relationships*, *22*, 138–152.

Rusbult, C. E. (1980). Commitment and satisfaction in romantic associations: A test of the investment model. *Journal of Experimental Social Psychology*, *16*, 172–186. http://dx.doi.org/10.1016/0022-1031(80)90007-4

Rusbult, C. E., Agnew, C. R., & Arriaga, X. B. (2012). The investment model of commitment processes. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 2, pp. 218–231). Sage. http://dx.doi.org/10.4135/9781446249222.n37

Ryan, R. M., Brown, K. W., & Creswell, J. D. (2007). How integrative is attachment theory? Unpacking the meaning and significance of felt security. *Psychological Inquiry*, 18, 177–182. doi:10.1080/10478400701512778

Ryan, R. M., & Deci, E. L. (2017). Relationships motivation theory. In R. M. Ryan & E. L. Deci, *Self-determination theory* (pp. 293–316). The Guilford Press.

Ryan, R. M., La Guardia, J. G., Solky-Butzel, J., Chirkov, V., & Kim, Y. (2005). On the interpersonal regulation of emotions: Emotional reliance across gender, relationships, and cultures. *Personal Relationships*, *12*, 145–163. doi:10.1111/j.1350-4126.2005.00106.x

Ryan, W. S., & Ryan, R. M. (2019). Toward a social psychology of authenticity: Exploring within-person variation in autonomy, congruence, and genuineness using self-determination theory. *Review of General Psychology*, *23*, 99–112.

Schnarch, D. (1997). *Passionate marriage: Love, sex, and intimacy in emotionally committed relationships*. W. W. Norton.

Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, *30*, 475–486. doi:10.1177/0146167203261883

Sheldon, K. M., Ryan, R., & Reis, H. T. (1996). What makes for a good day? Competence and autonomy in the day and in the person. *Personality and Social Psychology Bulletin*, *22*, 1270–1279. doi:10.1177/01461672962212007

Slotter, E. B., & Finkel, E. J. (2009). The strange case of sustained dedication to an unfulfilling relationship: Predicting commitment and breakup from attachment anxiety and need fulfillment within relationships. *Personality and Social Psychology Bulletin*, *35*, 85–100. doi:10.1177/0146167208325244

Uysal, A., Lin, H., & Knee, C.R. (2010). The role of need satisfaction in self-concealment and well-being. *Personality and Social Psychology Bulletin*, *36*, 187–199.

Uysal, A., Lin, H. L., Knee, C. R., & Bush, A. (2012). The association between self-concealment from one's partner and relationship well-being. *Personality and Social Psychology Bulletin*, *38*, 39–51.

Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 271–360). Academic Press.

Van Lange, P. A., Rusbult, C. E., Drigotas, S. M., Arriaga, X. B., Witcher, B. S., & Cox, C. L. (1997). Willingness to sacrifice in close relationships. *Journal of Personality and Social Psychology*, *72*, 1373–1395. http://dx.doi.org/10.1037/0022-3514.72.6.1373

Weinstein, N., DeHaan, C. R., & Ryan, R. M. (2010). Attributed motivation and the recipient experience: Perceptions of other, self, and the helping relationship. *Motivation and Emotion*, *34*, 418–431.

Weinstein, N., Hodgins, H. S., & Ryan, R. M. (2010). Autonomy and control in dyads: Effects on interaction quality and joint creative performance. *Personality and Social Psychology Bulletin*, *36*, 1603–1617.

Weinstein, N., Rodriguez, L. M., Knee, C. R., & Kumashiro, M. (2016). *Self-determined self-other overlap: Impacts on partners' perceptions of support and well-being in close relationships. Journal of Research in Personality* *65*, 130–139.

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, *66*, 297–333.

Wieselquist, J., Rusbult, C. E., Foster, C. A., & Agnew, C. R. (1999). Commitment, pro-relationship behavior, and trust in close relationships. *Journal of Personality and Social Psychology*, *77*, 942–966.

Winnicott, D. W. (1965). *The maturational processes and the facilitating environment: Studies in the theory of emotional development*. International Universities Press.

Xu, X., Lewandowski, G. W., & Aron, A. (2016). The self-expansion model of and optimal relationship development. In C. R. Knee & H. T. Reis (Eds.), *Positive approaches to optimal relationship development* (pp. 79–100). Cambridge University Press.

# Basic Research Themes

# Mindfulness and the Satisfaction of Basic Psychological Needs

Polina Beloborodova *and* Kirk Warren Brown

## Abstract

Conceptualized as a receptive awareness of and attention to present-moment events and experiences, mindfulness is regarded by self-determination theory as a critical psychological factor that facilitates the fulfillment of basic psychological needs for autonomy, relatedness, and competence. This chapter reviews research showing that trait, state, and trained mindfulness are related to more autonomous functioning, greater social well-being, and increased felt competence and task performance. Also discussed are proposed mechanisms that might explain those salutary effects, including a shift from automatic processing of experience to conscious attention regulation and observation of experience without egoic identification. Also discussed is the importance of intervention and other experimental research to examine the role of different mindfulness practices (e.g., focused attention vs. open monitoring) in promoting need satisfaction, and to investigate the interaction between mindfulness and need-supportive versus need-frustrating environments.

**Key Words:** mindfulness, attention, basic psychological needs, autonomy, competence, relatedness, self-regulation

Mindfulness, a concept rooted in Buddhist teachings, has attracted considerable attention from researchers across the globe due to its relation to mental and physical health and well-being (Brown et al., 2015). Mindfulness has a number of culturally and historically embedded meanings (e.g., Dunne, 2011), but following Buddhist canonical scholarship (e.g., Anālayo, 2003) some Western secular writings have described mindfulness as a receptive awareness of and attention to present-moment experience (e.g., Brown & Ryan, 2003), a conceptualization that places primacy upon an accepting or nonjudgmental appraisal of what is attended to in the ongoing stream of thought, emotion, and sensation arising in conscious awareness. And indeed within self-determination theory (SDT), paying attention to one's present-moment experience in an allowing rather than a controlling manner is considered the most important feature of mindfulness that facilitates autonomous self-regulation and basic psychological need fulfilment (Ryan & Deci, 2017).

While considerable research has examined how social agents (parents, teachers, supervisors, friends, etc.) can support or hinder need fulfillment, a growing body of research

has investigated the role of mindfulness as an internal, psychological support for basic psychological need satisfaction, and in this chapter we review the research to date on this topic and address the purported psychological processes underlying the mindfulness–basic needs relations. SDT postulates that there are three basic psychological needs essential for mental health and psychological well-being, fulfilling relationships, and successful work performance: autonomy (feeling a sense of agency and choice in the enactment of behavior), relatedness (a felt connection to other individuals or groups), and competence (a felt sense of behavioral effectiveness in influencing the environment). We organize this chapter around those three basic needs, reviewing studies that have investigated the connection between mindfulness and each of the needs. Then we explore possible processes underlying these relations and propose directions of future research.

## Mindfulness and Basic Psychological Need Satisfaction

### Autonomy

Autonomy refers to the need to experience one's behavior as volitional and self-endorsed. SDT proposes that motivation for different behaviors lies on a continuum anchored on one end by intrinsic motivation, characterized by the highest degree of autonomy, as when a person engages in an activity for its interest or enjoyment value; followed by extrinsic motivation, characterized by lack of autonomy, when a person does something because of external or internal pressures; and, on the other end, amotivation, representing a lack of impetus for behavior. Mindfulness is considered an important intra-individual factor that supports autonomy because it facilitates greater access to one's feelings and thoughts, as well as greater discernment of external conditions, and thereby fosters self-congruent choices and behaviors (Ryan & Deci, 2017). The connection between mindfulness and autonomy has been observed in a number of studies, in a variety of contexts, including daily life, the laboratory, the workplace, and exercise settings. For example, in early studies on this topic, evidence from experience sampling research showed that higher levels of trait mindfulness predicted more autonomously motivated daily behaviors (Brown & Ryan, 2003), and did so even when participants showed an implicit tendency toward heteronomy, or the tendency to feel controlled by internal or external forces (Levesque & Brown, 2007). Experimental work in the laboratory broadly supports these findings: an induced state of mindfulness predicted greater intrinsic motivation for a reading task relative to distraction and no instruction conditions, as well as enhanced episodic memory for the reading content (Brown et al., 2016).

In recent research conducted in the workplace, a meta-analysis showed that mindfulness was positively related to the satisfaction of the need for autonomy, with an estimated population correlation coefficient of .43 (Van den Broeck et al., 2016). In an exercise context, a 16-week longitudinal study showed increases in yoga class participants' state mindfulness that predicted their autonomous motivation for physical activity, both directly and through autonomy and competence needs satisfaction (Cox, Ullrich-French,

& Austin, 2020). A recent landmark meta-analysis (Donald et al., 2020) collected a corpus of research to investigate the connection between mindfulness and varied motivational orientations. This analysis found that in cross-sectional studies, trait mindfulness was positively associated with autonomous forms of motivation and negatively associated with controlled forms, with larger positive effects for intrinsic motivation and smaller effects for identified motivation (willingness to engage in an activity because it is valuable, but not necessarily enjoyable). Donald et al. also found a medium-size effect in studies of evidence-based mindfulness training—including mindfulness-based stress reduction (Kabat-Zinn, 1990) and mindfulness-based cognitive therapy (Segal, Williams, & Teasdale, 2002)—and autonomous motivation. However, the authors reported that there was considerable heterogeneity in effect sizes in both correlational and intervention studies that could not be explained by study design, and they called for additional studies to explore possible moderators.

Schuman-Olivier et al. (2020) elaborated the following mechanism to explain how mindfulness practice may facilitate autonomous forms of motivation, using the example of healthy behavior change. A person may begin with introjected motivation (coming from internal pressure or feelings of guilt or shame) or identified motivation (coming from perceived importance). As they continue their mindfulness practice, mindfully observe daily consequences of unhealthy behaviors, and realize the value of healthy behaviors, motivation for behavior change becomes internalized (more autonomous). A person then develops more proactive self-regulation (e.g., goal setting) that reduces regulation by judgment-driven, reactive negative feedback systems. This gives a boost to competence and autonomy, leading to a progression toward intrinsic motivation for healthy behaviors. Mindfulness practice further evokes curiosity and savoring of healthy, pleasant experiences, which may restructure reward processes toward natural rewards. Thus, mindfulness practice may lead to autonomous behavior change without undue effort or force (Ludwig, Brown, & Brewer, 2020).

Schuman-Olivier et al. (2020) emphasized that to achieve more autonomous self-regulation, at least for those with high levels of emotional dysregulation or attentional and cognitive impairments, attentional control and present-moment focus are more effective when supplemented with self-compassion training. Lindahl et al. (2017) suggest that highly effective meditation teachers often engage both strategies. Further, a mindfulness-based program that included developing self-compassion in addition to observing present-moment experience was effective in improving self-regulation and facilitating health behavior change in primary care patients with a *DSM-V* diagnosis (Gawande et al., 2019).

Thus, there is evidence that mindfulness, whether dispositional or trained, can support autonomous behavior. Mindfulness may also impact higher-level goals. In a review, Schultz and Ryan (2015) reported that across several studies, trait mindfulness was related to lower propensity to pursue extrinsic values and goals. There is also indication that mindfulness training lessens interest in rewards that often undermine autonomous regulation.

In a quasi-experiment, mindfulness meditation practitioners, relative to matched controls, showed diminished activation in brain regions associated with reward processing (e.g., nucleus accumbens) in a task that provided an opportunity to earn money (Kirk, Brown, & Downar, 2015). The picture is not entirely clear, however. Hafenbrack and Vohs (2018) found that a mindfulness induction reduced motivation to perform a mundane task regardless of whether it was framed as pleasant or unpleasant or did nor did not include a monetary reward. While these results must be carefully considered, it is possible that the mindfulness induction introduced an element of choice to disengage from the mundane task.

### Relatedness

In SDT, relatedness refers to a need for meaningful relationships and interactions, wherein one experiences a sense of connection with and caring for other people. A growing body of research shows that mindfulness is associated with improved social functioning, including intimate relations, peer and in-group relations, as well as out-group relations. In intimate relationships, higher dispositional mindfulness has been associated with greater relationship satisfaction (McGill, Adler-Baeder, & Rodriguez, 2016), possibly through partner acceptance (Kappen et al., 2018), perceived responsiveness (Adair, Boulton, & Algoe, 2018), and a belief in relationship development (Don, 2020). Trait mindfulness also predicted higher positive emotion during daily interactions between romantic partners, which in turn predicted greater feelings of connection (Quaglia, Goodman, & Brown, 2015). Experimental work is consistent with these findings. Participants in a mindfulness-based relationship enhancement program had increased relationship happiness and reduced relationship stress, relative to the wait-list control group. Further, more prolonged mindfulness practice on a given day predicted improved relationship functioning for several consecutive days (Carson et al., 2004).

At the peer relationships level, state present-centered attention measured with ecological momentary assessment in a college student sample predicted lower loneliness both concurrently and at the next time point, as well as higher concurrent feelings of connection to other people and felt school belonging (Beloborodova et al., 2022). Another study points to the value of states of mindfulness to foster social relations: Fredrickson et al. (2019) found that informal mindfulness practice in daily life was related to increased perceived social integration and positive emotions. In experimental research, mindfulness training promoted more supportive communications in college students (Jones, Bodie, & Hughes, 2019) and led to reduced feelings of loneliness and increased social contact in community adults (Lindsay et al., 2019). Drawing from research in workplace settings, a meta-analysis by Van den Broeck et al. (2016) showed that trait mindfulness was associated with greater relatedness at work, with an estimated population correlation coefficient of .33.

At the out-group level, Hodgins and Knee (2002) suggest that the willingness to experience what is occurring in the present moment without being threatened by or defending against it leads to less self-serving bias and in-group bias, less distortion in recall and recognition, and diminished stereotyping, as well as lower propensity to experience emotions associated with threat to the self. Such processes should predict more positive out-group contact, and indeed mindfulness appears to facilitate prosocial behavior toward strangers, as evidenced by both correlational and intervention studies (Donald et al., 2019), including interventions that do not feature explicit ethics-based instruction (Berry et al., 2020). The prosocial behavior accrued through mindfulness instruction has been mediated by enhanced empathic concern for out-group strangers (Berry et al., 2018; Hafenbrack et al., 2020). While research on mindfulness and prosociality is still in its early stages, this work suggests that mindfulness may enhance both prosocial emotion and behavior.

A possible mechanism that links mindfulness with improvements in social functioning involves careful attention deployment when encountering another person, leading to better discrimination of and attunement to others' emotions (Adair et al., 2018; Quaglia et al., 2019), better understanding of verbal and nonverbal behavior (Bavelas, Coates, & Johnson, 2000; Burgoon, Berger, & Waldron, 2000), and ultimately securing more effective cognitive control in social situations. However, mindfulness training takes a variety of forms, and that which focuses solely on cultivating present-moment attention might be insufficient for improving social well-being more generally. In this regard, Lindsay et al. (2019) showed that only mindfulness training that included developing an orientation of acceptance of present events and experiences produced lower levels of loneliness and more social interactions in their stressed community sample.

### Competence

Competence reflects people's inherent need to feel effective in interacting with the social and physical environment. The connection between mindfulness and competence has been investigated in fewer studies than in research on autonomy and relatedness, but initial research is promising. Aside from work showing that trait mindfulness predicts higher felt competence in daily life (Beloborodova & Brown, 2021), much of the extant research on mindfulness and competence has come from the world of sport, education, and the workplace. In the sport world, for example, Shannon et al. (2019) conducted a mindfulness-based intervention study among student athletes and found that perceived competence in mental health self-management was a primary mediator between participation in the intervention and both reduced stress and increased well-being. Iwasaki and Fry (2016) demonstrated that among adolescent soccer players, mindful engagement, which the authors described as the tendency to remain focused during daily activities and accept one's experiences, positively correlated with task orientation (aiming at higher competence and personal mastery), whereas an egoic orientation (striving to perform better than others) showed a negative correlation. In a longitudinal study on a sample

of yoga practitioners, increase in state mindfulness over an extended time period was positively related to autonomy and competence needs satisfaction (Cox et al., 2020). In a higher education setting, a study by Goodman et al. (2021) found that autonomy and competence-supporting classroom environment predicted students' greater state mindfulness before an exam, which was in turn associated with lower test anxiety and better performance. In their meta-analysis, Van den Broeck et al. (2016) showed that mindfulness was positively related to competence at work, with an estimated population correlation coefficient of .47.

Mindfulness might facilitate the sense of competence via actual improvement of performance, as well as by fostering intrinsic motivation and mastery (skill-oriented) goals rather than performance (result-oriented) goals. And in fact, higher mindfulness has been associated with improved task performance across a range of domains, perhaps as a result of diminished anxiety and increased availability of cognitive resources, such as attention and working memory (van Vugt, 2015). Mindfulness may enhance intrinsic motivation and mastery goals by directing attention away from self-concerns and toward the task at hand (Goodman et al., 2021), processes that are also associated with improved performance (Cerasoli & Ford, 2014).

## Candidate Mechanisms Underlying Mindfulness–Need Satisfaction Relations

The processes through which mindfulness has its need-satisfying effects are still largely theorized rather than empirically tested. Nevertheless, here we discuss several processes that may be at play in hopes of spurring further research. In Western cultures, training in mindfulness commonly involves observing present-moment experiences without identifying with them or trying to change them. Such treatment of experience appears to interfere with automatic processing and behavior (Levesque & Brown, 2007) and instead support conscious regulation. This may have two effects. First, disidentifying from experience may lead to diminished ego involvement and the lower need satisfaction that accompanies it (e.g., Niemiec et al., 2010). Second, observing thoughts and emotions without identifying with them may make them more accessible to consciousness, encouraging self-concordance. Indirect evidence for this comes from studies showing higher concordance between implicit affect, evaluated with the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998), and explicit affect, measured via self-report (Brown & Ryan, 2003; Remmers et al., 2018). Concordance between implicit and explicit self-concept has also been found (Koole et al., 2009; Levesque & Brown, 2007). Better understanding of one's emotions, thoughts, and behavior may, to put it simply, allow one to know what actions are truly satisfying. In this sense, mindfulness appears to promote "thought autonomy"—a capacity to choose which thoughts to act on and which not. This may stimulate engagement in freely chosen actions, social connection, and effectiveness as well as, more broadly, the pursuit of intrinsic goals, such as personal growth, affiliation, or contribution

to community, which are more conducive to the satisfaction of basic psychological needs than are extrinsic goals, such as wealth, attractiveness, or fame (Brown & Kasser, 2005; Deci et al., 2015; Schultz & Ryan, 2015). In sum, it is by fostering receptive, allowing attention to information about internal states and behavior that mindfulness may enhance engagement in behavior that leads to basic needs satisfaction and the enhanced functioning and well-being that accompany it (Hodgins & Knee, 2002; Ryan & Deci, 2017).

An alternative explanation of the relations between mindfulness and basic needs satisfaction is the potential of mindfulness to not only promote more self-congruent choices but also to transform experiences in such a way that the same activities are perceived as more meaningful and intrinsically satisfying. Several studies suggest that this may happen. Hanley et al. (2015) asked participants to perform a mundane task (wash dishes) after brief mindfulness instruction. Compared to control group participants who did not receive any instructions, mindful dishwashers reported higher state mindfulness, increases in inspiration, and decreases in nervousness. Cox et al. (2018) found that people with low intrinsic motivation to exercise randomized to a mindfulness condition where they received written and audio instructions to pay attention to their bodily sensations in a nonjudgmental manner during treadmill walking, had evidenced greater positive affect and overall enjoyment, as well as lower perceived exertion, relative to a control condition where they did not receive any instructions. A study by Arch et al. (2016) showed that brief mindfulness instruction increased the enjoyment of both positively valenced food (chocolate) and food with more varied associations (raisins). Bauer et al. (2017) demonstrated that participants with higher daily mindfulness showed more autonomous motivation for instant messaging: they found it more enjoyable and important than did the participants with lower daily mindfulness, who reported texting because being in contact with others made them feel important or not replying to messages would make others angry (controlled motivation). Thus, mindfulness might help people to derive more enjoyment from daily activities by changing how they are related to—that is, by bringing receptive attention to them—without necessarily changing what those activities are.

An important component of mindfulness-based interventions is developing a nonjudgmental stance toward one's thoughts and emotions and observing them as they come and go. Such practice facilitates the development of nonattachment, an open and receptive attitude toward oneself and other people that is marked by reduced fixation on or attachment to desirable experiences and avoidance of undesirable experiences (Sahdra, Shaver, & Brown, 2010). Such an attitude is associated with greater equanimity toward experience, which in turn promotes basic needs satisfaction without changing one's circumstances. Indeed, Elphinstone, Egan, and Whitehead (2020) found that nonattachment was related to greater basic needs satisfaction among college students, as well as more autonomous motivation for study.

Through a sustained meditation practice, a practitioner may become less attached to their concept of self by gradually switching from conceptual, automatically activated

models involving appraisals and evaluations of one's experience to nonconceptual, present-moment-centered processing that brings meaning and coherence (Sahdra et al., 2010). On the surface, this statement contradicts the research that shows higher mindfulness is associated with improved self-regulation and basic needs satisfaction. Yet a more detailed examination reveals that the concept of self in SDT is very similar to that in Buddhism. The Buddhist concept of no-self, *anattā* (Pali) or *anātman* (Sanskrit), does not deny the existence of the self, only its permanence (Govinda, 1961). The self is regarded as a constellation of feelings and thoughts that has a felt sense of coherence, individuality, and solidity but which in fact is a series of mental representations that is dynamic, contingent on social and cultural contexts, and an emergent property of the mind rather than an entity in itself (Brown et al., 2008). Similarly, SDT regards the self as a process that organizes and integrates experience rather than a solid entity (Ryan & Deci, 2017). Hodgins and Knee (2002) suggest that basic psychological needs reflect different aspects of this integrative process: competence represents integration with the environment; autonomy and relatedness constitute integration within and between persons, respectively. Mindfulness can enhance these synthetic processes by fostering openness to experience and removing the barriers to integration (Ryan & Rigby, 2015). As SDT argues that greater autonomy reflects greater integration, this dynamic might explain why mindfulness positively correlates with intrinsic and identified motivation and negatively correlates with introjected and external motivation, as well as how mindfulness training facilitates the transition to more autonomous forms of motivation (Ryan, Donald, & Bradshaw, 2021).

## Future Directions

In this chapter, we reviewed theoretical foundations and empirical evidence on the connection between mindfulness and the satisfaction of basic psychological needs: autonomy, relatedness, and competence. Although the existing evidence points to the positive role of mindfulness in the satisfaction of each of these needs, the majority of the studies are correlational and trait-based, using self-report measures that have been subject to criticism (e.g., Van Dam et al., 2018). More intervention and experimental studies are needed to better establish mindfulness-needs connections, while also permitting study of meditational processes.

Future studies could examine the effects of specific types of mindfulness training on need satisfaction. Dahl, Lutz, and Davidson (2015) identified three types or families of meditation practices: (1) *attentional practices* develop attention regulation skills; examples include focused attention, when a practitioner concentrates on a single object, such as breathing, and open monitoring, when attentional scope is broadened to incorporate all salient perceptual experience as it is happening; (2) *constructive* practices nourish adaptive cognitive and affective patterns that foster well-being; for instance in loving-kindness meditation a practitioner cultivates warmth and compassion toward themselves and then extend these to specific individuals and eventually to all beings; and (3) *deconstructive*

practices stimulate insight into one's models of self, others, and the world by exploring the processes of perception, emotion, and cognition; for example, non-dual-oriented practices aim to foster a mode of experiencing wherein there is no boundary between self and other or subject and object. Currently, the effects of attentional family practices are the most studied. In relation to basic needs satisfaction, focused attention may be perceived as a controlling practice, particularly among novice meditators. By contrast, open monitoring can be regarded as "choiceless" (Krishnamurti, 1991). How could such a practice facilitate self-determination? It may be that by allowing the mind to observe sensory, psychological, and somatic experience without judgment or cognitive closure, a deeper understanding of oneself and of what is truly satisfying has the opportunity to emerge (Ryan et al., 2021). Constructive family practices could be the most conducive to satisfaction of the relatedness need because they are aimed at cultivating prosocial attitudes and virtuous qualities. Research shows that loving-kindness meditation is indeed related to greater felt connection to other people (Fredrickson et al., 2008; Hutcherson, Seppala, & Gross, 2008; Kok et al., 2013). Deconstructive family practices might foster nonattachment, leading to greater felt autonomy as well as greater felt relatedness. Preliminary qualitative studies investigating the effects of inquiry-based stress reduction training (Mitchell & Mitchell, 2003) revealed that it helped participants to develop greater acceptance (Landau et al., 2016), cognitive flexibility, and psychological centeredness (Schnaider-Levi et al., 2017). More experimental research is needed to test such ideas, particularly given the predominance of focused attention and open monitoring practices in secular mindfulness training programs.

Mindfulness represents a psychological resource that is conceptually independent of social supports for autonomy, competence, and relatedness need satisfaction, an advantage that may be particularly valuable when such supports are lacking. However, research to investigate the possible synergistic effects of these psychological and social resources is called for (Olafsen, 2017; Schultz et al., 2015), particularly given the wide variety of contexts in which these resources can be brought to bear to enhance successful functioning and well-being.

## References

Adair, K. C., Boulton, A. J., & Algoe, S. B. (2018). The effect of mindfulness on relationship satisfaction via perceived responsiveness: Findings from a dyadic study of heterosexual romantic partners. *Mindfulness*, *9*(2), 597–609. https://doi.org/10.1007/s12671-017-0801-3

Anālayo, B. (2003). *Satipaṭṭhāna: The Direct Path to Realization*. Windhorse Publications.

Arch, J. J., Brown, K. W., Goodman, R. J., Della Porta, M. D., Kiken, L. G., & Tillman, S. (2016). Enjoying food without caloric cost: The impact of brief mindfulness on laboratory eating outcomes. *Behaviour Research and Therapy*, *79*, 23–34. https://doi.org/10.1016/j.brat.2016.02.002

Bauer, A. A., Loy, L. S., Masur, P. K., & Schneider, F. M. (2017). Mindful instant messaging. *Journal of Media Psychology*, *29*(3), 159–165. https://doi.org/10.1027/1864-1105/a000225

Bavelas, J. B., Coates, L., & Johnson, T. (2000). Listeners as co-narrators. *Journal of Personality and Social Psychology*, *79*(6), 941–952. https://doi.org/10.1037/0022-3514.79.6.941

Beloborodova, P., & Brown, K. W. (2021). *Trait mindfulness predicts daily felt competence and relatedness.* Unpublished raw data.

Beloborodova, P., Dutcher, J. M., Villalba, D. K., Tumminia, M. J. Doryab, A., Creswell, K., Cohen, S., Riskin, E., Sefdigar, Y., Seo, W., Mankoff, J., Dey, A., Creswell, J. D., & Brown, K. W. (2022). *College students' momentary states of mind are related to social well-being: The case of presence of mind.* Unpublished manuscript. Psychology Department, Virginia Commonwealth University.

Berry, D. R., Cairo, A. H., Goodman, R. J., Quaglia, J. T., Green, J. D., & Brown, K. W. (2018). Mindfulness increases prosocial responses toward ostracized strangers through empathic concern. *Journal of Experimental Psychology: General*, *147*(1), 93–112. https://doi.org/10.1037/xge0000392

Berry, D. R., Hoerr, J. P., Cesko, S., Alayoubi, A., Carpio, K., Zirzow, H., Walters, W., Scram, G., Rodriguez, K., & Beaver, V. (2020). Does mindfulness training without explicit ethics-based instruction promote prosocial behaviors? A meta-analysis. *Personality and Social Psychology Bulletin*, *46*(8), 1247–1269. https://doi.org/10.1177/0146167219900418

Brown, K. W., Creswell, J. D., & Ryan, R. M. (2015). *Handbook of mindfulness: Theory, research, and practice*. Guilford.

Brown, K. W., Goodman, R. J., Ryan, R. M., & Anālayo, B. (2016). Mindfulness enhances episodic memory performance: Evidence from a multimethod investigation. *PLOS One*, *11*(4), e0153309. https://doi.org/10.1371/journal.pone.0153309

Brown, K. W., & Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Social Indicators Research*, *74*(2), 349–368. https://doi.org/10.1007/s11205-004-8207-8

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Brown, K. W., Ryan, R. M., Creswell, J. D., & Niemiec, C. P. (2008). Beyond me: Mindful responses to social threat. In H. A. Wayment & J. J. Bauer (Eds.), *Transcending self-interest: Psychological explorations of the quiet ego* (pp. 75–84). American Psychological Association. https://doi.org/10.1037/11771-007

Burgoon, J. K., Berger, C. R., & Waldron, V. R. (2000). Mindfulness and interpersonal communication. *Journal of Social Issues*, *56*(1), 105–127. https://doi.org/10.1111/0022-4537.00154

Carson, J. W., Carson, K. M., Gil, K. M., & Baucom, D. H. (2004). Mindfulness-based relationship enhancement. *Behavior Therapy*, *35*(3), 471–494. https://doi.org/10.1016/S0005-7894(04)80028-5

Cerasoli, C. P., & Ford, M. T. (2014). Intrinsic motivation, performance, and the mediating role of mastery goal orientation: A test of self-determination theory. *Journal of Psychology*, *148*(3), 267–286. https://doi.org/10.1080/00223980.2013.783778

Cox, A. E., Roberts, M. A., Cates, H. L., & McMahon, A. K. (2018). Mindfulness and affective responses to treadmill walking in individuals with low intrinsic motivation to exercise. *International Journal of Exercise Science*, *11*(5), 609–624.

Cox, A. E., Ullrich-French, S., & Austin, B. (2020). Testing the role of state mindfulness in facilitating autonomous physical activity motivation. *Mindfulness*, *11*(4), 1018–1027. https://doi.org/10.1007/s12671-020-01311-y

Dahl, C. J., Lutz, A., & Davidson, R. J. (2015). Reconstructing and deconstructing the self: Cognitive mechanisms in meditation practice. *Trends in Cognitive Sciences*, *19*(9), 515–523. https://doi.org/10.1016/j.tics.2015.07.001

Deci, E. L., Ryan, R. M., Schultz, P. P., & Niemiec, C. P. (2015). Being aware and functioning fully: Mindfulness and interest taking within self-determination theory. In K. W. Brown, J. D. Creswell, & R. M. Ryan (Eds.), *Handbook of mindfulness: Theory, research, and practice* (pp. 112–129). Guilford.

Don, B. P. (2020). Mindfulness predicts growth belief and positive outcomes in social relationships. *Self and Identity*, *19*(3), 272–292. https://doi.org/10.1080/15298868.2019.1571526

Donald, J. N., Bradshaw, E. L., Ryan, R. M., Basarkod, G., Ciarrochi, J., Duineveld, J. J., Guo, J., & Sahdra, B. K. (2020). Mindfulness and its association with varied types of motivation: A systematic review and meta-analysis using self-determination theory. *Personality and Social Psychology Bulletin*, *46*(7), 1121–1138. https://doi.org/10.1177/0146167219896136

Donald, J. N., Sahdra, B. K., Zanden, B. V., Duineveld, J. J., Atkins, P. W. B., Marshall, S. L., & Ciarrochi, J. (2019). Does your mindfulness benefit others? A systematic review and meta-analysis of the link between

mindfulness and prosocial behaviour. *British Journal of Psychology*, *110*(1), 101–125. https://doi.org/10.1111/bjop.12338

Dunne, J. (2011). Toward an understanding of non-dual mindfulness. *Contemporary Buddhism*, *12*(1), 71–88. http://doi.org/10.1080/14639947.2011.564820

Elphinstone, B., Egan, P., & Whitehead, R. (2020). Greater autonomous motivation for study and basic psychological need satisfaction by being presently aware and "letting go": An exploration of mindful attention and nonattachment. *Motivation and Emotion*, 45, 1–12. https://doi.org/10.1007/s11031-020-09836-4

Fredrickson, B. L., Arizmendi, C., Van Cappellen, P., Firestine, A. M., Brantley, M. M., Kim, S. L., Brantley, J., & Salzberg, S. (2019). Do contemplative moments matter? Effects of informal meditation on emotions and perceived social integration. *Mindfulness*, *10*(9), 1915–1925. https://doi.org/10.1007/s12671-019-01154-2

Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, *95*(5), 1045–1062. https://dx.doi.org/10.1037%2Fa0013262

Gawande, R., To, M. N., Pine, E., Griswold, T., Creedon, T. B., Brunel, A., Lozada, A., Loucks, E. B., & Schuman-Olivier, Z. (2019). Mindfulness training enhances self-regulation and facilitates health behavior change for primary care patients: A randomized controlled trial. *Journal of General Internal Medicine*, *34*(2), 293–302. https://doi.org/10.1007/s11606-018-4739-5

Goodman, R. J., Trapp, S. K., Park, E. S., & Davis, J. L. (2021). Opening minds by supporting needs: Do autonomy and competence support facilitate mindfulness and academic performance? *Social Psychology of Education*, 19, 119–142. https://doi.org/10.1007/s11218-020-09577-9

Govinda, A. (1961). *The psychological attitude of early Buddhist philosophy, and its systematic representation according to Abhidhamma tradition*. Rider.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, *74*(6), 1464–1480. https://doi.org/10.1037/0022-3514.74.6.1464

Hafenbrack, A. C., Cameron, L. D., Spreitzer, G. M., Zhang, C., Noval, L. J., & Shaffakat, S. (2020). Helping people by being in the present: Mindfulness increases prosocial behavior. *Organizational Behavior and Human Decision Processes*, *159*, 21–38. https://doi.org/10.1016/j.obhdp.2019.08.005

Hafenbrack, A. C., & Vohs, K. D. (2018). Mindfulness meditation impairs task motivation but not performance. *Organizational Behavior and Human Decision Processes*, *147*, 1–15. https://doi.org/10.1016/j.obhdp.2018.05.001

Hanley, A. W., Warner, A. R., Dehili, V. M., Canto, A. I., & Garland, E. L. (2015). Washing dishes to wash the dishes: Brief instruction in an informal mindfulness practice. *Mindfulness*, *6*(5), 1095–1103. https://doi.org/10.1007/s12671-014-0360-9

Hodgins, H. S., & Knee, C. R. (2002). The integrating self and conscious experience. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 87–100). University of Rochester Press.

Hutcherson, C. A., Seppala, E. M., & Gross, J. J. (2008). Loving-kindness meditation increases social connectedness. *Emotion*, *8*(5), 720–724. https://doi-org.proxy.library.vcu.edu/10.1037/a0013237

Iwasaki, S., & Fry, M. (2016). Female adolescent soccer players' perceived motivational climate, goal orientations, and mindful engagement. *Psychology of Sport and Exercise*, *27*, 222–231. https://doi.org/10.1016/j.psychsport.2016.09.002

Jones, S. M., Bodie, G. D., & Hughes, S. D. (2019). The impact of mindfulness on empathy, active listening, and perceived provisions of emotional support. *Communication Research*, *46*(6), 838–865. https://doi.org/10.1177/0093650215626983

Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Dell.

Kappen, G., Karremans, J. C., Burk, W. J., & Buyukcan-Tetik, A. (2018). On the association between mindfulness and romantic relationship satisfaction: The role of partner acceptance. *Mindfulness*, *9*(5), 1543–1556. https://doi.org/10.1007/s12671-018-0902-7

Kirk, U., Brown, K. W., & Downar, J. (2015). Adaptive neural reward processing during anticipation and receipt of monetary rewards in mindfulness meditators. *Social Cognitive and Affective Neuroscience*, *10*(5), 752–759. https://doi.org/10.1093/scan/nsu112

Kok, B. E., Coffey, K. A., Cohn, M. A., Catalino, L. I., Vacharkulksemsuk, T., Algoe, S. B., & Fredrickson, B. L. (2013). How positive emotions build physical health: Perceived positive social connections account

for the upward spiral between positive emotions and vagal tone. *Psychological Science, 24*(7), 1123–1132. https://doi.org/10.1177/0956797612470827

Koole, S. L., Govorun, O., Cheng, C. M., & Gallucci, M. (2009). Pulling yourself together: Meditation promotes congruence between implicit and explicit self-esteem. *Journal of Experimental Social Psychology*, *45*(6), 1220–1226. https://doi.org/10.1016/j.jesp.2009.05.018

Krishnamurti, J. (1991). *The collected works of J. Krishnamurti: 1948–1949, Vol. 5: Choiceless awareness*. Krishnamurti Foundation of America.

Landau, C., Mitnik, I., Cohen-Mansfield, J., Tillinger, E., Friedman, E., & Lev-Ari, S. (2016). Inquiry-based stress reduction (IBSR) meditation technique for BRCA1/2 mutation carriers—A qualitative study. *European Journal of Integrative Medicine*, *8*(6), 958–964. https://doi-org.proxy.library.vcu.edu/10.1016/j.eujim.2016.04.001

Levesque, C., & Brown, K. W. (2007). Mindfulness as a moderator of the effect of implicit motivational self-concept on day-to-day behavioral motivation. *Motivation and Emotion*, *31*(4), 284–299. https://doi.org/10.1007/s11031-007-9075-8

Lindahl, J. R., Fisher, N. E., Cooper, D. J., Rosen, R. K., & Britton, W. B. (2017). The varieties of contemplative experience: A mixed-methods study of meditation-related challenges in Western Buddhists. *PLOS One*, *12*(5), e0176239. https://doi.org/10.1371/journal.pone.0176239

Lindsay, E. K., Young, S., Brown, K. W., Smyth, J. M., & Creswell, J. D. (2019). Mindfulness training reduces loneliness and increases social contact in a randomized controlled trial. *Proceedings of the National Academy of Sciences*, *116*(9), 3488–3493. https://doi.org/10.1073/pnas.1813588116

Ludwig, V. U., Brown, K. W., & Brewer, J. A. (2020). Self-regulation without force: Can awareness leverage reward to drive behavior change? *Perspectives on Psychological Science*, *15*(6), 1382–1399. https://doi.org/10.1177/1745691620931460

McGill, J., Adler-Baeder, F., & Rodriguez, P. (2016). Mindfully in love: A meta-analysis of the association between mindfulness and relationship satisfaction. *Journal of Human Sciences and Extension*, *4*(1), 89–101. https://doaj.org

Mitchell, B. K., & Mitchell, S. (2003). *Loving what is: Four questions that can change your life* (2nd ed.). Three Rivers Press.

Niemiec, C. P., Brown, K. W., Kashdan, T. B., Cozzolino, P. J., Breen, W. E., Levesque-Bristol, C., & Ryan, R. M. (2010). Being present in the face of existential threat: The role of trait mindfulness in reducing defensive responses to mortality salience. *Journal of Personality and Social Psychology*, *99*(2), 344–365. https://doi.org/10.1037/a0019388

Olafsen, A. H. (2017). The implications of need-satisfying work climates on state mindfulness in a longitudinal analysis of work outcomes. *Motivation and Emotion*, *41*(1), 22–37. https://doi.org/10.1007/s11031-016-9592-4

Quaglia, J. T., Goodman, R. J., & Brown, K. W. (2015). From mindful attention to social connection: The key role of emotion regulation. *Cognition & Emotion*, *29*(8), 1466–1474. https://doi.org/10.1080/02699931.2014.988124

Quaglia, J. T., Zeidan, F., Grossenbacher, P. G., Freeman, S. P., Braun, S. E., Martelli, A., Goodman, R. J., & Brown, K. W. (2019). Brief mindfulness training enhances cognitive control in socioemotional contexts: Behavioral and neural evidence. *PLOS One*, *14*(7), e0219862. https://doi.org/10.1371/journal.pone.0219862

Remmers, C., Zimmermann, J., Buxton, A., Unger, H.-P., Koole, S. L., Knaevelsrud, C., & Michalak, J. (2018). Emotionally aligned: Preliminary results on the effects of a mindfulness-based intervention for depression on congruence between implicit and explicit mood. *Clinical Psychology & Psychotherapy*, *25*(6), 818–826. https://doi.org/10.1002/cpp.2317

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., Donald, J. N., & Bradshaw, E. L. (2021). Mindfulness and motivation: A process view using self-determination theory. *Current Directions in Psychological Science, 30*(4) 300–306. https://doi.org/10.1177/09637214211009511

Ryan, R. M., & Rigby, C. S. (2015). Did the Buddha have a self? In K. W. Brown, J. D. Creswell, & R. M. Ryan (Eds.), *Handbook of mindfulness: Theory, research, and practice* (pp. 245–259). Guilford.

Sahdra, B. K., Shaver, P. R., & Brown, K. W. (2010). A scale to measure nonattachment: A Buddhist complement to Western research on attachment and adaptive functioning. *Journal of Personality Assessment*, *92*(2), 116–127. https://doi.org/10.1080/00223890903425960

Schnaider-Levi, L., Mitnik, I., Zafrani, K., Goldman, Z., & Lev-Ari, S. (2017). Inquiry-based stress reduction meditation technique for teacher burnout: A qualitative study. *Mind, Brain, and Education*, *11*(2), 75–84. https://doi.org/10.1111/mbe.12137

Schultz, P. P., & Ryan, R. M. (2015). The "why," "what," and "how" of healthy self-regulation: Mindfulness and well-being from a self-determination theory perspective. In B. D. Ostafin, M. D. Robinson, & B. P. Meier (Eds.), *Handbook of mindfulness and self-regulation* (pp. 81–94). Springer. https://doi.org/10.1007/978-1-4939-2263-5_7

Schultz, P. P., Ryan, R. M., Niemiec, C. P., Legate, N., & Williams, G. C. (2015). Mindfulness, work climate, and psychological need satisfaction in employee well-being. *Mindfulness*, *6*(5), 971–985. https://doi.org/10.1007/s12671-014-0338-7

Schuman-Olivier, Z., Trombka, M., Lovas, D. A., Brewer, J. A., Vago, D. R., Gawande, R., Dunne, J. P., Lazar, S. W., Loucks, E. B., & Fulwiler, C. (2020). Mindfulness and behavior change. *Harvard Review of Psychiatry*, *28*(6), 371–394. https://doi.org/10.1097/HRP.0000000000000277

Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. Guilford.

Shannon, S., Hanna, D., Haughey, T., Leavey, G., McGeown, C., & Breslin, G. (2019). Effects of a mental health intervention in athletes: Applying self-determination theory. *Frontiers in Psychology*, *10*, 1875. https://doi.org/10.3389/fpsyg.2019.01875

Van Dam, N. T., Van Vugt, M. K., Vago, D. R., Schmalzl, L., Saron, C. D., Olendzki, A., Meissner, T., Lazar, S. W., Kerr, C. E., Gorchov, J., Fox, K. C. R., Field, B. A., Britton, W. B., Brefczynski-Lewis, J. A., & Meyer, D. E. (2018). Mind the hype: A critical evaluation and prescriptive agenda for research on mindfulness and meditation. *Perspectives on Psychological Science*, *13*, 36–61.

Van den Broeck, A., Ferris, D. L., Chang, C.-H., & Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *Journal of Management*, *42*(5), 1195–1229. https://doi.org/10.1177/0149206316632058

van Vugt, M. K. (2015). Cognitive benefits of mindfulness meditation. In K. W. Brown, J. D. Creswell, & R. M. Ryan (Eds.), *Handbook of mindfulness: Theory, research, and practice* (pp. 190–207). Guilford.

# Integration versus Minimization of Emotional Experiences: Addressing Adaptive Emotion Regulation

Guy Roth *and* Moti Benita

## Abstract

Much of the research on emotion regulation describes the regulation of emotions as turning a volume button up or down, thus focusing on changes in intensity. Because strong negative emotions can disrupt functioning, many approaches to healthy emotion regulation focus on diminishing negative experiences. However, grounded in an *organismic* view of wellness, self-determination theory (SDT) views adaptive emotion regulation as represented by integrated and harmonious functioning. In this perspective, emotions are not obstacles that stand in the way of adaptive functioning but informational inputs that can help in the choice and self-guidance of actions. The chapter begins with SDT's definition of integrative emotion regulation (IER), compares it to controlled and amotivated regulation, and notes the differences between SDT's approach and other dominant approaches. It reviews research on consequences of IER, as well as research on its socialization. The chapter concludes with a discussion of future research directions.

**Key Words:** emotion regulation, emotional integration, awareness, autonomy, self-regulation, negative emotions

Emotion regulation is defined as an attempt to influence which emotions one has, when one experiences them, for how long, in what intensity, and how one expresses them (Gross, 2015). The ability to regulate the emotional experience and expression fosters adaptive behavior (Beauchaine, 2015) and is a key predictor of wellness (Weinstein, Brown, & Ryan, 2009), while difficulty doing so can generate maladjustment, even psychopathology (Beauchaine & Cicchetti, 2019; Gross, 2015). Because strong emotions—particularly negative ones like anger, fear, and sadness—can be unpleasant and hamper functioning, focus is often placed on diminishing negative experiences (Berenbaum et al., 1999).

Self-determination theory's (SDT; Deci & Ryan, 1985; Ryan & Deci, 2017) construction of healthy emotion regulation takes a different direction by centering on an organismic view of wellness (Ryan, Deci et al., 2006), in which wellness and mental health are associated with integrated and harmonious functioning; the latter, in turn, is characterized by awareness, assimilation, and self-regulated action (Ryan & Deci, 2017).

People diverge not only in the nature and intensity of their emotions but also in their motivational responses to them. SDT's definition of emotion regulation styles stems from its motivational distinction of autonomous, controlled, and amotivational processes. Autonomous regulation is a hallmark of healthy and growth-promoting functioning (Ryan, 1995). Central features are a lack of internal conflict, increased flexibility, and greater well-being (Deci & Ryan, 2000). SDT posits that autonomous regulation must develop in relation to external pressures, prompts, and temptations, as well as inner emotions, impulses, and urges (Ryan & Deci, 2017)—that is to say, at both the internal and the external boundaries of the self (Greenspan, 1979). Emotion regulation, a primary process in the internal boundary, reflects differences in autonomous or controlling functioning between individuals or within individuals in different contexts and life domains (Roth, Vansteenkiste, & Ryan, 2019). Whereas emotion regulation per se refers to the capacity to modulate one's emotions and impulses, SDT defines *emotional integration* as the most autonomous form of emotion regulation, as it involves a differentiated awareness of one's emotional states and the capacity to use this awareness in the volitional regulation of action (Ryan, Deci et al., 2006). In this view, emotions are informational inputs able to assist in the choice and self-guidance of actions, not hindrances to adaptive functioning (Vansteenkiste, Niemiec, & Soenens, 2010). By gaining access to and accepting both negative and positive feelings through self-reflection and/or volitional sharing, individuals grasp the nature of situations, choose coping strategies and actions, and adapt to failure experiences (Gratz & Roemer, 2004).

The chapter begins with SDT's definition of emotion regulation and relates this to other approaches. It then reviews research on the consequences of integrative emotion regulation and its socialization and concludes with suggestions for future directions.

## SDT Classification of Emotion Regulation Styles

SDT's essential distinction between autonomous and controlled regulation (Ryan & Deci, 2017) is reflected in the distinction between integrative emotion regulation (IER) and suppressive emotion regulation (SER; Benita, 2020). A third emotion regulation style, dysregulation, involves an amotivated stance to regulation (Ryan, Deci et al., 2006). These approaches differ in terms of quality and depth in processing emotions and in their respective consequences.

**Integrative emotion regulation.** In SDT, IER is considered the most mature and adaptive form of regulation at the "internal boundary" of rising feelings urges and impulses (Ryan, Deci, & Vansteenkiste, 2016). This intrapersonal emotion regulation style involves two components. First, consistent with mindfulness (Brown & Ryan, 2003), IER involves nonjudgmental, receptive attention to the emotional experience. Emotional inputs are attended to without distortion, minimization, or avoidance. Second, IER involves active interest in and volitional exploration of the experience, or "interest taking," and its relations to other aspects of self, like goals, values, and preferences (Benita, Levkovitz, & Roth,

2017; Benita, Shechter et al., 2021; Roth et al., 2018). Emotions are actively explored to grasp their meaning and importance. Having gained awareness of the experience and its potential meaning or value, the individual can make informed choices about subsequent actions, which may entail either the volitional expression of emotions, thereby relying on others as a source of emotional support (Ryan et al., 2005), or volitional withholding (Kim, Deci, & Zuckerman, 2002). Consistent with such theorizing, IER has been found to relate positively to openness for experience, authenticity, reflection (Roth et al., 2018), and well-being (Benita et al., 2020; Brenning et al, 2015).

**Suppressive emotion regulation.** Although emotions can be a source of information, they can also be experienced as pressuring and threatening, causing people to deny, suppress, or ignore the emotional experience (Roth et al., 2009). SER can be enacted in various ways. It can occur early in an emotional sequence when people deny or ignore the emotional experience by shifting attention or changing the meaning of the situation. As suppression includes *avoidance* of the emotional experience to minimize its impact, the emotion is not fully accessed or brought to awareness. SER can also occur later in the emotional sequence, when the emotional experience is already under way and is reflected in an attempt to hide the *behavioral expression* of the emotion (Gross, 2001). Individuals who commonly use SER are less likely to turn to others for emotional support (Kim et al., 2002), thereby impairing their ability to share their personal experiences or deal with negative emotions in relationships (Roth & Assor, 2012; Shahar, Kalman-Halevi, & Roth, 2018), possibly involving depression (Berenbaum et al., 1999). Because the individual does not attend to the emotional experience, it may resurface, causing rumination (Thomsen et al., 2011) and undermining well-being (Benita et al., 2020).

**Emotion dysregulation.** In dysregulation, a person feels incapable of managing emotions or urges. Emotions are experienced as overwhelming and/or disorganizing and, consequently, as impeding effective functioning. Individuals may have certain access to emotions, but these emotions may be expressed in unmodulated or impulsive ways or withheld. Emotion dysregulation can entail not only greater distress and self-harming behavior (Emery, Heath, & Mills, 2016) but also greater peer rejection, often because of outbursts, disruptions, or withdrawal (Shields, Cicchetti, & Ryan, 1994). The individual, when dysregulated, and whether expressing or withholding emotions, has little behavioral choice, generating relational tensions and subjective ill-being (Roth et al., 2009; Roth & Assor, 2012).

## SDT Definition of Adaptive Emotion Regulation versus Other Approaches

**Mindfulness.** Mindfulness is defined as nonjudgmental awareness of the present moment's experiences (Brown & Ryan, 2003; Chambers, Gullone, & Allen, 2009). It represents one approach to understanding the first dimension of IER: receptive awareness of the emotional experience (Deci et al., 2015; Roth et al., 2019). However, IER is not limited to mindful awareness; it also involves intentional and reflective exploration of the emotional

experience, or what has been described as "interest taking," with the goal of integrating the experience with other aspects of the self, like needs, values, and goals (Roth et al., 2018). Experimental work on consequences of IER has used manipulation instructions based on this second dimension (Roth et al., 2014, 2018). The first dimension of receptivity can open the door to the more deliberate second phase of active interest and inquiry that goes beyond observation, allowing the individual to explore their emotions and volitionally direct their behavior in a way that is informed by their interest taking.

**Ego control and ego resiliency**. Block and Block (1982) and Letzring, Block, and Funder (2005) define *ego resiliency* as a dynamic capacity to contextually modify one's level of ego control in response to contextual demands; *ego control* refers to the lack of ego resiliency. Overcontrol reflects rigid and consistent control of affect and impulses, even when control may not be needed. Undercontrol involves expression of impulse and affect across situations, even when doing so is inappropriate (Letzring et al., 2005). Overcontrol overlaps with SDT's suppressive regulation, whereas undercontrol resembles emotional dysregulation. Ego resiliency is considered a more adaptive and flexible style, involving the appropriate *balance* of overcontrol and undercontrol. Unlike SDT's concept of IER, ego resiliency does not refer explicitly to openness to emotions, or awareness and interest-based exploration, and it is not construed in terms of its level of autonomy or volition, a cardinal feature of IER. Instead, the concept of balance simply describes a flexible mode of steering behavior according to situational demands, without considering reasons for doing so or asking whether this balance is autonomous or controlled.

**Effortful control.** Effortful control is the ability to refocus and shift attention to inhibit or initiate responses in the service of nondominant responses (Rothbart & Bates, 2006). The developmental literature describes it as an adaptive way to regulate emotions, highly related to ego resiliency (Eisenberg et al., 2007). In SDT, the concept of emotional integration does not concern the amount of effort exerted to control emotions. Instead, it reflects the exertion and development of regulation through awareness, choice, and volition. Thus, from the SDT perspective, withholding a dominant reaction (i.e., effortful control) can happen for controlled or autonomous reasons. Moller, Deci, and Ryan (2006) found the pressured exertion of self-control is more energy-draining than the autonomous regulation of self-control. Concomitantly, controlling emotion regulation (i.e., SER) has costs for well-being (Benita et al., 2020), relationships (Roth & Assor, 2012; Shahar et al., 2018), and emotion regulation capacity (Benita et al., 2019; Weinstein & Hodgins, 2009; Roth et al., 2014, 2018).

**Process model of emotion regulation**. Gross's (1998a, 2015) influential approach describes specific regulatory practices unfolding over time, starting with attendance to emotional stimuli. The model differentiates between two clusters of regulatory practices modulating an emotion's response tendencies: *antecedent-focused* and *response-focused practices*. The former are enacted early in the emotion-generation process, before the emotional experience is fully activated; the latter appear later, when the emotion is already in

progress. Research has focused on two specific emotion regulation practices: *reappraisal,* a cognitive-oriented antecedent-focused strategy, and *expressive suppression*, a behaviorally response-focused strategy. Expressive suppression is defined as inhibiting ongoing emotional expressive behavior, and reappraisal is defined as attempting to think about a situation differently and to construe the emotion-eliciting situation in nonemotional terms so the emotion does not become salient to begin with (Gross, 2002). A large body of research suggests the advantage of reappraisal over suppression in such areas as cognitive functioning, social relations, and physiological benefits (Gross, 2015). Cognitive reappraisal's advantage is attributed to its timing in the emotional generation process, that is, before the unfolding of the emotional response.

Sometimes, however, reappraisal can be a controlled process, wherein the attempt to minimize the emotional experience is done defensively to avoid a threatening emotion and/or its outcomes. From the SDT perspective, reappraisal is adaptive when volitional. Thus, following receptive attention to the emotional experience and active exploration of its meaning, the individual volitionally sees how a different construal of the situation is warranted in a specific context. However, unreflective engagement in reappraisal (to diminish emotions) risks moving attention away from the important signals emotions convey. Thus, internalization of more adaptive appraisals, anchored in receptive attention and exploration, can be a volitional and, hence, more adaptive approach to emotion control. Along the same lines, suppression of expressive behavior may be adaptive when it originates in IER. For example, in an emergency, a parent may volitionally choose to hide their emotional turmoil to help their child stay calm.

In sum, antecedent-focused emotion regulation practices, like avoidance, distancing, and reappraisal, and response-focused emotion regulation practices, like suppression, may be adaptive when they result from integrative processes.

## Consequences of SDT's Emotion Regulation Styles

A theoretical construct can be considered psychologically meaningful only if it is linked, in a predictable way, with important psychological correlates. In the past decade, extensive experimental and correlational research in varied cultures has demonstrated adaptive outcomes of IER.

### Emotion Regulation Capacity: Evidence for an Immunization Effect

A typical outcome in emotion regulation research is emotion regulation capacity, often measured as decreased emotional arousal following exertion of regulatory efforts. However, the benefits of IER in this context are not self-evident because taking an interest in emotions, especially negative ones, might elevate them in the short term. Thus, such benefits of IER should be observed not only in immediate reduction of negative emotion but also in long-term reduction and adaptive processing of the emotional event. In the so-called immunization hypothesis, IER inoculates people against the long-term adverse effects of

events arousing negative emotions. In a test of this hypothesis, Roth et al. (2014, 2018) found participants in an IER condition displayed greater reduction in experienced fear and physiological arousal during a second exposure to a fear-eliciting scene and recalled more details than those in an expressive suppression condition (Roth et al., 2014) or an emotional distancing condition (Roth et al., 2018).

Others looking at the immunization hypothesis have asked whether long-term reductions in negative emotions are accompanied by nondefensiveness or the ability to gain access to all kinds of emotional experiences, positive or negative (Weinstein, Przybylski, & Ryan, 2013). A well-validated way to measure defensiveness is Pennebaker's (2017) word-category approach. Roth et al. (2018) found written texts of participants in an IER condition were indicative of a less defensive processing style than those in an emotional distancing condition. For example, self-referencing terms (e.g., "me" or "I" words) indicate nondefensive processing because the writer reveals a sense of ownership or engagement in the threatening experience (Newman et al., 2003). Similarly, Roth et al. (2014) found self-reported IER was positively associated with the use of word categories reflecting nondefensive emotional processing, while expressive suppression and dysregulation showed the opposite pattern.

More support for the immunization hypothesis comes from correlational research. Houle and Philippe (2020) recently showed participants high on IER and those high on dysregulation both reported significant memories of a negative event, but the former had higher acceptance of it, which, in turn, predicted increased well-being. In a short-term longitudinal study, Benita and Shechter et al. (2021) found that at a within-participant level, IER during goal pursuit predicted increases in both positive and negative affect, but at the between-participants level, those using IER experienced more positive emotions and were not likely to experience negative affect. Suppressive emotion regulation predicted negative affect at both levels, with no relation to positive affect.

Overall, these findings support the immunization hypothesis. Collectively, they show that although IER may predict short-term elevation of negative emotions after exposure to emotional events, it also predicts long-term reduction in negative emotions, more positive emotions, less defensiveness, and higher acceptance of the experience.

## Evidence of Adaptive Goal Pursuit

Researchers have long viewed emotions as having functional utility by helping people monitor their progress toward their goals and eventually attain them (Carver & Scheier, 2011; Izard, 1989). However, when pursuing goals, people often face setbacks (Brandstätter, Herrmann, & Schüler, 2013) likely to elicit unpleasant emotions, such as anxiety, shame, or embarrassment (Babij, Burnette, & Hoyt, 2020). These emotions can be experienced as overwhelming and divert people from a goal (Beauchaine & Cicchetti, 2019). Emotion regulation efforts should allow people to use the emotional experiences as information in the service of the goal pursuit, while not being overwhelmed by it. For example, (Benita,

Shechter et al., 2021) found that during goal pursuit, IER in the face of goal-related set-backs positively predicted goal progress through goal-related effort, and SER negatively predicted goal progress through goal-related depressed mood.

More recently, Benita and Arbel (2021) incorporated the differentiation between integrative and suppressive emotion regulation into the self-concordance model (Sheldon & Elliot, 1999), which differentiates autonomous from controlled goal pursuit for self-generated goals. The researchers found IER mediated the relations of autonomous goals with goal progress and positive affect, while SER mediated the negative relations of controlled goals with goal progress and the positive relations with negative affect during goal pursuit.

Collectively, these studies suggest IER facilitates adaptive resolution of goal-related setbacks. The autonomous stance to goals in general seems to propel an autonomous stance to negative emotions in the face of goal-related setbacks.

### Quality of Interpersonal Relationships

The benefits of IER extend to interpersonal processes. An important feature of adaptive interpersonal functioning is the experience of empathy (Zaki, 2020). Empathy involves the elicitation and elevation of negative emotions; therefore, the way people regulate those emotions is likely to determine whether they will experience caring and concern when the other is in need (Eisenberg, Spinrad, & Eggum, 2010) and whether they will provide emotional and/or instrumental help to that other (Cameron, 2018).

IER is expected to increase empathy because people who use this style generalize the interest-based stance they adopt to their own emotions, making them better attuned to what is emotionally salient for others. Roth, Shane, and Kanat-Maymon (2017) found adults with high IER displayed greater empathy for out-group members in intractable conflict, and this predicted support for conciliatory policies. Similarly, Benita et al. (2017) found adolescents high in IER reported greater empathy; this predicted greater self-reported prosocial behavior and higher teacher ratings of a student's concern for classmates.

Another interpersonal outcome related to IER is the quality of intimate relationships. Roth and Assor (2012) found individuals high on IER were more likely to empathetically support a partner struggling with emotional problems. In contrast, SER related negatively to the capacity to support others expressing negative emotions and related positively to difficulty disclosing negative emotions to a partner. In this study, dysregulation and suppressive emotion regulation had similar costs. Shahar et al. (2018) had similar results in a lab experiment involving intimate partners.

Collectively, the results suggest IER facilitates empathic responding to others in need. This results in a greater tendency to offer help to both in- and out-group members and in better-quality intimate relationships.

## IER and Well-Being

Evidence of the qualitative or long-term benefit of IER emerges in well-being research. SDT views well-being in terms of a person fully functioning—able to exercise their potential, connect with others, find meaning, and experience vitality (Ryan et al., 2016). A central tenet of SDT is that well-being, both hedonic and eudaimonic, is enhanced when a person engages in goals, activities, and lifestyles that satisfy basic psychological needs for competence, relatedness, and autonomy (Weinstein & Ryan, 2010). These needs are cross-developmentally and cross-culturally required for psychological growth, integrity, and well-being. In support of this view, Benita et al. (2020) showed that across three countries (Israel, Peru, Brazil) college students' IER positively predicted satisfaction of all three basic needs, and in turn basic need satisfaction mediated the relations between IER and eudaimonic indicators of well-being, assessed by Ryff's (1989) psychological well-being scales of personal growth, self-acceptance, and purpose in life. SER negatively predicted well-being through the frustration of the three needs.

Brenning et al. (2021) recently found Belgian adolescents' IER was positively related to psychological need satisfaction and negatively to need frustration. In addition, IER moderated the effect of basic need frustration and satisfaction with internalizing problems (depression, anxiety); the higher the adolescents were on IER, the less their basic need satisfaction and frustration predicted internalizing symptoms.

IER has been related to prospective reports of well-being. Brenning et al. (2015) showed Belgian adolescents' IER was related to increases in self-esteem over time. Houle and Philippe (2020) found Canadian adults' IER was related to well-being, measured as a composite of hedonic and eudaimonic well-being indicators: satisfaction with life (Diener et al., 1985), psychological well-being (Ryff, 1989), and depression (Beck & Beck, 1972).

Taken together, the findings suggest IER is a source of hedonic and eudaimonic well-being across cultures and age groups and may increase well-being by supporting psychological need satisfaction. It is also likely to buffer the effect of psychological need frustration and low need satisfaction on psychopathology symptoms.

## Socialization of IER

Given the benefits of IER, research anchored in SDT has explored contextual influences promoting this emotion regulation style, especially among children and adolescents. Emotion regulation is primarily socialized within the family (Eisenberg, Cumberland, & Spinrad, 1998; Spinrad, Morris, & Luthar, 2020). Most research on the socialization of emotion regulation has focused on a child's ability to down-regulate emotions, but SDT considers whether a child's emotion regulation capacities are autonomous (i.e., IER), controlled (i.e., SER), or amotivated (i.e., dysregulation).

Much of SDT's socialization research has been devoted to the distinction between autonomy supportive versus controlling parenting (Grolnick, Deci, & Ryan, 1997; Ryan, Deci et al., 2006). Autonomy-supportive socializing agents respect the other's perspective,

display interest in and care for the other's feelings, and generally take an accepting or experience-validating stance to the other. By minimizing pressure, autonomy-supportive agents promote a sense of initiative and choice, enabling others to act in nonconstricted and exploratory ways, responding to available emotional information with curiosity and less defensiveness. Roth et al. (2009) showed autonomy-supportive parenting related positively to IER, and this was mediated by a sense of choice to suppress or not suppress emotions. Similarly, Roth and Assor (2012) found parental autonomy support predicted adolescents' IER, and this predicted adolescents' intimacy capacity. Finally, Brenning et al. (2015) reported perceived maternal autonomy support increases in emotional integration and decreases in suppressive regulation over time. Interestingly, the effects of emotional dysregulation were reciprocal; parents' autonomy support decreased over time if adolescents displayed greater dysregulation at baseline, revealing the struggle of parents when children are emotionally dysregulated and the potential for negative spirals.

Contrary to autonomy support, controlling parenting practices take the form of providing a reward when a child meets parental expectation and punishment when the child does not. Obvious controlling practices include corporal punishment and intimidation; more subtle behaviors include guilt-induction and conditional regard. Conditional regard consists of two dimensions: conditional *positive* regard involves provision of more attention and affection than usual when a child meets parental expectations; conditional *negative* regard involves providing less attention and affection than usual when the child fails to do so. In the context of emotion regulation, the parent provides more or less affection to the child as a result of the extent to which the child's responses to emotional experiences meet parental expectations (e.g., expression or suppression of negative emotions). Parents high in conditional regard are often judgmental of children's personal responses to negative emotions; therefore, children may feel manipulated to minimize their expression or, on the contrary, to share them. As a result, they may distort their own awareness of negative emotions (Roth et al., 2019).

Roth et al. (2009) argued that conditional regard could lead to nonoptimal forms of emotion regulation among children, but differentially for positive and negative conditional regard. Their results supported the hypotheses: conditional negative regard predicted dysregulation of fear, mediated by resentment of the parents; conditional positive regard predicted emotion dysregulation and suppressive regulation, mediated by internal compulsion.

Parents may also pressure their children to express and share emotions, even if the children do not feel ready to do so. This may be particularly relevant in adolescence, when children wish to become more emotionally independent (Meeus et al., 2005; Van Petegem, Vansteenkiste, & Beyers, 2013). Alternatively, they may not be able to talk about their negative emotions. Many parents, especially those high in separation anxiety (Wuyts et al., 2017), will encourage their adolescent children to share negative emotions, but as SDT suggests, using conditional regard to promote sharing could have

negative outcomes. Emotions are highly personal, and pressure to share them may be seen as intrusive. Supporting this theory, Roth and Assor (2012) found expression-oriented conditional regard (parental pressure to expose emotions) predicted children's emotion dysregulation, while suppression-oriented conditional regard (parental pressure to inhibit emotion expression) predicted suppressive emotion regulation. In contrast, Ryan et al. (2005) have found that autonomy-supportive parenting predicts offspring's willingness to share emotional experiences with parents.

## Future Directions

Much of the research on emotion regulation has described regulation of negative emotions as turning a volume button up or down, in that regulation involves attenuation or intensification of negative emotions. As a significant branch of the research has evolved from work on coping with stress and anxiety (Lazarus, 1994), it is not surprising that the definition of adaptive regulation involves the extent to which the individual is able to reduce the intensity of negative emotions. Seminal work by Gross (1998a) contrasting reappraisal and expressive suppression is a prominent example of this tradition. These are two widely used strategies for down-regulating emotions; one is more efficient, because it comes early in the emotion-generation process, changes the meaning of the experience, and lessens the emotional experience. The other is less efficient; the emotional experience is already active, so the individual is left with the nonoptimal alternative of covering it up or avoiding its expression. Later research turned to specific contexts in which up-regulation of emotions, including negative ones, may be adaptive. For example, Tamir, Mitchell, and Gross (2008) studied up-regulation of anger in the context of conflictual negotiation, and Shahar et al. (2018) demonstrated the advantage of expressive behavior in the context of intimate relationships.

Yet an important focus of SDT goes beyond down-regulation, toward an understanding of how the active processing of emotions can facilitate more integrated, autonomous actions. In SDT's view, emotions are evolved signals that ideally play a constructive and informational role in self-regulation. Receptively attending to emotions, and being reflective about their meaning helps to enhance awareness and choice, and thus more autonomous self-regulation (Benita, Shechter et al., 2021; Ryan, Donald, & Bradshaw, 2021).

In this respect, IER relates to recent research on the value of flexibility in emotion regulation (Liu & Thompson, 2017), defined as the ability to match an emotion regulation practice to contextual demands (Aldao, Sheppes, & Gross, 2015; Bonanno & Burton, 2013; Hollenstein, 2015). Research has extensively examined outcomes of flexibility, but exploration of its antecedents is scarce. The SDT definition of integrative emotion regulation may contribute to the literature on flexibility. Defensive minimization of emotional experiences (i.e., SER) probably will not predict flexibility, but receptive, nonjudgmental, and nondefensive attention to the emotional experience, followed by intentional exploration of it, may. Gaining awareness of the experience and its meaning in a specific context

allows the individual to make informed choices about subsequent actions by taking into account contextual demands, personal goals, needs, and values. Thus, the integration of the experience may entail flexibility reflected by either the volitional expression or volitional withholding of emotions. Future research should explore IER as a possible antecedent of flexibility in varied life domains, such as relationships, coping with failures and setbacks, goal pursuit, and more.

Other research could empirically disentangle the two components of IER: receptive attention and intentional exploration. The present measurement does not separate the two dimensions, leaving the interplay between them a puzzle. We suggest the first dimension, receptive attention, may allow the second dimension, intentional exploration, but we need a more subtle measurement to test this proposition. Additionally, he research on integration of emotions is devoted to negative emotions. The focus is reasonable because negative emotions pose a greater challenge for regulation, but it is of interest to (1) ask whether the tendency to integrate negative experiences is associated with the tendency to integrate positive ones and (2) test their respective impacts on relevant outcomes, especially eudaimonic and hedonic well-being.

Future research would do well to devote attention to the facilitation of IER in interpersonal contexts. Beyond socialization (e.g., Brenning et al., 2015), SDT researchers have demonstrated the value of autonomy support (and needs support more generally) in close relationships (La Guardia et al., 2000; Moller et al., 2018; Ryan et al., 2005) and in healthcare (e.g., relationships between physicians and patients; Martinez et al., 2016). In line with the SDT conception of emotion regulation, it would be interesting to explore whether autonomy support in close relationships can help individuals take an interest in their emotions without being judgmental or defensive. This has important implications not only for close relationships but also for therapeutic encounters, where strong emotional experiences are often front and center, as recognized in modern "third wave" behavioral therapies like acceptance and commitment therapy (Hayes et al., 2006) and other therapeutic approaches (e.g., emotionally focused therapy; Greenberg, 2015). The emphasis on integration of emotions as a core therapeutic mechanism allows exploration of therapists' needs support as a possible antecedent of achieving emotional integration.

## Conclusion

The SDT conceptions of adaptive emotion regulation emphasize the capacity to use both negative and positive emotions as sources of information for volitional regulation of behavior. In the past decade, experimental and correlational research has found the capacity to integrate emotions with other aspects of the self relates to nondefensive emotional processing and improved well-being, social relationships, and goal pursuits. Negative emotions can be unpleasant and hamper functioning, but in many contexts and life domains, diminishing negative experiences may be counterproductive. In fact, intentional interest-taking in them may promote psychological growth.

# References

Aldao, A., Sheppes, G., & Gross, J. J. (2015). Emotion regulation flexibility. *Cognitive Therapy and Research*, *39*(3), 263–278. https://doi.org/10.1007/s10608-014-9662-4

Babij, A. D., Burnette, J. L., & Hoyt, C. L. (2020). Failing and feeling bad: How we think about experiencing negative emotions during setbacks. *Motivation and Emotion*, *44*(3), 436–452. https://doi.org/10.1007/s11031-019-09789-3

Beauchaine, T. P. (2015). Future directions in emotion dysregulation and youth psychopathology. *Journal of Clinical Child & Adolescent Psychology*, *44*(5), 875–896. https://doi.org/10.1080/15374416.2015.1038827

Beauchaine, T. P., & Cicchetti, D. (2019). Emotion dysregulation and emerging psychopathology: A transdiagnostic, transdisciplinary perspective. *Development and Psychopathology*, *31*(3), 799–804. https://doi.org/10.1017/S0954579419000671

Beck, A. T., & Beck, R. W. (1972). Screening depressed patients in family practice: A rapid technic. *Postgraduate Medicine*, *52*(6), 81–85. https://doi.org/10.1080/00325481.1972.11713319

Benita, M. (2020). Freedom to feel: A self-determination theory account of emotion regulation. *Social and Personality Psychology Compass*, e12563. https://doi.org/10.1111/spc3.12563

Benita, M., Arbel, R., Nudler-Muzikant, S., & Mills, D. J. (2021). *Pursuing academic goals for autonomous and controlled reasons: The mediating role of emotion regulation*. Manuscript submitted for publication.

Benita, M., Benish-Weisman, M., Matos, L., & Torres, C. (2020). Integrative and suppressive emotion regulation differentially predict well-being through basic need satisfaction and frustration: A test of three countries. *Motivation and Emotion*, *44*(1), 67–81. https://doi.org/10.1007/s11031-019-09781-x

Benita, M., Kehat, R., Zaba, R., Blumenkranz, Y., Kessler, G., Bar-Sella, A., & Tamir, M. (2019). Choosing to regulate emotions: Pursuing emotion goals in autonomy-supportive and controlling contexts. *Personality and Social Psychology Bulletin*, *45*(12), 1666–1680. https://doi.org/10.1177/0146167219838557

Benita, M., Levkovitz, T., & Roth, G. (2017). Integrative emotion regulation predicts adolescents' prosocial behavior through the mediation of empathy. *Learning and Instruction*, *50*, 14–20. https://doi.org/10.1016/j.learninstruc.2016.11.004

Benita, M., Shechter, T., Nudler-Muzikant, S., & Arbel, R. (2021). Emotion regulation during personal goal pursuit: Integration versus suppression of emotions. *Journal of Personality*, *89*(3), 565–579. https://doi.org/10.1111/jopy.12599

Berenbaum, H., Raghavan, C., Le, H. N., Vernon, L., & Gomez, J. (1999). Disturbances in emotion. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: Foundations of hedonic psychology* (pp. 267–287). Sage.

Block, J. H., & Block, J. (1982). The role of ego-control and ego-resiliency in the organization of behavior. In W. A. Collins (Ed.), *Development of Cognition, Affect, and Social Relations* (pp. 49–112). Psychology Press. https://doi.org/10.4324/9781315803029-7

Bonanno, G. A., & Burton, C. L. (2013). Regulatory flexibility: An individual differences perspective on coping and emotion regulation. *Perspectives on Psychological Science*, *8*(6), 591–612. https://doi.org/10.1177/1745691613504116

Brandstätter, V., Herrmann, M., & Schüler, J. (2013). The struggle of giving up personal goals: Affective, physiological, and cognitive consequences of an action crisis. *Personality and Social Psychology Bulletin*, *39*(12), 1668–1682. https://doi.org/10.1177/0146167213500151

Brenning, K., Soenens, B., Van Petegem, S., & Vansteenkiste, M. (2015). Perceived maternal autonomy support and early adolescent emotion regulation: A longitudinal study: Autonomy support and emotion regulation. *Social Development*, *24*(3), 561–578. https://doi.org/10.1111/sode.12107

Brenning, K., Soenens, B., Vansteenkiste, M., De Clercq, B., & Antrop, I. (2021). Emotion regulation as a transdiagnostic risk factor for (non)clinical adolescents' internalizing and externalizing psychopathology: Investigating the intervening role of psychological need experiences. *Child Psychiatry & Human Development*, *53*(1), 124–136. https://doi.org/10.1007/s10578-020-01107-0

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Cameron, C. D. (2018). Motivating empathy: Three methodological recommendations for mapping empathy. *Social and Personality Psychology Compass*, *12*(11), e12418. https://doi.org/10.1111/spc3.12418

Carver, C. S., & Scheier, M. F. (2011). Self-regulation of action and affect. In K. D. Vohs & R. F. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications* (2nd ed., pp. 3–21). Guilford Press.

Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review*, *29*(6), 560–572. https://doi.org/10.1016/j.cpr.2009.06.005

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Springer.

Deci, E. L., & Ryan, R. M. (2000). The "what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268.

Deci, E. L., Ryan, R. M., Schultz, P. P., & Niemiec, C. P. (2015). Being aware and functioning fully: Mindfulness and interest-taking within self-determination theory. In K. W. Brown, J. D. Creswell, & R. M. Ryan (Eds.), *Handbook of mindfulness: Theory, research, and practice* (pp. 112–129). Guilford Press.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Eisenberg, N., Cumberland, A., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychological Inquiry*, *9*(4), 241–273. https://doi.org/10.1207/s15327965pli0904_1

Eisenberg, N., Michalik, N., Spinrad, T. L., Hofer, C., Kupfer, A., Valiente, C., Liew, J., Cumberland, A., & Reiser, M. (2007). The relations of effortful control and impulsivity to children's sympathy: A longitudinal study. *Cognitive Development*, *22*(4), 544–567. https://doi.org/10.1016/j.cogdev.2007.08.003

Eisenberg, N., Spinrad, T. L., & Eggum, N. D. (2010). Emotion-related self-regulation and its relation to children's maladjustment. *Annual Review of Clinical Psychology*, *6*(1), 495–525. https://doi.org/10.1146/annurev.clinpsy.121208.131208

Emery, A. A., Heath, N. L., & Mills, D. J. (2016). Basic psychological need satisfaction, emotion dysregulation, and non-suicidal self-injury engagement in young adults: An application of self-determination theory. *Journal of Youth and Adolescence*, *45*(3), 612–623. https://doi.org/10.1007/s10964-015-0405-y

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, *26*(1), 41–54. https://doi.org/10.1023/B:JOBA.0000007455.08539.94

Greenberg, L. S. (2015). *Emotion-focused therapy: Coaching clients to work through their feelings* (2nd ed.). Washington, DC, US: American Psychological Association.

Greenspan, S. I. (1979). Intelligence and adaptation: An integration of psychoanalytic and Piagetian developmental psychology. *Psychological Issues*, *12*(3–4, Mono 47/48), 408–408.

Grolnick, W. S., Deci, E. L., & Ryan, R. M. (1997). Internalization within the family: The self-determination theory perspective. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 135–161). John Wiley & Sons.

Gross, J. J. (1998a). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology*, *74*(1), 224–237. https://doi.org/10.1037/0022-3514.74.1.224

Gross, J. J. (1998b). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, *2*(3), 271–299. https://doi.org/10.1037/1089-2680.2.3.271

Gross, J.J. (2001). Emotion regulation in adulthood: Timing is everything. *Current Directions in Psychological Science, 10*, 214–219.

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*, *39*(3), 281–291.

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, *26*(1), 1–26. https://doi.org/10.1080/1047840X.2014.940781

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, 44(1), 1–25. https://doi.org/10.1016/j.brat.2005.06.006

Hollenstein, T. (2015). This time, it's real: Affective flexibility, time scales, feedback loops, and the regulation of emotion. *Emotion Review*, *7*(4), 308–315. https://doi.org/10.1177/1754073915590621

Houle, I., & Philippe, F. L. (2020). Is the negative always that bad? Or how emotion regulation and integration of negative memories can positively affect well-being. *Journal of Personality*, *88*(5), 965–977. https://doi.org/10.1111/jopy.12544

Izard, C. E. (1989). The structure and functions of emotions: Implications for cognition, motivation, and personality. In I. S. Cohen (Ed.), The G. Stanley Hall lecture *series* (pp. 39–73). American Psychological Association. https://doi.org/10.1037/10090-002

Kim, Y., Deci, E. L., & Zuckerman, M. (2002). The development of the Self-Regulation of Withholding Negative Emotions Questionnaire. *Educational and Psychological Measurement*, *62*(2), 316–336. https://doi.org/10.1177/0013164402062002008

La Guardia, J. G., Ryan, R. M., Couchman, C., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology, 79*, 367–384.

Lazarus, R. S. (1994). *Emotion and adaptation* (Reprint ed.). Oxford University Press.

Letzring, T. D., Block, J., & Funder, D. C. (2005). Ego-control and ego-resiliency: Generalization of self-report scales based on personality descriptions from acquaintances, clinicians, and the self. *Journal of Research in Personality, 39*(4), 395–422. https://doi.org/10.1016/j.jrp.2004.06.003

Liu, D. Y., & Thompson, R. J. (2017). Selection and implementation of emotion regulation strategies in major depressive disorder: An integrative review. *Clinical Psychology Review, 57*, 183–194. https://doi.org/10.1016/j.cpr.2017.07.004

Martinez, K. A., Resnicow, K., Williams, G. C., Silva, M. N., Abrahamse, P., Shumway, D. A., Wallner, L. P., Katz, S. J., & Hawley, S. T. (2016). Does physician communication style impact patient report of decision quality for breast cancer treatment? *Patient Education and Counseling, 99*(12), 1947–1954. doi: 10.1016/j.pec.2016.06.025

Meeus, W., Iedema, J., Maassen, G., & Engels, R. (2005). Separation-individuation revisited: On the interplay of parent-adolescent relations, identity and emotional adjustment in adolescence. *Journal of Adolescence, 28*(1), 89–106. https://doi.org/10.1016/j.adolescence.2004.07.003

Moller, A. C., Deci, E. L., & Ryan, R. M. (2006). Choice and ego-depletion: The moderating role of autonomy. *Personality and Social Psychology Bulletin, 32*(8), 1024–1036. https://doi.org/10.1177/0146167206288008

Moller, A.C., Roth, G., Niemiec, C. P., Kanat-Maymon, Y., & Deci, E. L. (2018). Mediators of the association between parents' conditional regard and the quality of their adult-children's peer-relationships. *Motivation and Emotion, 43*, 35–51.

Newman, M. L., Pennebaker, J. W., Berry, D. S., & Richards, J. M. (2003). Lying words: Predicting deception from linguistic style. *Personality and Social Psychology Bulletin, 29*, 665–675.

Pennebaker, J. W. (2017). Expressive writing in psychological science. *Perspectives on Psychological Science, 13*(2), 226–229. https://doi.org/10.1177/1745691617707315

Roth, G., & Assor, A. (2012). The costs of parental pressure to express emotions: Conditional regard and autonomy support as predictors of emotion regulation and intimacy. *Journal of Adolescence, 35*(4), 799–808. https://doi.org/10.1016/j.adolescence.2011.11.005

Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and academic consequences of parental conditional regard: Comparing conditional positive regard, conditional negative regard, and autonomy support as parenting practices. *Developmental Psychology, 45*(4), 1119–1142. https://doi.org/10.1037/a0015272

Roth, G., Benita, M., Amrani, C., Shachar, B.-H., Asoulin, H., Moed, A., Bibi, U., & Kanat-Maymon, Y. (2014). Integration of negative emotional experience versus suppression: Addressing the question of adaptive functioning. *Emotion, 14*(5), 908–919. https://doi.org/10.1037/a0037051

Roth, G., Shahar, B.-H., Zohar-Shefer, Y., Benita, M., Moed, A., Bibi, U., Kanat-Maymon, Y., & Ryan, R. M. (2018). Benefits of emotional integration and costs of emotional distancing. *Journal of Personality, 86*(6), 919–934. https://doi.org/10.1111/jopy.12366

Roth, G., Shane, N., & Kanat-Maymon, Y. (2017). Empathising with the enemy: Emotion regulation and support for humanitarian aid in violent conflicts. *Cognition and Emotion, 31*(8), 1511–1524. https://doi.org/10.1080/02699931.2016.1237348

Roth, G., Vansteenkiste, M., & Ryan, R. M. (2019). Integrative emotion regulation: Process and development from a self-determination theory perspective. *Development and Psychopathology, 31*(3), 945–956. https://doi.org/10.1017/S0954579419000403

Rothbart, M. K., & Bates, J. E. (2006). Temperament. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology* (Vol. 3, pp. 99–166). Wiley. http://onlinelibrary.wiley.com/doi/10.1002/9780470147658.chpsy0303/abstract

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality, 63*(3), 397–427. https://doi.org/10.1111/j.1467-6494.1995.tb00501.x

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness.* Guilford Press.

Ryan, R. M., Deci, E. L., Grolnick, W. S., & La Guardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti & D. J. Cohne (Eds.), *Developmental psychopathology* (2nd ed., Vol. 1, pp. 795–849). Wiley.

Ryan, R. M., Deci, E. L., & Vansteenkiste, M. (2016). Autonomy and autonomy disturbances in self-development and psychopathology: Research on motivation, attachment, and clinical process. *Developmental Psychopathology*, *1*, 385–438.

Ryan, R. M., Donald, J. N., & Bradshaw, E. L. (2021). Mindfulness and motivation: A process view using self-determination theory. *Current Directions in* Psychological Science, *30*(4), 300–306. https://doi.org/10.1177/09637214211009511

Ryan, R. M., La Guardia, J. G., Solky-Butzel, J., Chirkov, V., & Kim, Y. (2005). On the interpersonal regulation of emotions: Emotional reliance across gender, relationships, and cultures. *Personal Relationships*, *12*(1), 145–163. https://doi.org/10.1111/j.1350-4126.2005.00106.x

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*(6), 1069–1081. https://doi.org/10.1037/0022-3514.57.6.1069

Shahar, B.-H., Kalman-Halevi, M., & Roth, G. (2018). Emotion regulation and intimacy quality: The consequences of emotional integration, emotional distancing, and suppression. *Journal of Social and Personal Relationships*, *36*(11–12), 3343–3361. https://doi.org/10.1177/0265407518816881

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, *76*(3), 482–497. https://doi.org/10.1037//0022-3514.76.3.482

Shields, A. M., Cicchetti, D., & Ryan, R. M. (1994). The development of emotional and behavioral self-regulation and social competence among maltreated school-age children. *Development and Psychopathology*, *6*(1), 57–75. https://doi.org/10.1017/S0954579400005885

Spinrad, T. L., Morris, A. S., & Luthar, S. S. (2020). Introduction to the special issue: Socialization of emotion and self-regulation: Understanding processes and application. *Developmental Psychology*, *56*(3), 385–389. https://doi.org/10.1037/dev0000904

Tamir, M., Mitchell, C., & Gross, J. J. (2008). Hedonic and instrumental motives in anger regulation. *Psychological Science*, *19*(4), 324–328. https://doi.org/10.1111/j.1467-9280.2008.02088.x

Thomsen, D. K., Tønnesvang, J., Schnieber, A., & Olesen, M. H. (2011). Do people ruminate because they haven't digested their goals? The relations of rumination and reflection to goal internalization and ambivalence. *Motivation and Emotion*, *35*(2), 105–117. https://doi.org/10.1007/s11031-011-9209-x

Van Petegem, S., Vansteenkiste, M., & Beyers, W. (2013). The jingle-jangle fallacy in adolescent autonomy in the family: In search of an underlying structure. *Journal of Youth and Adolescence*, *42*(7), 994–1014. https://doi.org/10.1007/s10964-012-9847-7

Vansteenkiste, M., Niemiec, C. P., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: An historical overview, emerging trends, and future directions. In T. C. Urdan & S. A. Karabenick (Eds.), *The decade ahead: Theoretical perspectives on motivation and achievement* (pp. 105–165). Emerald Group.

Weinstein, N., Brown, K. W., & Ryan, R. M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal of Research in Personality*, *43*(3), 374–385. https://doi.org/10.1016/j.jrp.2008.12.008

Weinstein, N., & Hodgins, H. S. (2009). The moderating role of autonomy and control on the benefits of written emotion expression. *Personality and Social Psychology Bulletin*, *35*(3), 351–364. https://doi.org/10.1177/0146167208328165

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2013). The integrative process: New research and future directions. *Current Directions in Psychological Science*, *22*(1), 69–74. https://doi.org/10.1177/0963721412468001

Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, *98*(2), 222–244. https://doi.org/10.1037/a0016984

Wuyts, D., Soenens, B., Vansteenkiste, M., Van Petegem, S., & Brenning, K. (2017). The role of separation anxiety in mothers' use of autonomy support: An observational study. *Journal of Child and Family Studies*, *26*(7), 1949–1957. https://doi.org/10.1007/s10826-017-0707-7

Zaki, J. (2020). Integrating empathy and interpersonal emotion regulation. *Annual Review of Psychology*, *71*(1), 517–540. https://doi.org/10.1146/annurev-psych-010419-050830

# The Energy behind Human Flourishing: Theory and Research on Subjective Vitality

Christina Frederick *and* Richard M. Ryan

## Abstract

This chapter reviews the history of theory and research on subjective vitality within self-determination theory (SDT). Research on subjective vitality, defined as the phenomenal experience of aliveness and of having energy available to the self, has demonstrated the centrality of this experience of energy to wellness and flourishing. Research has shown that subjective vitality varies not only with physical conditions but also with different types and conditions of motivation. Generally, more autonomous motives are associated with enhanced vitality, whereas controlled motives diminish subjective energy. Findings also show that satisfaction of basic psychological needs enhances subjective vitality, whereas need frustrations deplete one's sense of energy and aliveness. Experimental work on "ego depletion," in which self-controlling motives are induced, leading to lowered energy, is consistent with this SDT-based theorizing. Subjective vitality has been studied in many domains, beginning with exercise and physical activity and extending to areas such as health and wellness, sleep, energy in the workplace, and the importance of nature to the experience of vitality. Across contexts and characters, subjective vitality remains one of the most phenomenally accessible and predictive indicators of wellness available.

**Key Words:** self-determination theory, vitality, motivation, ego depletion, autonomy

As an organismic perspective, self-determination theory (SDT) is centrally concerned with what characterizes full functioning and thriving. Among the most important variables in that description is the experience of vitality. For over 25 years, *subjective vitality* has been a central construct in SDT research, as both an aspect of motivational states and an indicator of well-being and flourishing. Ryan and Frederick (1997, p. 530) defined subjective vitality as the "experience of possessing energy and aliveness," or the feeling of having energy available to the self. In keeping with the overall tenets of SDT, they assumed that subjective vitality would vary with both psychological and physical influences. Especially relevant was the idea that beyond physical factors such as exertion or

fatigue, satisfaction of SDT's basic psychological needs would enhance subjective vitality, whereas basic need frustrations would deplete this resource.

Across the many years since, subjective vitality has been studied within motivational contexts ranging from sports to the workplace and across varied cultures and age groups. Today we have gained a deeper understanding of the construct itself, as well as its place within SDT. In the current chapter we review the subjective vitality literature, focusing on its conceptualization, operational definition, and integration within SDT's organismic framework and nomological net. After reviewing illustrative research on vitality in relation to a variety of topics, we discuss the future of vitality-based research and pathways to enhance vitality through changes in one's inner (e.g., mindfulness) and outer (e.g., natural elements) environments.

## Vitality as a Ubiquitous Concept

The general concept of vitality has been discussed for centuries by philosophers, writers, religious scholars, and, more recently, psychologists. The notion of a life energy possessed by individuals that can be mobilized or depleted over time has, for example, long been present in Eastern perspectives. Cleary (1991) notes vitality as a theme in Taoist texts dating back over 2,500 years. The concepts *chi* or *ki* (Jou, 1981), *prana* (Kumagai, 1988), and *bayu* (Wikan, 1989) all describe vitality as a life force or energy both physical in nature and encompassing a subjective experience. As a core concept of Eastern religious traditions, corresponding practices arose to promote the flow of vitality, including, but not limited to, the disciplines of yoga, meditation, tai chi, and acupuncture (Thayer, 1986, 1996).

Within Western psychology, the concept of a life force was present early on in the work of Freud and the ego psychologists, identified as *Eros*, the energy that seeks unity and binding and thus underlies the synthetic or integrative nature of the ego (Freud 1923/ 1962; Nunberg, 1931; White, 1959). In this dynamic view, psychic conflicts and divisions deplete this energy, whereas unity and freedom from conflict allow for feelings of vitality and the more constructive activities of the ego. Reich (1951) and Lowen (1989), two psychoanalytic practitioners who focused on body psychotherapies, argued that psychic conflict can be redirected into defenses, resulting in energy blocks and rigidities, whereas psychological integration is manifest as vitality.

Conceptualizations of vitality have also emerged in more traditional health-related literatures. Selye (1950, 1956) developed a well-known theory identifying how stressors (psychological, environmental, and medical) are able to chip away at the pool of adaptive energy humans use to remain healthy. When that energy reserve becomes depleted, the results are illness and exhaustion.

Interest in subjective energy was also sparked by McNair, Lorr, and Doppleman's (1971) Profile of Mood States (POMS), which became a widely used measure in both

medical (Searight & Montone, 2020) and sport (LeUnes & Burger, 2000) research. The POMS assesses six related areas: tension, depression, anger, vigor, fatigue, and confusion, with the subscale of vigor tapping most directly into energy mood states (O'Connor, 2004). For example, a POMS profile with high levels of vigor and associated low levels of depression, tension, anger, fatigue, and confusion is referred to as the "iceberg profile," which is more frequent among elite versus less competitive or more casual athletes (Renger, 1993). Vigor has also been associated with sleep quality (e.g., Tsunoda et al., 2017) and even sport performance (e.g., Newby & Simpson, 1996), as well as with our original Subjective Vitality Scale (SVS; Ryan & Frederick, 1997).

A particularly interesting perspective on energy was developed by Thayer (1989, 2003), who distinguished two types of energy states: calm energy and tense energy. He defined calm energy as the relaxed possession of liveliness and vigor, and it is that state which corresponds to the state of vitality as conceptualized in SDT. Calm energy contrasts with both low energy (e.g., fatigue), and tense energy (e.g., caffeine-induced, pressure-induced) states. In an early experiment with SDT relevance, Thayer and Moore (1972) had students perform an intellectual task under ego-involved and task-involved conditions. The ego-involvement condition was induced by conveying that the task was testing their intelligence, an induction similar to that used by Ryan (1982) as an internally controlling condition to undermine intrinsic motivation. Thayer and Moore (1972) found that this ego-involving condition resulted in greater tension but lower feelings of energy than a condition involving a more task-involving set. In other experiments Thayer (2003) showed that walking (a physical energy-expending activity) could replenish calm energy, similar to findings with the SVS (e.g., Ryan et al., 2010).

## SDT's Organismic Model of Vitality

While these historical and health perspectives are of interest, the conceptualization of subjective vitality within SDT draws most directly from organismic thinking (Ryan & Deci, 2017; Ryan & Vansteenkiste, this volume). A fundamental assumption in SDT is that humans are self-organizing creatures who, when healthy, are actively assimilating and integrating life experiences (Ryan, 1995). SDT describes a fully functioning person as actively engaged in the world, curiously learning, observing, connecting, and internalizing. The person is in such moments making what Perls, Hefferline, and Goodman (1951) described as "healthy contact": their behavior is characterized by both awareness (clear perception) and excitement (energy mobilization). Within SDT subjective vitality represents this experience of positive energy that is within one's possession or available for mobilization.

In this regard there is an intimate link between SDT's concept of autonomy and subjective vitality. Specifically, when a person is acting with autonomy, they can be fully and

volitionally engaged. The more autonomy, the less one needs "self-control" (which we view as depleting) and the more energy and excitement are available to the self (Quirin et al., 2021). As we shall review, research confirms that when acting with autonomy, people are more able to mobilize more energy and report greater vitality.

More generally, SDT posits that all three psychological needs—those for competence and relatedness as well as autonomy—impact vitality, with satisfactions enhancing and frustrations diminishing it (Ryan & Deci, 2008). Competence is intrinsically rewarding and motivating, thus it is associated with energy mobilization and with feelings of effectance fueling mobilization. Relatedness differently is intrinsically satisfying and both supports autonomy (as specified in relationships motivation theory; see Knee & Browne, this volume) and is "exciting" in its own right, eliciting energy and engagement.

In short, SDT argues that subjective vitality represents the experience of energy available to the self. It is expressed in terms like "excitement," "enthusiasm," and "spirit" that convey not merely arousal but a positive spirit from within. Subjective vitality is affected by a variety of physical factors, especially those affecting sleep and health (see Campbell & Vansteenkiste, 2022, this volume). But the dynamics of personal vitality go well beyond physical factors as they also reflect supports for and satisfactions of the person's basic psychological needs for autonomy, competence, and relatedness. Indeed, physical and psychological factors exert both independent and interactive influences on vitality, as we shall review.

Within SDT theory and research, vitality is used as a descriptor of high-quality engagement, but also as a central indicator of organismic wellness, or, as Ryan and Deci (2017, p. 256) write, "the most general characteristic of a fully functioning person." This is fitting insofar as the very term "vitality" has etymological roots in the ideas of life and living. Given its centrality, it is also not surprising that vitality is one of the most phenomenologically accessible and cross-culturally translatable constructs within SDT. People everywhere can readily and reliably rate whether they have energy and spirit, as well as distinguish that state from high arousal (as in anxiety, panic, or anger).

SDT thus sees vitality as fluctuating as a function of physiological factors (e.g., prior exertion, nourishment, sleep, health-related issues) as well as basic psychological need-related experiences. Yet notably, these are not simply additive factors. There are clear examples in life when one is fatigued or hungry, and yet the psychological excitement of pursuing a valued goal sustains high levels of vitality. An elite athlete who has just successfully completed a major competition might objectively define exhaustion as a physical state, yet the feelings of autonomy, competence, and relatedness they feel in the moments after finishing may support elevated perceptions of vitality. In contrast are examples of people rested and nourished who lack a sense of spark and vitality, as in oppressed individuals seeing no purpose in action.

**Initial Validation Studies**

Our interest in vitality first emerged in research on sport and exercise, through interviews with exercisers and athletes. Many participants spontaneously used the term "vitality" to describe the experience or consequences of physical activity (Frederick, 1991; Frederick & Ryan, 1993). Seeing how central and accessible the idea of vitality was, we began more earnestly measuring it.

Subsequently, Ryan and Frederick (1997) presented the results of six studies validating a seven-item SVS. In Study 1, subjective vitality was examined in relationship to psychological and physiological health outcomes. Results confirmed that higher levels of vitality were associated with positive measures of psychological health and negatively with self-reports of ill-being, such as anxiety and depression. In Study 2 we examined the stability of the vitality construct over an eight-week period in several participant groups. Results showed that SVS scores were positively related to autonomy as well as psychological and physical health indicators. Study 3 focused on exploring subjective vitality as it relates independently to positive affect and negative affect, as well as relating it to the Big Five personality factors (Costa & McCrae, 1985). Here vitality was positively related to extraversion and positive affectivity, and negatively to neuroticism and negative affect. In Study 4 we examined the effects of pain on subjective vitality. Findings showed that patients in a pain clinic reported lower vitality compared to a matched control sample. Among pain clinic patients, vitality was found to be higher among those who experienced pain as disabling or who reported pain fright. Vitality also predicted patients' levels of self-esteem, body functioning, and self-actualization. Study 5 focused on stability of vitality across a two-year period among patients treated for obesity. Subjective vitality was correlated with greater change in body mass index across the program and was also related to internalization of weight loss motivation. Finally, in Study 6 we utilized a diary study method to examine daily fluctuations in perceptions of vitality. Findings showed that vitality was impacted by changes in physical symptomatology, with greater symptomatology serving as a drain on subjective vitality.

These initial validation studies broadly articulated how subjective vitality related with positive and negative affect, with psychological wellness as well as distress, and with physical health and symptomatology. They also revealed that although trait vitality is strongly predictive of an array of psychological and health outcomes, it is a state that fluctuates within a person, to a substantial degree as a function of psychological need dynamics. These initial findings thus set the stage for a broader research agenda on vitality within SDT. However because that literature relies to a large extent on self-reports of vitality, we shall first describe our measure and its modifications over time.

**Measuring Subjective Vitality**

Ryan and Frederick's (1997) original SVS contained seven items, presented in Table 10.1, that had high internal consistency and showed excellent construct validities, relating to

| Table 10.1 Trait and State Items from the Subjective Vitality Scale |
| --- |
| Trait Items |
| 1. I feel alive and vital. |
| 2. I don't feel very energetic. * + |
| 3. Sometimes I feel so alive I just want to burst. |
| 4. I have energy and spirit. |
| 5. I look forward to each new day. + |
| 6. I nearly always feel alert and wake. |
| 7. I feel energized. |
| State Items |
| 1. At this moment, I feel alive and vital. |
| 2. I don't feel very energetic right now. * + |
| 3. Currently I feel so alive I just want to burst. |
| 4. At this time, I have energy and spirit. |
| 5. I am looking forward to each new day. + |
| 6. At this moment, I feel alert and awake. |
| 7. I feel energized right now. |

* Item removed in 6-item scale (Bostic, McGartland Rubio, & Hood, 2000).

+ Items removed for currently recommended 5-item scale (see Kawabata et al., 2017).

differences in physical states and basic psychological need satisfactions. This seven-item scale has subsequently been used in many studies, but further refinements suggested that subsets of these items can provide more internally consistent and efficient scale. Specifically, Bostic, McGartland Rubio, and Hood's (2000) analysis indicated that better psychometrics for the SVS were achieved by eliminating the one negatively worded item (item 2 in Table 10.1). The resulting six-item version of the SVS has also been translated and validated for French (Salama-Younes, et al. 2009), Arabic (Fayad & Kazarian, 2013), and Spanish (Castillo, Tomás, & Balaguer, 2017) populations.

Kawabata et al. (2017) presented a translation and validation of the SVS for Japanese and Singaporean populations. They favored a five-item version of the scale, eliminating items 2 and 5 of the original, in part based on our own advice, because the item "I look forward to each new day" seemed to us to be more about optimism than energy, and this was reflected in the psychometrics. Goldbeck, Hautzinger, and Wolkenstein's (2019) translation of the SVS for a German population also found the five-item scale exhibited the best overall psychometrics. Thus, although all three versions have shown good reliability and construct validities, the five-item version is recommended.

**Trait versus state measurement**. The SVS can be used for state or trait measurement of vitality, based upon the directions provided for completing the items, as well as small

| Table 10.2 Items from the Subjective Vitality/Depletion Scale |
|---|
| **Vitality Subscale** |
| 1. I feel alive and vital. |
| 2. I have a lot of positive energy and initiative. |
| 3. I feel a sense of liveliness and spark. |
| **Depletion Subscale** |
| 4. I seem to have lost my "get up and go." |
| 5. I feel drained. |
| 6. I feel lifeless and unenthused. |

*Source*: Ryan et al. (2021).

*Note*: Trait items are t rated for how one has felt "over the past month"; state items are rated for how one feels "at this moment."

changes in item wording. In the trait version of the scale, respondents are asked to endorse items based on how they feel "in general." In the state version, respondents are asked to report based on how they feel "right now" (see Table 10.1). Translation of the SVS into other languages and in formats most applicable to specific populations has increased the worldwide viability and interest in the construct of vitality and in using the SVS to examine its psychological correlates across multiple domains.

**Vitality *and* depletion.** SDT researchers have increasingly embraced the dual-process model of basic needs in which positive outcomes associated with full functioning are largely accounted for by need satisfactions, negative outcomes associated with ill-being, and defense being accounted for by need frustrations, with expectation that crossover paths are weaker. A similar model is expected for energy dynamics, with the important implication of where to identify and leverage factors that enhance or diminish subjective vitality. To facilitate this, Ryan and colleagues (2021) have recently assembled construct validities suggesting a dual-process measure of vitality and depletion. The new Vitality/Depletion Scale (Table 10.2) is comprised of six items, three for subjective vitality and three for subjective depletion. Several preliminary studies, primarily using cross-sectional or short-term longitudinal assessments, have shown the strong promise of the dual-process approach in this area and the potential independence rather than polarity of vitality and depletion experiences.

## SDT Research Using the SVS

It is not possible to thoroughly review extant vitality research within this chapter, mainly because the SVS has been used in so many different studies in so many different domains and applied settings. Just a cursory examination of the topics of the hundreds of studies we reviewed for this chapter revealed, however, several key areas for vitality research. On the more theoretical side of the research spectrum were articles reporting on scale translation,

development, and validation (e.g., Bostic et al., 2000; Castillo et al., 2017; Fayad & Kazarian, 2013; Kawabata et al., 2017; Salama-Younes et al, 2009, Salama-Younes, 2011) and articles focusing on self-regulation and vitality (e.g., Baard, Deci, & Ryan, 2004; Juhl & Routledge, 2015; Nix et al., 1999; Ryan et al., 2005). More numerous were articles that examined the relationships between subjective vitality and *ego depletion*, or energy drains due to self-regulatory exertions (e.g., Ryan & Deci, 2008; Martela, DeHaan, & Ryan, 2016; Muraven, Gagné, & Rosman, 2008; Weinstein, Brown, & Ryan, 2009). A number of articles examined vitality in applied settings, such as work or physical activity (e.g., Frederick & Lazzara, 2020; Karkkola, Kuittinen, & Hintsa, 2019; Karkkola et al., 2018; Pololi et al., 2015) or in relationship to a specific situation, practice, or activity, such as health behaviors, mindfulness practice, enjoying nature, or engaging in goal setting (e.g., Brdar, 2006; Guérin, 2012; Ommundsen et al., 2010; Rijavec, Brdar, & Miljković, 2006). Accordingly, we have chosen to focus attention on a few key areas that are representative of the breadth of vitality research, including vitality's relations with need satisfaction, ego depletion, physical activity and health behaviors, nature, and mindfulness.

*Need Satisfaction and Subjective Vitality*

Ryan and Deci (2008, 2017) formally placed vitality within basic psychological needs theory (Vansteenkiste, Soenens, & Ryan, this volume), with their Proposition VI stating:

> Subjective vitality is based on more than physical nutrients; it also reflects satisfaction versus thwarting of basic psychological needs for autonomy, competence and relatedness. Therefore, both externally controlling and self-controlling states are expected to deplete vitality, whereas basic psychological needs satisfactions are expected to enhance it. (Ryan & Deci, 2017, p. 258)

This reflects Ryan and Frederick's (1997) results showing that vitality is positively related to basic psychological need satisfactions, as well as similar findings by Baard et al. (2004) in the domain of work and Deci et al. (2006) in the domain of close friendships.

In fact, since these early studies, these associations have been repeatedly confirmed. As an illustrative case, Yu et al. (2020) investigated how basic psychological need satisfactions predicted both subjective vitality and *peace of mind*, both considered to be indicators of integrity and wellness, across East Asian and American samples. They found that vitality and peace of mind were positively associated with each other, and moreover that both were predicted by basic psychological needs, without moderation by sample. These results support the view that vitality as measured by the SVS is indeed a positive form of energy and SDT's universality claims, as culture did not moderate the impact of need satisfactions on either vitality or peace of mind.

**Goal contents theory**. Kasser and Ryan (1996) showed that this principle extended to intrinsic and extrinsic goal contents. Relative valuing and accomplishment of intrinsic

goals was significantly associated with greater subjective vitality, presumably as a function of the positive effects of intrnsic goals on need satisfaction (see also Schmuck, Kasser, & Ryan, 2000). In fact a large number of studies have linked goal contents with vitality (see Bradshaw et al., 2021).

*Ego Depletion Research*

Muraven (2012), and Baumeister et al. (1998) brought the idea of ego depletion prominently into the literature. Although controversial in terms of the reliability of the effects (Hagger et al., 2017; Inzlicht & Friese, 2019; Vohs et al., 2021), the work on ego depletion has implications for SDT's approach to vitality, and thus there have been several experiments at the interface between the two theories.

First, the general predictions of the depletion model overlap with those of SDT in suggesting that self-controlling activities, those where one must "make" oneself act in certain ways, would be vitality-depleting. This is consistent with the autonomy-undermining effects found from both internally controlling and externally controlling events. SDT further adds the differentiation that truly autonomous activities would be less depleting (Quirin et al., 2021).

One controversy entered the picture, however, with the claim by Baumeister et al. (1998) that choice was itself depleting because it requires self-regulatory capacities to enact. In order to clarify that this was not contrary to SDT's position on energy, Moller et al., (2006) showed that when a person's "choices" were subtly pressured, as was done in Baumeister et al.'s experiments, there was indeed a depletion effect on vitality and performance. However, when participants were given a true choice condition, the ego-depletion phenomenon did not occur. That is, autonomy moderated the observed depletion effects, as predicted by SDT.

Muraven, Rosman, and Gagné (2007) and Muraven (2008) presented experimental evidence showing that the ego-depletion effects depend on relative autonomy. Specifically, it was shown that when self-control was perceived as autonomous, it was less energy-depleting than when it was controlling in nature. Based on this work, Muraven et al. (2008) examined the role of subjective vitality in the relationship between self-control and ego depletion. They placed participants in autonomy-supportive, neutral, or controlling conditions and requested they exert self-control by asking them not to think of a white bear while they were asked to write down any thoughts that came to mind in a five-minute period. Afterward, participants completed a set of motivation inventories and the SVS. Last, participants performed a response-inhibition task, which served as a measure of ego depletion. Results showed that those in the autonomy-supportive condition reported higher levels of vitality and performed better on the response-inhibition task, indicating less ego depletion. Those in the controlling condition had lower levels of subjective vitality and evidenced worse performance on the response-inhibition task.

Rouse, Ntoumanis, and Duda (2013) examined how motivational climate (autonomy-supportive versus controlled) interacted with an ego-depletion condition to predict subjective vitality. Ego depletion was achieved by having participants engage in a cognitively fatiguing task. Results revealed that a high autonomy-supportive environment and an environment low in control was related to higher subjective vitality, regardless of whether or not participants were in the ego-depletion condition. Notably, the combined results of these two studies speak to the importance of autonomy-supportive environments on the experience of subjective vitality.

It is noteworthy that the ego-depletion model is built on the idea that the energy of willpower is a limited resource (see Baumeister et al., 1998), whereas SDT looks at vitality as a dynamic process within an open system. Yet because many forms of self-regulation are self-controlling, in those cases SDT predicts depletion, whereas opportunities for autonomy enhance vitality. Interesting in this regard is a longitudinal study by Sieber et al. (2019) showing that more autonomous goal striving predicts endorsement of belief that willpower is not a limited resource, a relation mediated by vitality. Put differently, whether people think their willpower is limited or not limited reflects how much vitality they are experiencing in everyday life, itself related to their autonomous strivings.

### Physical Activity/Exercise

A key area of applied research involving subjective vitality has been the domain of physical activity—sport and exercise—with articles utilizing samples of young sport participants and PE students, individual and team athletes, and adult exercisers.

In work with youth athletes, research attention focused on how motivational climates and subjective motivational states influence levels of subjective vitality. Gagné, Ryan, and Bargmann (2003) studied youth gymnasts using a diary study format. Measures of subjective vitality were collected before and after practice to determine if vitality related to motivational style. Results of analysis showed that at a within-person level of analysis, ratings of vitality were negatively and significantly related to amotivation and positively and significantly related to intrinsic motivation.

Ommundsen et al. (2010) also examined well-being in youth athletes as influenced by motivational climate. Youth soccer players completed measures of motivational climate, basic psychological needs, and subjective vitality. The authors found that players with higher SVS scores reported a mastery climate and had higher levels of autonomy and intrinsic motivation. They also found that each of SDT's three basic psychological needs was a significant predictor of vitality, combining to explain 24% of the variance in the SVS.

Attention has also been paid to the study of exercise and physical activity in adult populations. Vlachopoulos and Karavani (2009) studied exercise participants in Greece, finding that autonomy support was a direct predictor of subjective vitality. Couto et al. (2017) showed that the relation between being physically active and exhibiting higher

levels of vitality was present in older adults in Portugal. In a study with a general group of fitness center participants, Wilson et al. (2006) measured motivation and vitality before and after a 12-week program. Both perceptions of autonomy and competence were related to vitality at the time 1 assessment, but only competence was related to vitality at time 2. However, increases in both autonomy and competence over the course of the study resulted in corresponding increases in subjective vitality. Reinboth and Duda (2006) examined changes in need satisfaction and vitality over time within a sample of university athletes followed over the course of a competitive season. Using hierarchical regression, Reinboth and Duda reported that two variables, satisfaction of the need for autonomy and feelings of relatedness to the coach, were significant predictors of subjective vitality. Kinnafick et al. (2014) further showed that success in enhancing fitness in specific populations (e.g., inactive adults) can be achieved by providing an autonomy-supportive environment, which then leads to greater vitality and enhanced physical fitness. Rouse et al. (2015) showed the usefulness of the SVS as a measure of well-being in adults suffering from rheumatoid arthritis. This study also showed that higher levels of vitality were associated with better physical function and negatively related to perceptions of fatigue.

When examined as a group, these studies in the physical activity domain document the significant link between autonomy and competence and subjective vitality. In these studies, an environment that is perceived as supporting autonomy as well as individual perceptions of competence were related to levels of vitality. These studies also provide evidence that subjective vitality is related to positive psychological and physical performance outcomes, regardless of age of participant. Nonetheless, it is apparent that work in this area is in its early stages, and there is much more to know about how vitality is supported in physical activities, as well as how vitality may support long-term participation in exercise and physical activity.

### Exposure to Nature

Several studies based in SDT have examined how physical environments impact vitality. Ryan et al. (2010) explored how outdoor space and nature affected vitality in a series of studies. Findings provided strong support for the hypothesis that being outside and in the presence of nature enhanced subjective vitality, even controlling for physical activity and social interactions. The study also found that subjective vitality was increased by viewing pictures of natural settings versus pictures of buildings and artifacts (see also Weinstein, Przybylski, & Ryan, 2009). However, not all outdoor spaces have this effect. For example, arid landscapes versus those with water were found to engender less vitality (Shalev, 2016).

Combining physical activity with nature may be especially vitality-boosting. Whereas even a brief walk can amplify feelings of vitality (Thayer, 2003), Takayama et al. (2014) suggested this positive effect is enhanced by being in a forest environment. However, Janeczko et al. (2020) found that both suburban and forest walks increase vitality. Thus,

whether there is a robust incremental effect of nature on exercise-engendered energy will require further research.

*Vitality and Mindfulness*

Bishop et al. (2004) defined mindfulness as a state of consciousness that is comprised of two components: heightened or sustained *attention* and *awareness* of current internal and external events. Brown and Ryan (2003, p. 824), in their research validating the Mindful Attention Awareness Scale, also articulated the connection mindfulness has to SDT, arguing that "mindfulness may facilitate well-being through self-regulated activity." Brown and Ryan found that mindfulness predicted autonomy at both state and trait levels of analysis.

In support of this premise, Brown and Ryan (2003) found that vitality was positively and significantly related to mindfulness in three separate samples. In a second study (Brown & Ryan, 2004), the relations between two aspects of mindfulness, presence and acceptance, was examined in relation to vitality. "Presence" referred to a state of current attention and awareness, while "acceptance" referred to a nonjudgmental review of emotional states. In this study, vitality related positively and strongly to presence but was unrelated to acceptance.

Since Brown and Ryan's (2003, 2004) work, other studies have examined SVS in relation to mindfulness. Visser et al. (2015), examined the mediational role sleep quality may have in explaining how mindfulness predicts perceptions of vitality. As vitality is comprised of both psychological and physical elements of energy, lack of or poor-quality sleep can tax individuals' physical resources, so even when mindfulness is present, perceptions of vitality may be lower. Results of this study found that only two variables mediated the relationship between mindfulness and vitality: habitual sleep efficiency and daytime disruption. To the extent that mindfulness can lessen the inability to fall or remain asleep, and also lessen inattention and attentional lapses during the day, it allows for more energy to be available to the self, and then results in higher levels of subjective vitality.

In a similarly formatted study, Wu and Buchanan (2019) examined the effects of coping factors on the relationship between mindfulness and subjective vitality. This study found that two coping strategies, being able to suppress emotion and directly addressing problems, mediated the relations between mindfulness and subjective vitality. The authors explain that mindfulness may allow for enactment of positive coping strategies, which in turn allow for increased levels of subjective vitality.

At this point many studies have confirmed the connections between mindfulness and subjective vitality (see Ryan, Donald, & Bradshaw, 2021). Indeed, a recent meta-analysis (Donald et al., 2020) showed how SDT's taxonomy of motives was systematically related to mindfulness, such that the higher the degree of autonomy, the greater the association with mindfulness. Insofar as mindfulness serves to support or enhance autonomy, thereby

freeing the flow of psychological energy needed to engage in life activities, it may also increase feelings of well-being, including subjective vitality.

## Subjective Vitality and Health-Related Behaviors

Subjective vitality is a facet of well-being that encompasses both physical and psychological states. It is a natural assumption, then, to assume vitality is related to more optimal physical states, in much the same way positive emotion has been shown to relate to better health and the ability to ward off illness (Cohen et al., 2006). Hirsch et al. (2015) explored how vitality relates to physical, emotional, and social health factors. In this study of adults in a primary care setting, those who believed in a positive future orientation about their health exhibited higher levels of vitality, which in turn predicted higher self-reported levels of physical health, mental health, and social functioning. The results of this study suggest that vitality is closely tied to a sense of optimism and health.

A more recent study, by Arslan, Yıldırım, and Aytaç (2020), focused on attitudes toward coronavirus and how vitality may be associated with lower worry about the virus. Arslan et al. measured coronavirus anxiety, subjective vitality, loneliness, and rumination in a sample of young Turkish adults. "Rumination" was defined as chronic, negative thoughts and affect. The authors found that subjective vitality mediated the relation between present-state coronavirus anxiety and the longer-term outcome of rumination. Higher anxiety predicted a lower level of subjective vitality and a higher level of loneliness, which in term predicted higher levels of rumination. Arslan et al.'s results supported prior findings linking subjective vitality with persistent health concerns.

Vitality has also been identified as a variable of interest in sleep research. For example, Visser et al. (2015) used vitality as an outcome related to mindfulness and sleep quality in older adults. Vitality was positively correlated with both mindfulness and sleep quality. In their path model, adults exhibiting higher levels of mindfulness experienced more sleep efficiency and less daytime dysfunction related to tiredness. In turn, these variables that are indicative of better sleep quality predicted higher levels of vitality. More recently, Campbell and colleagues (2014; Campbell & Vansteenkiste, this volume) showed that SDT's basic need satisfactions predicted better sleep, and that both need satisfaction and sleep quality predicted daytime vitality.

## Vitality in the Workplace

SDT has been of interest in many applied areas, including the work environment. Ryan et al. (2010) showed the importance of the fulfillment of basic psychological needs in enhancing vitality across both work and nonwork activities. Interestingly, for most workers vitality is lower at work and as a function of lower autonomy and relatedness in work settings.

As it relates to the workplace, a key question is thus how the basic psychological needs of autonomy, competence, and relatedness are supported or thwarted at work, and

how this affects employees' energy and vitality. For example, Vansteenkiste et al. (2007) reported that extrinsic and intrinsic work environments differentially affect vitality, with on-the-job vitality levels being higher in intrinsic work environments. This study also showed that extrinsic environments thwart fulfillment of the basic psychological needs. Although this study did not use the SVS to measure vitality, a similar measure was used, supporting the idea that fulfilling basic needs at work contributes directly to perceptions of vitality (see also Nerstad et al., 2020).

Studies using the SVS have also examined how basic psychological need satisfactions in the workplace contribute to perceptions of vitality (Barati, Oreyzi, & Shahir, 2020; Karkkola et al., 2018, 2019). Karkkola et al. (2018) examined the relations between social support and subjective vitality at work, including social support from peers as well as supervisors. Relevant here is that all three of SDT's basic psychological needs predicted subjective vitality. In a similar study, Karkkola et al. (2019) again examined vitality, this time examining the relations between role clarity versus role conflict, basic needs, and vitality. When roles are clear, an employee can focus on and attain goals, creating a positive motivation environment. In role conflict, there is confusion about work demands and expectations, creating frustration and a negative motivational environment not conducive to fulfillment of needs or to vitality. Findings showed that in a work environment where role clarity was higher, so was subjective vitality, with autonomy and competence mediating this association. In contrast, the experience of role confusion negatively predicted autonomy and relatedness, which in turn predicted vitality.

A novel study by Op den Kamp et al. (2018) assumed that individuals play a role in managing their own energy (vitality) levels in the workplace and that such active energy management may in turn lead to more or less creative work performance. Vitality management was measured once a week for three weeks, as was creative work performance, a self-reported belief that workers produced creative solutions to work problems. Individuals who exhibited better vitality management also reported more creative work performance. This relation was especially robust for individuals with greater levels of self-insight and in work environments that provide social support for creativity.

Wohlers et al. (2019) looked at how the physical environment in the workplace affects vitality. They found that environments built to facilitate undisturbed work are associated with enhanced vitality and improved job-related attitudes. This is suggestive of how workplace studies can identify factors to enhance, or decrease the draining of, employees' energy levels.

## Future Directions in the Study of Vitality

**Vitality and the physical environment**. One future direction for vitality research is exploring with greater specificity how physical environments affect perceptions of vitality. As this chapter is being written, the COVID-19 pandemic is in full swing. People's typical activities and movements are restricted, and more time is spent indoors. There is

ample evidence that people are now paying more attention to both indoor and outdoor environments. Home remodels are booming (CNBC, 2020), as people are assessing and paying more attention to the function and form of their interior spaces. In addition, engagement in outdoor activities during the pandemic has increased (OIA, 2020; News Medical Life Sciences, 2020). Our relationship to our indoor and outdoor spaces resulting from COVID restrictions is changing, and yet we don't know very much about how our physical environments impact vitality.

Studies, some of which we described above, show strong support for the hypothesis that physical environments, indoor and outdoor, can differentially influence our experience of vitality. Many lines of research can be explored to more deeply examine these relationships and how specific aspects of indoor or outdoor spaces can facilitate or suppress feelings of vitality. For example, Smolders, De Kort, and van den Berg (2013) specifically examined the role of light exposure in enhancing vitality. They showed that light exposure, especially when experienced in the morning and during times of the year when it is darker, enhanced subjective vitality. Factors such as size of rooms, number of windows, amount of natural light, height of ceilings, open versus closed floor plans, and the proportion of personal to public or group space in a structure are all environmental aspects worth studying in relationship to vitality. As we spend considerable amounts of time in our indoor spaces, it is important to determine how those spaces impact our sense of energetic well-being. Outdoor environments differ as well (e.g., arid vs. green landscapes, managed vs. wild nature) in the affordances that may spark, or douse, feelings of vitality (e.g., see Janeczko et al., 2020; Shalev, 2016; Takayama et al., 2014).

**Neurological and physiological mechanisms of vitality/depletion effects**. Whenever people discuss vitality, the joint influences of psyche and soma are clear, but the underlying mechanisms, both neurologic and physiologic, for how energy is unregulated or seemingly drained represent their own "mysterious leaps" from mind to body, to paraphrase Freud. How energy is differentially mobilized in autonomous versus controlled motivational contexts may, however, shed light on mechanisms. Lane et al, (2011) suggested that mobilization and depletion of energy is an issue of glucose allocation, in which glucose transport mechanisms respond to the subjective importance or value of events. Applying this idea and drawing from both personality systems interaction theory and SDT, Kazen, Kuhl, and Leicht (2015) found that relative to people preforming under controlling regulation, those acting autonomously showed increased allocations of blood glucose, thereby invigorating performance. Those doing the task in an autonomous way also performed better and experienced it as less effortful. The study is provocative in suggesting glucose allocation as a bidirectional influence, conditional on autonomous versus controlled motivation.

Although how the body fuels itself is well understood, how psychological mechanisms amplify or deplete available energies is less so. This is a place where mind-body interaction—or more rightfully, an organismic perspective—has rich territory to explore.

Especially given the increasing understanding of how need satisfactions are represented neurologically (see Lee, this volume; Di Domenico & Ryan, this volume), we are converging toward new models of motivation and its energization. Just as important would be studies of cardiovascular dynamics (blood pressure, pulse rate, heart rate variability) in states of vitality, as well as hormonal dynamics (e.g., cortisol changes).

**Connection and love as basic sources of vitality**. A good deal of research has established that subjective vitality fluctuates as a function of autonomy and control. Evidence with respect to other basic needs is less common. Important especially is a better understanding of how relationships and their various qualities impact vitality. We all know the anecdotes of falling in love leaving people bursting with energy, and rejection and exclusion having depleting effects. But how and why this occurs deserve more research attention.

## Conclusion

The subjective energy we have to act, to cope, and to thrive fluctuates not only with physical factors such as sleep, nutrition, and exercise but also with psychological factors, including variations in autonomous and controlled motivations and psychological need satisfactions and frustrations. In this chapter we presented an incomplete overview of nearly 25 years of research on subjective vitality attesting to these dynamics. Our review shows the vibrancy of subjective vitality research within SDT, through studies validating the SVS and examining the import of subjective vitality in multiple life domains, including work, sport, and love. There are many future avenues for vitality research, including better specification of environmental catalysts of energy, more research on physiological and neurological mechanisms underlying perceived energy, and further studies on the best self-regulatory and self-management styles to maintain and enhance one's vitality. There is little doubt that vitality will remain a central construct within SDT and that theory and research on the energy available to the self will continue to evolve.

## References

Arslan, G., Yıldırım, M., & Aytaç, M. (2020). Subjective vitality and loneliness explain how coronavirus anxiety increases rumination among college students. *Death Studies*, *46*, 1–10.

Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, *34*(10), 2045–2068.

Barati, H., Oreyzi, H., & Shahir, E. (2020). Correlation of job characteristics with positive (optimism, vitality and positive affect) and negative (tension and impulsivity) components of psychological well-being among employees of Isfahan Gas Transmission Company. *Journal of Health Promotion Management*, *9*(2), 67–80.

Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, *74*(5), 1252–1265.

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z., Abbey, S., Speck, M., Velting, D., & Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, *11*(3), 230–241.

Bostic, T. J., McGartland Rubio, D., & Hood, M. (2000). A validation of the Subjective Vitality Scale using structural equation modeling. *Social Indicators Research*, *52*(3), 313–324.

Bradshaw, E. L., Sahdra, B. K., Ciarrochi, J., Parker, P. D., Martos, T., & Ryan, R. M. (2021). A configural approach to aspirations: The social breadth of aspiration profiles predicts well-being over and above the

intrinsic and extrinsic aspirations that comprise the profiles. *Journal of Personality and Social Psychology*, *120*(1), 226–256.

Brdar, I. (2006). Life goals and well-being: Are aspirations important for happiness? *Drustvena Istrazivanja*, *15*(4), 671–691.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848.

Brown, K., & Ryan, R. M. (2004). Perils and promise in defining and measuring mindfulness: Observations from experience. *Clinical Psychology: Science and Practice*, *11*(3), 242–248.

Campbell, R., Vansteenkiste, M., Delesie, L. M., Mariman, A. N., Soenens, B., Tobback, E., Van der Kaap-Deeder, J., & Vogelaers, D. P. (2014). The secret to a good night's sleep: The role of psychological need satisfaction examined. *European Health Psychologist*, *16*(S), 689.

Castillo, I., Tomás, I., & Balaguer, I. (2017). The Spanish-version of the Subjective Vitality Scale: Psychometric properties and evidence of validity. *Spanish Journal of Psychology*, *20*, E26.

Cleary, T. (Ed. & Trans.). (1991). *Vitality, energy, spirit: A Taoist sourcebook*. Shambhala.

CNBC. (2020). Pandemic home remodeling is booming. Retrieved from https://www.cnbc.com/2020/08/07/pandemic-home-remodeling-is-booming-what-your-neighbors-are-doing.html, December 17, 2020.

Cohen, S., Alper, C. M., Doyle, W. J., Treanor, J. J., & Turner, R. B. (2006). Positive emotional style predicts resistance to illness after experimental exposure to rhinovirus or influenza a virus. *Psychosomatic Medicine*, *68*(6), 809–815.

Costa, P. T., Jr., & McCrae, R. R. (1985). *The NEO Personality Inventory manual*. Psychological Assessment Resources.

Couto, N., Antunes, R., Monteiro, D., Moutão, J., Marinho, D., & Cid, L. (2017). Validation of the Subjective Vitality Scale and study of the vitality of elderly people according to their physical activity. *Revista Brasileira de Cineantropometria & Desempenho Humano*, *19*, 261–269.

Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the benefits of giving as well as receiving autonomy support: Mutuality in close friendships. *Personality & Social Psychology Bulletin*, *32*(3), 313–327.

De Mille, A. (1991). *Martha: The life and work of Martha Graham—A biography*. Random House: New York.

Donald, J. N., Bradshaw, E. L., Ryan, R. M., Basarkod, G., Ciarrochi, J., Duineveld, J. J., ... & Sahdra, B. K. (2020). Mindfulness and its association with varied types of motivation: A systematic review and meta-analysis using self-determination theory. *Personality and Social Psychology Bulletin*, *46*(7), 1121–1138.

Fayad, Y. I., & Kazarian, S. S. (2013). Subjective vitality of Lebanese adults in Lebanon: Validation of the Arabic version of the Subjective Vitality Scale. *Social Indicators Research*, *114*(2), 465–478.

Frederick, C. M. (1991). *An investigation of the relationship among participation motives, level of participation and psychological outcomes in the domain of physical activity* (Order No. 9128754). Available from ProQuest One Academic. (303929025). Retrieved from http://ezproxy.libproxy.db.erau.edu/login?url=https://www.proquest.com/dissertations-theses/investigation-relationship-among-participation/docview/303929025/se-2?accountid=27203

Frederick, C. M., & Lazzara, E. H. (2020). Examining gender and enjoyment: Do they predict job satisfaction and well-being? *Psychologist-Manager Journal*, *23*(3–4), 163–176.

Frederick, C. M., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relations with participation and mental health. *Journal of Sports Behavior*, 16, 124–146.

Freud, S. (1962). *The ego and the id*. Norton. (Original work published 1923).

Gagné, M., Ryan, R. M., & Bargmann, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology*, *15*(4), 372–390.

Goldbeck, F., Hautzinger, M., & Wolkenstein, L. (2019). Validation of the German version of the Subjective Vitality Scale—A cross-sectional study and a randomized controlled trial. *Journal of Well-Being Assessment*, *3*(1), 17–37.

Guérin, E. (2012). Disentangling vitality, well-being, and quality of life: A conceptual examination emphasizing their similarities and differences with special application in the physical activity domain. *Journal of Physical Activity & Health*, *9*(6), 896–908.

Hagger, M., Peters, G. J. Y., Heino, M. T., Crutzen, R., & Johnston, M. (2017). The replication crisis in (health) psychology: Reflections and solutions. *European Health Psychologist*, *19*(Supp.), 473.

Hirsch, J. K., Molnar, D., Chang, E. C., & Sirois, F. M. (2015). Future orientation and health quality of life in primary care: Vitality as a mediator. *Quality of Life Research*, *24*(7), 1653–1659.

Inzlicht, M., & Friese, M. (2019). The past, present, and future of ego depletion. *Social Psychology, 50* (5–6), 370–378. https://doi.org/10.1027/1864-9335/a000398

Janeczko, E., Bielinis, E., Wójcik, R., Woźnicka, M., Kędziora, W., Łukowski, A., Elsadek, M., Szyc, K., & Janeczko, K. (2020). When urban environment is restorative: The effect of walking in suburbs and forests on psychological and physiological relaxation of young Polish adults. *Forests*, *11*(5), 591.

Jou, T. H. (1981). *The Tao of Tai-Chi Chuan*. Tai Chi Foundation.

Juhl, J., & Routledge, C. (2015). The awareness of death reduces subjective vitality and self-regulatory energy for individuals with low interdependent self-construal. *Motivation and Emotion*, *39*(4), 531–540.

Kumagai, H. A. (1988). KI: The 'Fervor of Vitality'and the Subjective Self. *Symbolic Interaction*, *11*(2), 175–190.

Karkkola, P., Kuittinen, M., & Hintsa, T. (2019). Role clarity, role conflict, and vitality at work: The role of the basic needs. *Scandinavian Journal of Psychology*, *60*(5), 456–463.

Karkkola, P., Kuittinen, M., Hintsa, T., Ryynänen, J., & Simonen, A. (2018). Each one counts: Basic needs mediating the association between social support and vitality at work. *Scandinavian Journal of Work and Organizational Psychology*, *3*(1), 1–11.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*, 280–287.

Kawabata, M., Yamazaki, F., Guo, D. W., & Chatzisarantis, N. L. (2017). Advancement of the Subjective Vitality Scale: Examination of alternative measurement models for Japanese and Singaporeans. *Scandinavian Journal of Medicine & Science in Sports*, *27*(12), 1793–1800.

Kazén, M., Kuhl, J., & Leicht, E. M. (2015). When the going gets tough . . . : Self-motivation is associated with invigoration and fun. *Psychological Research*, *79*(6), 1064–1076.

Kinnafick, F. E., & Thøgersen-Ntoumani, C. (2014). The effect of the physical environment and levels of activity on affective states. *Journal of Environmental Psychology*, *38*, 241–251.

Kinnafick, F. E., Thøgersen-Ntoumani, C., Duda, J. L., & Taylor, I. (2014). Sources of autonomy support, subjective vitality and physical activity behaviour associated with participation in a lunchtime walking intervention for physically inactive adults. *Psychology of Sport and Exercise*, *15*(2), 190–197.

Kumagai, H. A. (1988). KI: The "fervor of vitality" and the subjective self. *Symbolic Interaction*, *11*(2), 175–190.

Lane, A. M., Beedie, C. J., Devonport, T. J., & Stanley, D. M. (2011). Instrumental emotion regulation in sport: relationships between beliefs about emotion and emotion regulation strategies used by athletes. *Scandinavian Journal of Medicine & Science in Sports*, *21*(6), e445–e451.

LeUnes, A., & Burger, J. (2000). Profile of mood states research in sport and exercise psychology: Past, present and future. *Journal of Applied Sport Psychology*, 12(1), 5–15. https://doi.org/10.1080/10413200008404210

Lowen, A. (1989). Bioenergetic analysis. *Current Psychotherapies*, 572–583.

Martela, F., DeHaan, C., & Ryan, R. (2016). On enhancing and diminishing energy through psychological means. In E. Hirt, J. Clarkson, & L. Jia (Eds.) *Self-regulation and ego control* (pp. 67–85). Academic Press.

McNair, D., Lorr, M., & Doppleman, L. (1971). *Profile of mood states manual*. Educational and Industrial Testing Service.

Moller, A. C., Deci, E. L., & Ryan, R. M. (2006). Choice and ego-depletion: The moderating role of autonomy. *Personality and Social Psychology Bulletin*, *32*(8), 1024–1036.

Muraven, M. (2008). Autonomous self-control is less depleting. *Journal of Research in Personality*, *42*(3), 763–770.

Muraven, M. (2012). Ego depletion: Theory and evidence. In R. M. Ryan (Ed.), *The Oxford handbook of human motivation* (pp. 111–126). Oxford University Press.

Muraven, M., Gagné, M., & Rosman, H. (2008). Helpful self-control: Autonomy support, vitality, and depletion. *Journal of Experimental Social Psychology*, *44*(3), 573–585.

Muraven, M., Rosman, H., & Gagné, M. (2007). Lack of autonomy and self-control: Performance contingent rewards lead to greater depletion. *Motivation and Emotion*, *31*(4), 322–330.

Nerstad, C., Caniëls, M., Roberts, G. C., & Richardsen, A. M. (2020). Perceived motivational climates and employee energy: The mediating role of basic psychological needs. *Frontiers in Psychology*, *11*, 1509.

Newby, R. W., & Simpson, S. (1996). Correlations between mood scores and volleyball performance. *Perceptual and Motor Skills*, *83*(3, suppl), 1153–1154.

News Medical Life Sciences. (2020). Study reports increase in outdoor activity among women during Covid-19. Retrieved from https://www.news-medical.net/news/20201216/Study-reports-increase-in-outdoor-activity-among-women-during-COVID-19.aspx, December 17, 2020.

Nix, G. A., Ryan, R. M., Manly, J. B., & Deci, E. L. (1999). Revitalization through self-regulation: The effects of autonomous and controlled motivation on happiness and vitality. *Journal of Experimental Social Psychology*, *35*(3), 266–284.

Nunberg, H. (1931). The synthetic function of the ego. *International Journal of PsychoAnalysis*, *12*, 123–140.

OIA. (2020). Increase in outdoor activities due to Covid-19. Retrieved from https://outdoorindustry.org/article/increase-outdoor-activities-due-covid-19/, December 17, 2020.

O'Connor, P. J. (2004). Evaluation of four highly cited energy and fatigue mood measures. *Journal of Psychosomatic Research*, *57*(5), 435–441.

Ommundsen, Y., Lemyre, P., Abrahamsen, F., & Roberts, G. (2010). Motivational climate, need satisfaction, regulation of motivation and subjective vitality: A study of young soccer players. *International Journal of Sport Psychology*, *41*(3), 216–242.

Op den Kamp, E. M., Tims, M., Bakker, A. B., & Demerouti, E. (2018). Proactive vitality management in the work context: Development and validation of a new instrument. *European Journal of Work and Organizational Psychology*, *27*(4), 493–505.

Perls, F., Hefferline, R. F., & Goodman, P. (1951). *Gestalt therapy: Excitement and growth in the human personality*. Julian Press.

Pololi, L. H., Evans, A. T., Civian, J. T., Gibbs, B. K., Coplit, L. D., Gillum, L. H., & Brennan, R. T. (2015). Faculty vitality—Surviving the challenges facing academic health centers: A national survey of medical faculty. *Journal of the Association of American Medical Colleges*, *90*(7), 930–936.

Quirin, M., Jais, M., Di Domenico, S. I., Kuhl, J., & Ryan, R. M. (2021). Effortless willpower? The integrative self and self-determined goal pursuit. *Frontiers in Psychology*, *12*, 653458. https://doi.org/10.3389/fpsyg.2021.653458

Reich, W. (1951). *Selected writings: An introduction to orgonomy*. Farrar, Straus and Giroux.

Reinboth, M., & Duda, J. L. (2006). Perceived motivational climate, need satisfaction and indices of well-being in team sports: A longitudinal perspective. *Psychology of Sport and Exercise*, *7*(3), 269–286.

Renger, R. (1993). A review of the Profile of Mood States (POMS) in the prediction of athletic success. *Journal of Applied Sport Psychology*, *5*(1), 78–84.

Rijavec, M., Brdar, I., & Miljković, D. (2006). Extrinsic vs. intrinsic life goals, psychological needs and life satisfaction. In A. Fave (Ed.), *Dimensions of well-being: Research and intervention* (pp. 91–104). FrancoAngeli.

Rouse, P. C., Ntoumanis, N., & Duda, J. L. (2013). Effects of motivation and depletion on the ability to resist the temptation to avoid physical activity. *International Journal of Sport and Exercise Psychology*, *11*, 39–56.

Rouse, P. C., Van Zanten, J. J. V., Ntoumanis, N., Metsios, G. S., Yu, C. A., Kitas, G. D., & Duda, J. L. (2015). Measuring the positive psychological well-being of people with rheumatoid arthritis: A cross-sectional validation of the subjective vitality scale. *Arthritis Research & Therapy*, *17*(1), 1–7.

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, *43*(3), 450–461.

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, *63*, 397–427.

Ryan, R. M., & Deci, E. L. (2008). From ego depletion to vitality: Theory and findings concerning the facilitation of energy available to the self. *Social and Personality Psychology Compass*, *2*(2), 702–717.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., Donald, J. N., & Bradshaw, E. L. (2021). Mindfulness and Motivation: A Process View Using Self-Determination Theory. *Current Directions in Psychological Science*, 09637214211009511.

Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*(3), 529–565.

Ryan, R. M., Kuhl, J., & Deci, E. L. (1997). Nature and autonomy: An organizational view of social and neurobiological aspects of self-regulation in behavior and development. *Development and Psychopathology*, *9*(4), 701–728.

Ryan, R., La Guardia, J., Solky-Butzel, J., Chirkov, V., & Kim, Y. (2005). On the interpersonal regulation of emotions: Emotional reliance across gender, relationships, and cultures. *Personal Relationships*, *12*(1), 145–163.

Ryan, R. M., Sahdra, Bradshaw, Standage, Rigby, & Frederick. (2021) *The Subjective Vitality/Depletion Scale*. Unpublished manuscript, Australian Catholic University.

Ryan, R., Weinstein, N., Bernstein, J., Brown, K., Mistretta, L., & Gagne, M. (2010). Vitalizing effects of being outdoors and in nature. *Journal of Environmental Psychology*, *30*(2), 159–168.

Salama-Younes, M. (2011). Validation of the Mental Health Continuum short form and Subjective Vitality Scale with Egyptian adolescent athletes. In R. J. Estes & M. J. Sirgy (Eds.) *The human pursuit of well-being* (pp. 221–234). Springer.

Salama-Younes, M., Montazeri, A., Ismaïl, A., & Roncin, C. (2009). Factor structure and internal consistency of the 12-item General Health Questionnaire (GHQ-12) and the Subjective Vitality Scale (VS), and the relationship between them: A study from France. *Health and Quality of life Outcomes*, *7*(1), 1–6.

Schmuck, P., Kasser, T., & Ryan, R. M. (2000). Intrinsic and extrinsic goals: Their structure and relationship to well-being in German and U.S. college students. *Social Indicators Research*, *50*(2), 225–241.

Searight, H. R., & Montone, K. (2020). Profile of mood states. In V. Zeigler-Hill & T. K. Shackelford (Eds.) *Encyclopedia of personality and individual differences*, *1-6*, 4057–4062 Springer.

Selye, H. (1950). Stress and the general adaptation syndrome. *British Medical Journal*, *1*(4667), 1383.

Selye, H. (1956). *The stress of life*. McGraw-Hill.

Shalev, I. (2016). Pictorial and mental arid landscape images reduce the motivation to change negative habits. *Journal of Environmental Psychology*, *45*, 30–39.

Sieber, V., Flückiger, L., Mata, J., Bernecker, K., & Job, V. (2019). Autonomous goal striving promotes a non-limited theory about willpower. *Personality and Social Psychology Bulletin*, *45*(8), 1295–1307.

Smolders, K., De Kort, Y., & van den Berg, S. (2013). Daytime light exposure and feelings of vitality: Results of a field study during regular weekdays. *Journal of Environmental Psychology*, *36*(1), 270–279.

Takayama, N., Korpela, K., Lee, J., Morikawa, T., Tsunetsugu, Y., Park, B.-J., Li, Q., Tyrväinen, L., Miyazaki, Y., & Kagawa, T. (2014). Emotional, restorative and vitalizing effects of forest and urban environments at four sites in Japan. *International Journal of Environmental Research and Public Health*, *11*, 7207–7230.

Tavernier, R., Hill, G. C., & Adrien, T. V. (2019). Be well, sleep well: An examination of directionality between basic psychological needs and subjective sleep among emerging adults at university. *Sleep Health*, *5*(3), 288–297.

Thayer, R. E. (1986). Activation-deactivation adjective check list: Current overview and structural analysis. *Psychological Reports*, *58*(2), 607–614.

Thayer, R. E. (1989). *The biopsychology of mood and arousal*. Oxford University Press.

Thayer, R. E. (1996). *The origin of everyday moods: Managing energy, tension, and stress*. Oxford University Press, USA.

Thayer, R. E. (2003). *Calm energy: How people regulate mood with food and exercise*. Oxford University Press, USA.

Thayer, R. E., & Moore, L. E. (1972). Reported activation and verbal learning as a function of group size (social facilitation) and anxiety-inducing instructions. *The Journal of Social Psychology*, 88(2), 277–287.

Tsunoda, K., Mutsuzaki, H., Hotta, K., Shimizu, Y., Kitano, N., & Wadano, Y. (2017). Correlation between sleep and psychological mood states in female wheelchair basketball players on a Japanese national team. *Journal of Physical Therapy Science*, *29*(9), 1497–1501.

Vansteenkiste, M., Neyrinck, B., Niemiec, C. P., Soenens, B., De Witte, H., & Van den Broeck, A. (2007), On the relations among work value orientations, psychological need satisfaction and job outcomes: A self-determination theory approach. *Journal of Occupational and Organizational Psychology*, *80*(2), 251–277.

Visser, P. L., Hirsch, J. K., Brown, K. W., Ryan, R., & Moynihan, J. A. (2015). Components of sleep quality as mediators of the relation between mindfulness and subjective vitality among older adults. *Mindfulness*, *6*(4), 723–731.

Vlachopoulos, S. P., & Karavani, E. (2009). Psychological needs and subjective vitality in exercise: A cross-gender situational test of the needs universality hypothesis. *Hellenic Journal of Psychology*, *6*(2), 207–222.

Vohs, K., Schmeichel, B., Lohmann, S., Gronau, Q. F., Finley, A. J., Wagenmakers, E. J., & Albarracín, D. (2021). A multi-site preregistered paradigmatic test of the ego depletion effect. *Psychological Science*, *32*(10), 1566–1581.

Weinstein, N., Brown, K. W., & Ryan, R. M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal of Research in Personality*, *43*(3), 374–385. https://doi.org/10.1016/j.jrp.2008.12.008

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2009). Can nature make us more caring? Effects of immersion in nature on intrinsic aspirations and generosity. *Personality and Social Psychology Bulletin, 35*(10), 1315–1329.

White, R. W. (1960). Competence and the psychosexual stages of development. In M. R. Jones (Ed.), *Nebraska Symposium on Motivation, Vol. 8: Perspectives on motivation* (pp. 97–141). University of Nebraska Press.

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, *66*(5), 297–333.

Wikan, U. (1989). Managing the heart to brighten face and soul: Emotions in Balinese morality and health care. *American Ethnologist*, *16*, 294–312.

Wilson, P., Longley, K., Muon, S., Rodgers, W., & Murray, T. (2006). Examining the contributions of perceived psychological need satisfaction to well-being in exercise. *Journal of Applied Biobehavioral Research*, *11*(3–4), 243–264.

Wohlers, C., Hartner-Tiefenthaler, M., & Hertel, G. (2019). The relation between activity-based work environments and office workers' job attitudes and vitality. *Environment and Behavior*, *51*(2), 167–198.

Wu, I. H. C., & Buchanan, N. T. (2019). Pathways to vitality: The role of mindfulness and coping. *Mindfulness*, *10*(3), 481–491.

Yu, S., Zhang, F., Nunes, L. D., Deng, Y., & Levesque-Bristol, C. (2020). Basic psychological needs as a predictor of positive affects: A look at peace of mind and vitality in Chinese and American college students. *The Journal of Positive Psychology*, *15*(4), 488–499.

# Need-Supportive and Need-Thwarting Socialization: A Circumplex Approach

Nathalie Aelterman *and* Maarten Vansteenkiste

## Abstract

To support motivation, growth, and performance it is critical to foster individuals' basic psychological needs for autonomy, competence, and relatedness. To achieve this goal, socializing agents, such as teachers, sport coaches, and managers, can make use of a broad array of need-relevant strategies that can either support or thwart students', athletes', and employees' psychological needs. Central to this chapter is the discussion of a circumplex approach, which allows for an integrative and fine-grained study of different need-relevant styles. The chapter discusses the basic tenets of this approach, reviews recent supportive studies, highlights its advantages and potential for practice, and provides recommendations for future research.

**Key Words:** need support, need thwarting, socialization, self-determination theory, circumplex

Socializing agents, including parents, teachers, sports coaches, and managers, play an important role in the broader process of learning and development throughout the life course, as they help children and (young) adults to acquire the beliefs, values, skills, and resources needed to live and participate in society (Baumrind, 2012; Wallace & Wolf, 1999; Wentzel, 2009). In this socialization process, they are often confronted with the task to motivate others. Teachers need to motivate students to submit their homework on time, sports coaches need to stimulate athletes to persist at a monotonous strength-training regimen, and managers have to find a way to encourage employees to take over tasks from an ill colleague. When tasks require persistence or flexibility and have little intrinsic appeal, socializing agents need creativity and patience to motivate others (Reeve, 2015; Vansteenkiste et al., 2018).

The question of how to best motivate others is a topic of lively discussion among teachers, coaches, and managers themselves. An argument often voiced is that a strategy that is motivating for one person is not necessarily motivating or is even demotivating for another person and vice versa. To illustrate, whereas some students, athletes, or employees would like their teacher, coach, or manager to provide more support and guidance, others prefer more independence. Likewise, some like predictability, whereas others want to

deviate from the daily routines by engaging in novel tasks (Benlahcene, Kaur, & Awang-Hashim, 2020). In the search for which motivating approach works best for whom and when, socializing agents often rely on trial and error or their intuition and lay beliefs about ideal motivating strategies. Although people's intuition can sometimes be spot on, it can also misguide them, leading them to under- or overestimate the effectiveness of motivational strategies or failing to adjust their motivational strategy to the situation at hand. To guide and refine one's motivational approach, a theory-driven perspective about what makes for a "good" and effective socializing agent and what makes for a "poor" and demotivating socializing agent is needed.

Self-determination theory (SDT; Ryan & Deci, 2017) offers such a fundamental theoretical perspective that can guide everyday motivational practices across varied situations and interactions with different others. A central premise of SDT is that, even though every student, athlete, and employee is unique and every situation is different, there is a critical set of basic motivational processes that socializing agents need to take into account to optimally motivate others. Specifically, motivating socializing agents do well to nurture individuals' basic psychological needs for autonomy, competence, and relatedness (Vansteenkiste, Ryan, & Soenens, 2020).

In this chapter, we present a circumplex approach, a new integrative and fine-grained perspective on motivating and demotivating socialization that was recently developed. We discuss the implications of the circumplex approach for both theory and practice and provide a number of suggestions of how to move this literature forward.

## Need-Supportive and Need-Thwarting Socialization

**Theoretical foundation.** SDT starts from the assumption that all individuals have a set of basic psychological needs, the satisfactions of which are considered essential nutriments for individuals' growth and well-being (Ryan & Deci, 2017; Vansteenkiste et al., 2020). Across diverse life domains, including education, healthcare, sports, parenting, and the workplace, abundant research has shown that the satisfaction of the needs for autonomy (i.e., experiencing a sense of volition), competence (i.e., experiencing a sense of effectiveness), and relatedness (i.e., experiencing a sense of connection) relates to high-quality motivation, engagement, deep-level learning, performance, and mental health (see Vansteenkiste et al., 2020 and Vansteenkiste, Soenens, & Ryan, this volume for an overview). Although individuals can be low in need satisfaction, their needs can also become more actively threatened, entailing the experience of need frustration. Need frustration manifests through experiences of obligation and conflict (autonomy), failure and inadequacy (competence), and loneliness and exclusion (relatedness), with research indicating that such experiences are especially predictive of individuals' disrupted functioning as indexed by disengagement and ill-being, including stress, burnout, and physical symptom burden (Bartholomew et al., 2011; Vansteenkiste & Ryan, 2013).

Given the significant importance of need-relevant experiences, the question of how socializing agents can foster or undermine basic needs through their motivating style has received considerable attention (Reeve & Cheon, 2021; Vansteenkiste et al., 2019). SDT maintains that three dimensions of need-supportive (i.e., motivating) socialization, that is, autonomy support, structure, and relatedness support, are conducive to need satisfaction, autonomous motivation, and well-being (Ryan & Deci, 2017). In contrast, controlling, chaotic, and rejecting environments involve a more direct thwarting of the basic needs (i.e., demotivating socialization), and have been found to predict need frustration, controlled motivation, ill-being, and even psychopathology (Vansteenkiste & Ryan, 2013; Ryan, Deci, & Vansteenkiste, 2016).

**Autonomy support and control.** Historically, autonomy support has received the most attention within SDT (e.g., Grolnick & Ryan, 1987), in part because the need for autonomy is both most unique to the theory and most controversial (see Ryan & Deci, 2017). It is also emphasized within SDT because autonomy-supportive socializing agents are likely to support competence and relatedness needs as well (Vansteenkiste et al., 2020). When autonomy-supportive, the basic attitude or interpersonal tone of socializing agents is one of curiosity, receptivity, and flexibility for the emerging interests, preferences, and values of others (Vansteenkiste & Soenens, 2015; Vansteenkiste et al., 2019), which allows them to be more responsive to others' inner resources and to identify obstacles for motivation and action (Reeve, Jang, & Jang, 2018).

Over time, several critical practices of autonomy-supportive socialization have been identified (Patall et al., 2018), including the offer of input and choice, the provision of a meaningful rationale, following others' pace of progress, the use of inviting language, the nurturing of curiosity and task interest, and the acceptance of negative affect (Reeve, 2009, 2021; Vansteenkiste et al., 2019). While some studies investigated these practices in isolation (e.g., choice: Waterschoot et al., 2019; meaningful rationale: Jang et al., 2008), others examined them in combination (e.g., Deci et al., 1994). Generally, the effects of different autonomy-supportive practices have been found to be synergistic such that combining factors enhances the effects. For example, the motivating effect of a meaningful rationale appears to be heightened if combined with other autonomy-supportive practices, such as the use of noncontrolling language and the acknowledgment of negative affect (for meta-analyses, see Gillison et al., 2019; Steingut, Patall, & Trimble, 2017).

Dozens of studies found that perceived autonomy support fosters need satisfaction and brings multiple behavioral, emotional, and social benefits for students, athletes, and employees. This evidence has recently been compiled in a number of systematic reviews and meta-analyses in the domains of (physical) education (Lochbaum & Jean-Noel, 2016; Vasconcellos et al., 2020), health (Gillison et al., 2019; Ntoumanis et al., 2021), and work (Slemp et al., 2018).

Whereas autonomy support involves practices that nurture need-based experiences, the use of control may not only leave basic needs unsatisfied but may even thwart them,

thereby engendering need frustration (Vansteenkiste & Ryan, 2013). When being controlling, socializing agents, often unconsciously, adopt a tunnel view in which their own agenda and expectations get prioritized, which leads them to exert pressure on others to think, feel, and act in prescribed ways and to leave little or no room for others' perspective (Reeve, 2009). Such pressure can take the form of threatening with sanctions, commanding, yelling, and shouting or the contingent use of incentives and rewards (i.e., external control), or it can involve appealing to feelings of guilt and shame, using power-assertive strategies such as intimidation, and triggering contingent self-worth (i.e., internal control; Soenens et al., 2012).

Initially, autonomy support and control were treated as the two poles of a single bipolar continuum (Deci et al., 1981; Reeve, 2009). Yet, over the past decade, the practice of control was increasingly studied in its own right, leading to the introduction of a dual-process model (Bartholomew et al., 2011; Vansteenkiste & Ryan, 2013). Rather than treating autonomy support and control as antithetical, it was recognized within the dual-process model that socializing agents' nonreliance on autonomy support does not automatically imply that they act in a controlling way. To illustrate, while some socializing agents may fail to offer choice or to provide a meaningful rationale (i.e., autonomy support), this does not imply that they rely on threats and sanctions to enforce compliance (i.e., control). Also, some socializing agents may, across situations, make use of a combination of both autonomy-supportive and controlling strategies. Congruent with this assumption, empirical studies pointed to moderate (–.50 < r < –.30; Bartholomew et al., 2011) or small (–.30 < r < –.10; Haerens et al,. 2015) negative correlations between perceived autonomy support and control.

A growing number of both cross-sectional and longitudinal studies (e.g., Jang, Kim, & Reeve, 2016) now provides convincing evidence that autonomy support and control represent distinct processes with differential and unique antecedents and outcomes (Vansteenkiste & Ryan, 2013). In addition, person-centered approaches that capture different configurations of motivating styles indicate that different combinations or profiles of autonomy support and control can be identified, with the profile involving high autonomy support and low control yielding the optimal pattern of outcomes (Haerens et al., 2018; Matosic & Cox, 2014).

**Autonomy support and structure.** Much like autonomy support, the provision of structure is said to be need-conducive. The basic attitude or interpersonal tone underlying structure involves a process-oriented focus, with socializing agents displaying trust in others' capacity to steadily advance their skills. This attitude allows socializing agents to better align their practices with others' momentary skill level, strengths, and learning potential, while also identifying obstacles for progress. Structuring socializing agents foster competence need satisfaction by communicating clear expectations, goals, and guidelines; providing step-by-step "how to" directions to attain the desired expectations; offering desired help and guidance; adjusting tasks' difficulty levels in accordance with students',

athletes', or employees' skills; providing positive informational feedback during and after task completion; and expressing confidence in students', athletes', and employees' capabilities (Mouratidis, Michou, Telli, Maulana, & Helms-Lorenz, 2022; Reeve, 2006; Ryan & Deci, 2017; Vansteenkiste & Soenens, 2015).

Historically, SDT investigators viewed autonomy support and structure as factors facilitating internalized motivation and durable engagement (see Grolnick & Ryan, 1989; Grolnick, Ryan, & Deci, 1991) rather than as being at odds with each other. Consistent with such theorizing, several studies have reported positive correlations between both dimensions, indicating that structuring socializing agents also act in autonomy-supportive ways and vice versa (Jang, Reeve, & Deci, 2010). At the same time, structuring elements (e.g., expectations, help) can be provided in a way that is autonomy-supportive (e.g., by using inviting language or providing meaningful rationales) or controlling (e.g., by threatening with sanctions those who do not follow the guidelines); the chosen style of introduction can either enhance or diminish the motivational benefits of structure. For instance, the benefits of setting expectations (Vansteenkiste et al., 2012) or introducing behavioral rules (Koestner et al., 1984) are more pronounced when provided in an autonomy-supportive way, while the competence-frustrating effect of negative feedback (Carpentier & Mageau, 2013; Mabbe et al., 2018) and task difficulty (Baten et al., 2020) gets diminished when introduced in an autonomy-supportive way.

While structure has received increasing attention, the separate role of chaos has been largely understudied in the SDT literature (but see Skinner, Johnson, & Snyder, 2005). Chaos includes practices that are inconsistent, unpredictable, and arbitrary or that actively interfere with the pathways to competence development (e.g., pointing out failure, doubting others' capacities to improve; Rocchi, Pelletier, & Desmarais, 2017). Chaos can take the form of permissiveness (Baumrind, 2012), where socializing agents fail to consequently stick to introduced guidelines and rules (i.e., laissez-faire climate), the form of unpredictability, where socializing agents abruptly and arbitrarily shift towards a different strategy, or the form of enforced independence, where socializing agents leave others to their own devices, presumably because they feel unable or lack the energy to provide the required assistance (see Soenens, Vansteenkiste, & Sierens, 2009). Empirical work on the notion of chaos is currently fairly scarce, yet available research in the sports context indicates that a chaotic coaching style is predictive of less need satisfaction and autonomous motivation and more need frustration and controlled motivation among athletes (Rocchi et al., 2017).

**Toward an Integrative Approach: A Circumplex Model**

**Circumplex structure.** Recently, various studies have begun to examine different (de) motivating styles in conjunction to achieve a more integrative understanding of need-supportive socialization. Multidimensional scaling analyses (Borg, Groenen, & Mair,

2013) are being harnessed to model how different need-supportive (i.e., autonomy support and structure) and need-thwarting (i.e., control and chaos) practices relate to each other in varied settings, including education (secondary education: Aelterman et al., 2019; Moé, Consiglio, & Katz, 2022; higher education: Vermote et al., 2020; physical education: Escriva-Boulley et al., 2021), sport (Delrue, Reynders et al., 2019), nursing (Duprez et al., 2019), parenting (Mabbe et al., 2022), and work (Aelterman et al., 2022).

Across these different settings, a two-dimensional circumplex structure has been identified (see Figure 11.1), which allows for a more integrative insight into the variety of socialization practices. The horizontal dimension (i.e., *x*-axis) denotes the extent to which socializing agents support, relative to thwart, individuals' basic psychological needs, where autonomy support and structure represent need-supportive styles and control and chaos represent need-thwarting styles. The vertical dimension (i.e., *y*-axis) reflects the extent to which socializing agents are directive and take the lead in the interaction or instead leave the initiative and action to those who need to be motivated. When considered from this dimension, structure and control represent highly directive styles, and autonomy support and chaos represent less or even nondirective interaction styles (Aelterman et al., 2019). Each of the four overarching styles can thus be characterized by its level of need support and directiveness, with adjacent styles (e.g., structure and control) sharing one feature and oppositional styles (e.g., autonomy support and control) scoring differently on both dimensions. It should be noted that the oppositional location of autonomy support and control does not imply that both should be considered as falling along a single bipolar continuum. Congruent with the dual-process model, autonomy support and control and
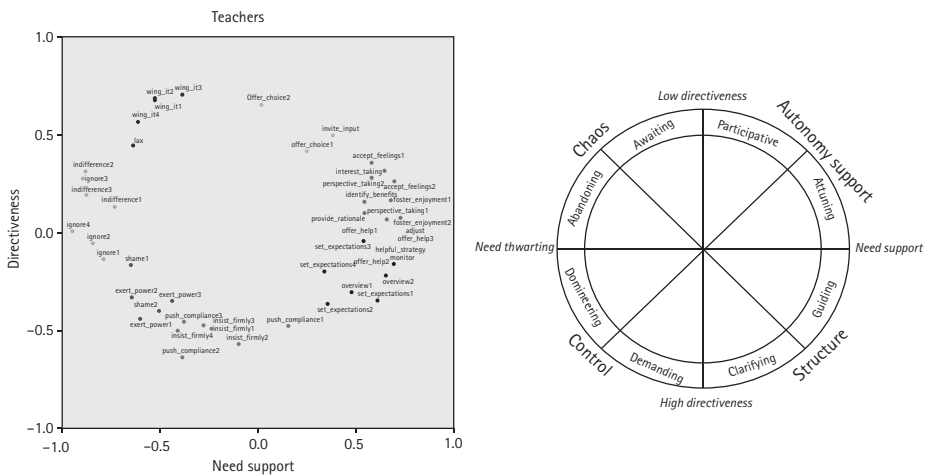


**Figure 11.1** A data-driven two-dimensional circumplex model (as obtained with the Situations-in-School Questionnaire; left) and a conceptual socialization compass (right)

*Source*: Aelterman et al., 2019 (left)

structure and chaos were found to be moderately (but not perfectly) negatively correlated (Aelterman et al., 2019).

The circumplex model also produces a more refined insight, as eight subareas were identified, each overarching style broken down into two subcomponents that differ in a more subtle way from each other. Across different life domains, these eight subareas "naturally" emerged from the data, with socialization practices within a specific subarea forming a coherent cluster of practices (i.e., approach). Table 11.1 provides an overview of the definitions of the four overarching socialization styles and a description of the eight identified approaches in the circumplex model (Aelterman et al., 2019). Specifically, when autonomy-supportive, socializing agents use practices that are *participative*, such as offering choice, asking for students', athletes', or employees' input and welcoming their suggestions, or *attuning*, such as acknowledging negative affect and resistance, promoting task interest, and explaining the personal relevance of a task or request. When providing structure, socializing agents can make use of *guiding* practices, such as offering appropriate help, encouragement, and growth-oriented feedback, or *clarifying* practices, such as setting clear goals and expectations. Reflective of a controlling style, socializing agents can rely on both *demanding* practices, such as the use of forceful language or threatening with sanctions, or *domineering* practices that are more intrusive and manipulative, such as guilt-induction or public shaming. Socializing agents who adopt a chaotic style are rather indifferent toward others' progress, thereby either relying on *abandoning* practices, as when they are unresponsive to others' struggles and concerns or have given up on earlier introduced rules and agreements when encountering resistance, or relying on *awaiting* practices by not intervening when more direction is needed and seeing how things unfold (Aelterman et al., 2019).

Congruent with their location in the circumplex, these eight approaches are meaningfully related to one another, with the correlations representing a sinusoid pattern. That is, each approach is most positively correlated with an adjacent approach, and the strength of the correlations gradually decreases, becoming nonsignificant and negative when moving to the opposite approach in the circumplex. To illustrate, an attuning approach correlates highly positively with a participative and guiding approach, with these correlates becoming decreasingly positive and even negative in the case of a domineering approach. This ordered pattern of correlates is reminiscent of the pattern of correlates typically observed between the regulatory subtypes of SDT's motivational continuum (Ryan & Deci, 2020). Like the SDT simplex model, the circumplex model appears fairly stable across life domains (e.g., education, sport, nursing, parenting, work), respondents (e.g., teachers vs. students), and settings (e.g., team vs. individual sports). Studies have even found the structure of the circumplex to be similar for students and teachers in a secondary education setting (Aelterman et al., 2019) and for sport coaches and athletes (Delrue, Reynders et al., 2019).

**Relations with outcomes.** Across different contexts (e.g., education, sport, and work), this sinusoid pattern of correlations was systematically found in relation to a

**Table 11.1** Conceptual Definitions of the Six Socialization Styles and Description of the Eight Identified Approaches in the Circumplex Model, as Proposed by Aelterman et al. (2019)

| Socialization Style | Conceptual Definition/Basic Attitude | Subarea | Description |
|---|---|---|---|
| Autonomy support | The socializing agent's basic attitude represents an interpersonal tone and sentiment of *curious interest, receptivity, and flexibility.* The socializing agent seeks to maximally identify and nurture others' interests, preferences, and feelings so that they can volitionally engage themselves in activities or tasks. | Participative | A *participative* socializing agent identifies others' personal interests by engaging in a dialogue with them and inviting them to provide input and suggestions. In addition, where possible, the socializing agent tries to offer (meaningful) choices in how students, athletes, or employees deal with activities and tasks. |
| | | Attuning | An *attuning* socializing agent nurtures others' personal interests by trying to find ways to make the tasks or projects more interesting and enjoyable, accepting others' expressions of negative affect, and trying to understand how they see things. The socializing agent allows others to work at their own pace and provides explanatory rationales that are personally meaningful in the eyes of their students, athletes, or employees. |
| Structure | The socializing agent's basic attitude represents an interpersonal tone and sentiment of *process and progress orientation.* Starting from the capabilities and abilities of others, the socializing agent provides strategies, help, and assistance so that others feel competent to master activities or tasks. | Guiding | A *guiding* socializing agent nurtures others' progress by providing appropriate help and assistance as and when needed. The socializing agent goes through the steps that are necessary to complete a task so that students, athletes, or employees can continue independently and, if necessary, can ask questions. Together with them the socializing agent constructively reflects on mistakes so that the students, athletes, or employees see for themselves *what* can be improved and *how* they can improve. |
| | | Clarifying | A *clarifying* socializing agent communicates expectations to others in a clear and transparent way. The socializing agent offers an overview of what students, athletes, or employees can expect and monitors their progress in meeting the communicated expectations. |

**Table 11.1** Continued

| Socialization Style | Conceptual Definition/Basic Attitude | Subarea | Description |
|---|---|---|---|
| Control | The socializing agent's attitude is one of *pressure and coercion.*<br><br>The socializing agent insists that others think, feel, and behave in a prescribed way and imposes their own agenda and requirements onto others, irrespective of what others think. | Demanding | A *demanding* socializing agent requires discipline from the students, athletes, or employees by using powerful and commanding language to make clear what they have to do. The socializing agent points out to others their duties, tolerates no participation or contradiction, and threatens with sanctions if others don't comply. |
|  |  | Domineering | A *domineering* socializing agent exerts power to others to make them comply with their requests. The socializing agent suppresses others by inducing feelings of guilt and shame. While a demanding socializing agent tries to change others' thoughts, feelings, and behaviors into something more acceptable to the agent, a domineering approach is characterized by a personal attack on students, athletes, or employees. |
| Chaos | The socializing agent's attitude is one of *laissez-faire.*<br><br>The socializing agent leaves others to their own devices, making it confusing for them to figure out what that they should do, how they should behave, and how they can develop their skills. | Abandoning | An *abandoning* socializing agent gives up on others. The socializing agent allows others to just do their own thing because eventually they have to learn to take responsibility for their own behavior. |
|  |  | Awaiting | An *awaiting* socializing agent offers a laissez-faire climate where the initiative fully lies with the students, athletes, or employees. The socializing agent tends to wait to see how things evolve, doesn't plan too much, and lets things take their course. |
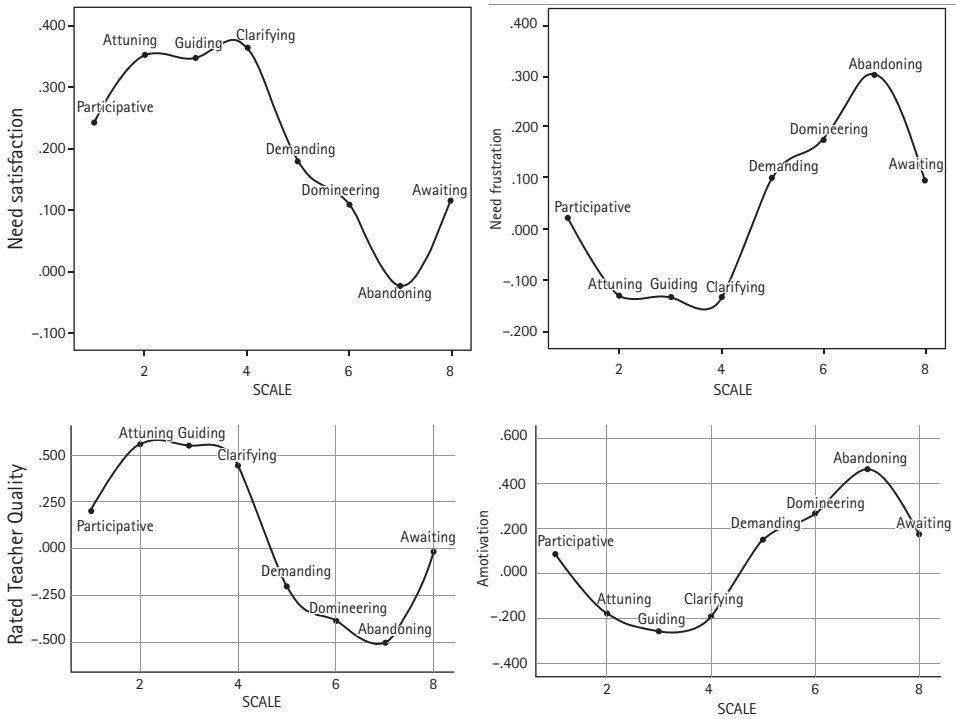
**Figure 11.2** Examples of sinusoid relations between eight approaches in the circumplex model and teacher antecedents (e.g., need-based experiences) and student outcomes (e.g., rated teacher quality and amotivation)

*Source*: Aelterman et al., 2019

variety of outcomes (see Figure 11.2 for an example), with the attuning and guiding approaches yielding the strongest correlations with positive outcome variables, and correlations gradually decreasing and becoming negative as one moves along the circumplex to the domineering and abandoning approaches. Clearly, the sharpest peaks and drops in the pattern of correlates with adaptive outcomes vary primarily as a function of the need-supportive and need-thwarting properties of each approach (i.e., the horizontal axis) and far less as a function of the level of directiveness characterizing each approach (i.e., the vertical axis). Said differently, there are different ways of being very and not very directive as a socializing agent, some being more need-conducive and others being more need-undermining.

To illustrate, the more students (Aelterman et al., 2019) and athletes (Delrue, Reynders et al., 2019) feel that their teachers/coaches attune their style to the students' or athletes' preferences and offer appropriate guidance, the more they have their basic psychological needs fulfilled, the more they report being autonomously motivated, and the more they rate their teacher or coach positively, such that they would highly recommend them to others and would like to be taught or coached by them again in the future. In addition, employees who experience their manager as attuning and guiding are most satisfied with their job and are most likely to take up commitments within the organization that are

not part of their contractual tasks (i.e., organizational citizenship behavior; Aelterman & Vansteenkiste, 2022). In contrast, negative outcomes, including need frustration, controlled motivation, amotivation, and symptoms of burnout such as emotional exhaustion and depersonalization, yield an opposite pattern, with the domineering and abandoning approaches being most positively related and the attuning and guiding approaches being most negatively related (Delrue, Reynders et al., 2019).

**Relations with antecedents.** The approaches in the circumplex model yield a similar ordered pattern of correlates with antecedents, including socializing agents' type of motivation, need-based experiences, and socialization goals. First, autonomously motivated socializing agents are more likely to adopt all four need-supportive approaches (participative, attuning, guiding, and clarifying), whereas those who are amotivated or controlled-motivated are more likely to adopt need-thwarting approaches (Aelterman et al., 2019; Vermote et al., 2020).

Second, the more socializing agents have their own basic needs fulfilled, the more they report making use of need-supportive approaches (i.e., attuning and guiding, followed by participative and clarifying; Aelterman et al., 2019; Delrue, Reynders et al., 2019; Moé et al., 2022; Vermote et al., 2020). Presumably, experiences of need satisfaction are vitalizing and boost socializing agents' energy (e.g., Karkkola et al., 2018), which may enhance their psychological availability toward others (Van der Kaap-Deeder et al., 2019). In contrast, need frustration predicts a domineering and demanding approach or failing to intervene when action is called for (i.e., abandoning and awaiting; Vermote et al., 2020), an effect that can be carried by the stress and associated narrow focus on one's own agenda and needs (Van der Kaap-Deeder et al., 2019).

Third, the type of socialization goals that socializing agents adopt (Jang, 2019) and their beliefs regarding the malleability of intelligence (Vermote et al., 2020) are equally predictive of their (de)motivating style. If socializing agents aim to help others in realizing their interests and dreams or in becoming empathic and socially engaged individuals, they are more likely to act in autonomy-supportive ways. In contrast, the more socializing agents embrace extrinsic goals, such as the pursuit of excellence and gaining high social status and approval, the more they adopt a pressuring and controlling style (Jang, 2019). Furthermore, socializing agents with a growth mindset, conceiving intelligence as changeable through learning and effort (Dweck, 2008), report making use of structuring approaches (i.e., guiding and clarifying; Vermote et al., 2020), presumably because a growth mindset comes with a process-oriented focus central to structure. If socializing agents believe that achievement is mainly determined by innate differences in intelligence (i.e., fixed mindset), they report engaging less in autonomy-supportive approaches (i.e., participative and attuning) and more in controlling approaches (i.e., demanding and domineering), and are even more likely to give up (i.e., abandoning approach; Vermote et al., 2020).

## The Benefits of a Circumplex Perspective

The circumplex approach has important implications for current theorizing and research as it allows one (1) to adopt a more graded or ordered understanding of need-relevant socialization practices, (2) to adopt a more refreshing outlook at the interrelation between different need-relevant styles, and (3) to gain a better understanding of the pitfalls associated with the application of autonomy support and structure (Vansteenkiste et al., 2019).

**A graded approach.** The more holistic perspective of the circumplex is illuminating as it allows for a better understanding of the interrelation between different (de)motivating styles. Instead of treating these styles in isolation and conceiving them as distinct styles that should yield unique correlates, the ordered pattern of correlates warrants a more graded and dynamic perspective. The reasoning behind this ordered approach is that the different (de)motivating approaches do not differ from each other in a categorical (i.e., black/white) fashion but instead are more graded in their relations.

Indeed, across different contexts, the pattern of correlations suggests that the need-nurturing potential of the different styles in the circumplex may vary. Specifically, because of their most pronounced *need-satisfying* properties, the guiding and attuning approaches are labeled as directly need-nurturing (Aelterman et al., 2019). Instead, the participative and clarifying approaches yield somewhat less strong correlations with desirable outcomes presumably because of their *need-enabling* character. That is, when being participative or clarifying, socializing agents create the conditions for students', athletes', or employees' need satisfaction to occur, yet their need satisfaction is not necessarily guaranteed (Aelterman et al., 2019; Vansteenkiste et al., 2019). For example, although the offer of choice is potentially autonomy-enhancing, its effect likely depends on a number of criteria, including the nature of the choice (e.g., option choice vs. action choice; De Muynck et al., 2019), the type of offered options (e.g., trivial vs. meaningful; Pan & Gauvain, 2012), the number of options (Patall, Cooper, & Robinson, 2008), the way in which the choice is provided (e.g., informational vs. steering; Moller, Deci, & Ryan, 2006), as well as characteristics of the chooser (Waterschoot et al., 2019). Likewise, socializing agents can communicate clear goals and expectations, yet the motivating effect likely depends on the style of conveying these expectations (e.g., informative vs. evaluative; Vansteenkiste et al., 2012) and the nature of the information being provided (e.g., useful vs. redundant; Goemaere et al., 2018).

This circumplex's ordering of styles also applies to the variation in the demotivating practices: socializing agents' adoption of domineering and abandoning approaches are highly *need-thwarting*, thereby actively undermining students', athletes', or employees' psychological needs, motivation, and engagement, whereas the reliance on demanding and awaiting approaches yields a more modest need-thwarting effect, even being *need-depriving*. That is, they may fail to support psychological needs and motivation without eliciting intense need-frustrating experiences.

**Interrelations between need-relevant styles**. The circumplex also allows one to understand the high correlations that have sometimes been reported between structure

and autonomy support in past studies (e.g., Rocchi et al., 2017). Given their adjacent position in the circumplex, such high correlations are to be expected, especially in the case of the attuning and guiding approach. Among athletes, these two approaches were even found to be so heavily intertwined that they could not be factor-analytically separated (Delrue, Reynders et al., 2019). Yet, rather than being problematic and signaling a lack of discriminant validity, such high correlations can now be positively appreciated; that is, they simply reflect reality. The reason guiding and attuning approaches are highly related is because both are highly need-supportive. In addition, a circular structure may better align with daily reality as socializing agents often simultaneously engage in a variety of need-supportive or need-thwarting practices in a given situation. At the same time, the circumplex highlights that there is variation in the association between autonomy support and structure, whereby the approaches that yield a more distal relation to each other (i.e., clarifying and participative) are less highly correlated. These findings are congruent with prior person-centered work indicating that teachers can be perceived as setting expectations for their students in a more autonomy-supportive or a more controlling way (Vansteenkiste et al., 2012).

Another implication of the circumplex is that different need-supportive dimensions do not necessarily need to compete for unique variance in outcomes. Scholars have sometimes pitted need-supportive dimensions (e.g., autonomy support and structure) against each other to examine which one yields the strongest predictive power. Although informative, the quest for unique correlates is not always the important focus. Rather, what matters especially is the ordered pattern of correlates, with the positive or negative peak in the correlates being outcome-dependent.

**Pitfalls in the application of autonomy support and structure**. The circumplex model provides a better understanding of the fallacies that socializing agents may have encountered in the application of autonomy support and structure in practice. Specifically, some socializing agents may be concerned that supporting students', athletes', or employees' autonomy may undermine structure or even lead to a permissive climate (i.e., chaos), in which no goals and expectations are set, or rules are no longer being established. The circumplex model shows that such concerns are legitimate. Importantly, this potential pitfall pertains not to the concept of autonomy support in itself but to its incorrect application in practice, when socializing agents shift toward a too open, awaiting, and permissive approach. Indeed, some students, athletes, or employees may feel overwhelmed by the room for initiative and the possibility for independent choice making, because they lack the capabilities, skills, or necessary information to adequately partake in the participatory process. At these moments or for these individuals, the offer of choice would need to be complemented with some degree of structure for them to benefit in terms of their-need based experiences. Thus, a poorly structured participative approach may indeed be perceived as chaotic, an outcome that a need-supportive socializing agent would avoid.

At the same time, socializing agents sometimes are concerned that providing too much structure might pressure students, athletes, or employees to think, feel, and behave in prescribed ways and inhibit their initiative and creativity. Indeed, although the provision of structure and guidance is important to foster students', athletes', and employees' competence development, an overly structuring approach may turn into rigid control and pressure. Again, the circumplex helps to explain why the incorrect application of a clarifying approach comes with a motivational pitfall, as the clarifying and demanding approaches are situated next to each other. Specifically, what may be described as well-intended expectations, goals, and guidance by a socializing agent may be perceived as pressure and coercion by the student, athlete, or employee. Given that it is especially the perception of the social environment that is predictive of students', athletes', and employees' motivational experiences (De Meyer et al., 2014), the communication and monitoring of goals, expectations, and guidelines (i.e., clarifying approach) will be growth-promoting only if they are experienced as really supportive of the need for competence.

Overall, then, in daily practice, at least for some autonomy-supportive practices, there appears to be a fairly thin line separating order and chaos. Similarly, some structuring practices, when not well timed or applied in practice, may be appraised as controlling. Yet these practical pitfalls do not hold to the same extent for all identified approaches, but especially for those that lean closer to the chaotic style (i.e., participative approach) and the controlling style (i.e., clarifying approach).

**Motivational Tailoring and the Capacity for Calibration**

The ordered or graded pattern of motivating approaches in the circumplex highlights that there are many inroads to need satisfaction, thereby opening the door for motivational tailoring. Specifically, for socializing agents to optimally motivate others, they need to be capable of calibrating their motivating approach to characteristics of their students, athletes, or employees and the situation at hand (Vansteenkiste et al., 2019). Even though socializing agents may know the specific strategies (e.g., offering choice, giving a rationale, providing progress-oriented feedback) that are characteristic of a motivating style, this does not mean that they make optimal use of them in their daily practice. They additionally need to be sensitive to the order, the timing, and the circumstances in which they use various strategies, and thus to the functional significance (Ryan & Deci, 2017) of the particular strategies they rely on. For example, at the start of a learning activity, teachers will probably adopt different strategies such as giving instructions or providing an overview of the assignment, whereas halfway through the activity they are more likely to offer help and provide feedback (Haerens et al., 2013). Coaches will likely react differently when athletes disrupt the training than when athletes cooperate enthusiastically (Delrue, Soenens et al., 2019). And managers likely act in more directive and task-oriented ways when facing an organizational crisis compared to when a crisis is not an issue (Gagné et al., 2020). Having the skill of calibration signals that socializing agents have acquired the capacity to respond

in adaptive and flexible ways to the constantly changing circumstances and reactions they are facing in their daily practice (Vansteenkiste et al., 2019).

Socializing agents' capacity for calibration is a multilayered skill, involving that they (1) start from the basic attitudes of curious interest, a process-oriented focus, and sincere respect and care in order to optimally connect with their students, athletes, or followers; (2) make a well-considered choice of which socialization style and strategy to use when; and (3) continuously monitor and adjust their socialization style to function in changing circumstances so as to optimally nurture others' basic needs at all times (Vansteenkiste et al., 2019). By endorsing a need-supportive basic attitude, socializing agents gain insight in and learn to better estimate what is on students', athletes', or employees' minds. They become more aware of their various personal attributes, including their motivation (Do my employees find this a tedious or an exciting task?), preferences (Do my students prefer to complete this assignment in class or in small groups?), and knowledge and skills (Are these gifted children who want to be challenged more?). At the same time, well-calibrating socializing agents are aware of a variety of environmental features, including characteristics of the task (Is this a too difficult or too simple task?) and of the situation at hand, such as the size of the group, the moment of the day (Is it a Friday afternoon?), time pressures, uncertainty, or the heterogeneity of the group.

Although socializing agents may infer some of this knowledge themselves, the best way to get an insight into students', athletes', or employees' personal attributes is probably by giving them a voice. By fostering the participation of their students, athletes, or employees, socializing agents can gain more accurate information about their viewpoints instead of being misguided by a biased perspective on their students', athletes', or employees' goals and interests. In this context, it was shown that first inferring how the learning material can best be taught according to students and subsequently teaching the class in student-preferred ways promoted greater autonomy, engagement, and deep-level learning compared to a group that was taught as usual (Jang et al., 2016).

Further, equipped with this knowledge, well-calibrating socializing agents are capable of selecting the motivating style (e.g., guiding) and associated practice (e.g., providing appropriate help) that best fit others' needs and situational requirements. Such motivational tailoring between socializing agents' practices and these various personal and environmental features requires ongoing awareness of the dynamics in the situation. Motivational tailoring then maximizes students', athletes', and employees' opportunities to have their basic psychological needs met. Such tailoring may look fairly different from individual to individual or from situation to situation, such that there might be quite some variability in individuals' pathways to enhanced need satisfaction. Yet well-calibrating socializing agents have one key goal in mind: to maximally support their students', athletes', or employees' basic needs. The observable diversity and heterogeneity of motivating strategies used by socializing agents thus masks an underlying shared process of improved need satisfaction. For instance, while a participative style may be warranted for

already highly engaged students, thereby allowing them to advance their knowledge and skill levels independently, other students may benefit more from a guiding style, which provides adjusted help and a step-by-step approach (see Patall, Sylvester, & Han, 2014).

Finally, calibration also involves the continuous monitoring of whether currently used motivating practices truly catch on. This requires substantial flexibility and a self-critical attitude by motivating agents to adjust their motivating style. Through this monitoring process, well-calibrating socializing agents are better able to use multiple motivating strategies, paying attention to the order (e.g., "Should I first recognize the source of their irritation and resistance before giving a rationale?") and the time spent on each of the motivating practices (e.g., "Should I continue asking employees for input or move toward clarifying my expectations?"). Because the preferences and knowledge of the ones being socialized are often fluctuating, it is possible that a motivating practice that initially increased their need satisfaction and engagement loses its motivational potential at a later time (Vansteenkiste et al., 2019).

## Future Directions

First, although the circumplex model includes a broad variety of need-supportive and need-thwarting practices, the model is not exhaustive or complete. As research evolves, the circumplex model may be further refined or extended through the assessment of additional practices and styles. Specific styles such as adjusting the pace of progress to individuals' needs, offering rewards, and giving positive feedback can be mapped within the model. In addition, the broader dimension of the support and thwarting of relatedness (e.g., Gonzalez & Chiviacowsky, 2018; Sparks et al., 2016) deserves to be explored in relation to the circumplex. Further, it needs to be examined whether a differentiated circumplex emerges in every life domain or culture, with different life domains or cultures potentially impacting the extent to which different practices cluster together or fall apart. For instance, in the nursing context, the four overarching styles could be identified, thus creating room for further operational improvements to examine whether these can eventually be broken down into subcomponents (Duprez et al., 2019).

Notions such as classroom management and cognitive activation (Pianta & Hamre, 2009) and transformational and transactional leadership (Bass, 1985; Day, 2014) can likely be situated in the circumplex, thereby possibly forming a hybrid of different identified subareas. How the circumplex relates to other developed taxonomies can be examined, including the model for interpersonal teacher behavior, which is grounded in interpersonal theory (Wubbels et al., 2006), and the leadership circumplex (Redeker et al., 2014). This attempt at cross-fertilization may help to fill voids in the proposed circumplex, to provide deeper insight into why certain socialization practices have been found to be effective, and to shed light on the unique and complementary nature between the proposed circumplex and other concepts and models in the field.

Second, while the circumplex allows zooming out, adopting a helicopter or macroscopic perspective, this movement could be coupled with a microscopic perspective, zooming in to specific practices through a process of deconstruction. That is, the circumplex model indicates that need-relevant styles (e.g., autonomy support) fall into different need-relevant approaches (e.g., attuning, participative), which in turn comprise a variety of need-relevant practices (e.g., offering a rationale, promoting interest). To make the circumplex amendable for daily practice and intervention research, this layered perspective could be continued by examining the diverse strategies to operationalize a need-relevant practice. To illustrate, choice, a critical practice belonging to the participative approach, can be differentiated into option and action choice (Reeve, Nix, & Hamm, 2003), where option choice involves the offer of a menu of options from which students, athletes, or employees can choose what to do, and action choice involves choice regarding how assignments or exercises are executed (e.g., order, pace; De Muynck et al., 2019). Also, future work can examine the optimal conditions for maximizing the need-actualizing potential of a specific need-supportive practice. For example, the motivational potential of a rationale is better actualized if the rationale is intrinsically goal-oriented (Vansteenkiste, Lens, & Deci, 2006).

Third, the circumplex model provides interesting avenues for future research adopting a person-centered approach toward socialization. The circumplex model identifies critical subareas of (de)motivating socialization, but socializing agents' daily socialization style consists of combinations of different subareas. Past research (see Matosic & Cox, 2014; Haerens et al., 2018; Vansteenkiste et al., 2012) has identified such profiles using the overarching socialization styles. Yet the correlates of different combinations of autonomy support and control were found to depend on the specific approach under investigation. A domineering, relative to a demanding, approach was found to yield more negative outcomes, both when perceived in isolation and in combination with either autonomy support or structure by sport athletes (Reynders et al., 2020). Thus, the observed differentiation within these styles in the circumplex model allows one to extend and refine the number of identified profiles in past work. Overall, relying on more advanced research designs and data-analytic methods, future research is needed to adequately test and model the dynamic influences operating at multiple levels over time.

Fourth, the circumplex model yields great promise for practice and future intervention work on need-supportive socialization. Recent intervention studies in the contexts of education (e.g., Cheon, Reeve, & Vansteenkiste, 2020), sport (e.g., Reynders et al., 2019), and work (e.g., Jungert et al., 2018) have shown that socializing agents can successfully be trained to adopt more need-supportive styles and to avoid engaging in need-thwarting styles. As these studies are increasingly shifting from an exclusive focus on the malleability of autonomy support toward training socializing agents in the provision of structure as well, they would benefit from a more integrative assessment of need-supportive practices. In addition, because a reduced reliance on controlling and chaotic practices may occur as

a desirable side-effect of an intervention targeting need-supportive socialization, the circumplex model offers the advantage of simultaneously assessing socializing agents' adoption of controlling and chaotic practices all at once.

From an applied perspective, the circumplex model also has great potential as an ecologically valid feedback and self-reflection instrument for socializing agents. After completing the questionnaire, socializing agents can be provided with their personalized (teaching, coaching, or leadership) profile and associated personalized feedback that is meant to increase awareness about their current socialization style. In this way, the profile acts as a "compass" allowing socializing agents not only to reflect on their current use of (de)motivating practices (Where am I today?) but also to detect potential vulnerabilities or pitfalls in the application of need-supportive practices, thereby gaining insight into their potential for growth. Although socializing agents may slip into need-thwarting practices as a function of contextual pressures or because they observe disengagement in those being socialized (e.g., Pelletier, Séguin-Lévesque, & Legault, 2002; Wuyts et al., 2017), the compass can point them in the direction to get back on track and hints at areas where they can develop their motivating interpersonal skills.

## Conclusion

The study of what makes for a (de)motivating socializing agent has rapidly grown over the past years. Studies grounded in SDT have not only become increasingly methodologically sophisticated, but they also have generated novel insights at both the conceptual and the practical level. The recent identification of a circumplex model sheds a refreshing light on how different motivating and demotivating socialization styles fit together and points toward the importance of a graded or ordered approach. Although the circumplex structure is in need of replication, extension, and refinement in diverse age groups, domains, and cultures, the available evidence is promising. The circumplex may serve as a source of inspiration to continue the study of need-relevant practices and serve as a guide in daily practice to help socializing agents interact with students, athletes, or employees in motivating ways.

## References

Aelterman, N. & Vansteenkiste, M. (2022). Towards a fine-grained view on need-supportive and need-thwarting leadership: A circumplex approach. Manuscript in progress.

Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J. R., & Reeve, J. (2019). Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. *Journal of Educational Psychology*, *111*, 497–521.

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, *37*, 1459–1473.

Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press.

Baten, E., Vansteenkiste, M., De Muynck, G-J., De Poortere, E. & Desoete, A. (2020). How can the blow of math difficult on elementary school children's motivational, cognitive, and affective experiences be

dampened? The critical role of autonomy-supportive instructions. Journal of Educational Psychology, 12, 1490–1505.

Baumrind, D. (2012). Differentiating between confrontive and coercive kinds of parental power-assertive disciplinary practices. *Human Development*, *55*(2), 35–51.

Benlahcene, A., Kaur, A., & Awang-Hashim, R. (2020). Basic psychological needs satisfaction and student engagement: The importance of novelty satisfaction. *Journal of Applied Research in Higher Education*. Advance online publication.

Borg, I., Groenen, P. J. F., & Mair, P. (2013). *Applied multidimensional scaling*. Springer.

Carpentier, J., & Mageau, G. A. (2013). When change-oriented feedback enhances motivation, well-being and performance: A look at autonomy-supportive feedback in sport. *Psychology of Sport and Exercise*, *14*(3), 423–435.

Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2020). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. *Teaching and Teacher Education*, *90*, 103004. https://doi.org/10.1016/j.tate.2019.103004

Day, D. V. (Ed.). (2014). *Oxford handbook of leadership and organizations*. Oxford University Press.

De Meyer, J., Tallir, I., Soenens, B., Vansteenkiste, M., Aelterman, N., Van den Berghe, L., Speleers, L., & Haerens, L. (2014). Does observed controlling teaching behavior relate to students' motivation in physical education? *Journal of Educational Psychology*, *106*, 541–554. http://dx.doi.org/10.1037/a0034399

De Muynck, G. J., Soenens, B., Waterschoot, J., Degraeuwe, L., Broek, G. V., & Vansteenkiste, M. (2019). Towards a more refined insight in the critical motivating features of choice: An experimental study among recreational rope skippers. *Psychology of Sport and Exercise*, *45*, 101561.

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, *62*(1), 119–142.

Deci, E. L., Schwartz, A. J., Sheinman, L., & Ryan, R. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology*, *73*, 642–650. https://dx.doi.org/10.1037/0022-0663.73.5.642

Delrue, J., Reynders, B., Broek, G. V., Aelterman, N., De Backer, M., Decroos, S., De Muynck, G.-J., Fontaine, J., Fransen, K., Van Puyenbroeck, S., Haerens, L., & Vansteenkiste, M. (2019). Adopting a helicopter-perspective towards motivating and demotivating coaching: A circumplex approach. *Psychology of Sport and Exercise*, *40*, 110–126.

Delrue, J., Soenens, B., Morbée, S., Vansteenkiste, M., & Haerens, L. (2019). Do athletes' responses to coach autonomy support and control depend on the situation and athletes' personal motivation? *Psychology of Sport and Exercise*, *43*, 321–332.

Duprez, V., Vansteenkiste, M., Beeckman, D., Verhaeghe, S., & Van Hecke, A. (2019). Capturing motivating versus demotivating self-management support: Development and validation of a vignette-based tool grounded in self-determination theory. *International Journal of Nursing Studies*, *28*, 3858–3865.

Dweck, C. S. (2008). *Mindset: The new psychology of success*. Random House Digital.

Escriva-Boulley, G., Guillet-Descas, E., Aelterman, N., Vansteenkiste, M., Van Doren, N., Lentillon-Kaestner, V., & Haerens, L. (2021). Adopting the Situations-in-School Questionnaire to examine physical education teachers' motivating and demotivating styles using a circumplex approach. *International Journal of Environmental Research and Public Health*, *18*, 7342. https://doi.org/10.3390/ijerph18147342

Gagné, M., Morin, A. J. S., Schabram. K., Wang, Z. N., Chemolli, E., & Briand, M. (2020). Uncovering relations between leadership perceptions and motivation under different organizational contexts: A multilevel cross-lagged analysis. *Journal of Business and Psychology*, *35*, 713–732.

Gillison, F., Rouse, P., Standage, M., Sebire, S., & Ryan, R. M. (2019). A meta-analysis of techniques to promote motivation for health behaviour change from a self-determination theory perspective. *Health Psychology Review*, *13*(1), 110–130. https://doi.org/10.1080/17437199.2018.1534071

Goemaere, S., Beyers, W., De Muynck, G.-J., & Vansteenkiste, M. (2018). The paradoxical effect of long instructions on negative affect and performance: When, for whom and why do they backfire? *Acta Astronautica*, *147*, 421–430.

Gonzalez, D. H., & Chiviacowsky, S. (2018). Relatedness support enhances motor learning. *Psychological Research*, *82*, 439–477.

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, *52*, 890–898.

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, *81*, 143–154.

Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology, 83*, 508–517.

Haerens, L., Aelterman, N., Van den Berghe, L., De Meyer, J., Soenens, B., & Vansteenkiste, M. (2013). Observing physical education teachers' need-supportive interactions in classroom settings. *Journal of Sport & Exercise Psychology*, *35*, 3–17.

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise*, *16*, 26–36. http://dx.doi.org/10.1016/j.psychsport.2014.08.013

Haerens, L., Vansteenkiste, M., De Meester, A., Delrue, J., Tallir, I., Vande Broek, G., Goris, W. & Aelterman, N. (2018). Different combinations of perceived autonomy support and control: Identifying the most optimal motivating style. *Physical Education and Sport Pedagogy*, *23*, 16–36.

Jang, H. (2008). Supporting students' motivation, engagement, and learning during an uninteresting activity. *Journal of Educational Psychology, 100*, 798–811.

Jang, H.-R. (2019). Teachers' intrinsic versus extrinsic instructional goals predict their classroom motivational styles. *Learning and Instruction*, *60*, 286–300.

Jang, H., Kim, E. J., & Reeve, J. (2016). Why students become more engaged or more disengaged during the semester: A self-determination theory dual-process model. *Learning and Instruction*, *43*, 27–38.

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology*, *102*, 588–600.

Jungert, T., Van den Broeck, A., Schreurs, B., & Osterman, U. (2018). How colleagues can support each other's needs and motivation: An intervention on employee work motivation. *Applied Psychology*, *67*, 3–29.

Karkkola, P., Kuittinen, M., Hintsa, T., Ryynänen, J., & Simonen, A. (2018). Each one counts: Basic needs mediating the association between social support and vitality at work. *Scandinavian Journal of Work and Organizational Psychology*, *3*, 1–11.

Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling vs. informational styles on intrinsic motivation and creativity. *Journal of Personality*, *52*(3), 233–248.

Lochbaum, M., & Jean-Noel, J. (2016). Perceived autonomy support instruction and student outcomes in physical education and leisure-time: A meta-analytic review of correlates. *Revista Internacional de ciencias del deporte*, *12*, 29–47.

Mabbe, E., Soenens, B., Vansteenkiste, M., van der Kaap-Deeder, J., & Mouratidis, A. (2018). Day-to-day variation in autonomy-supportive and psychologically controlling parenting: The role of parents' daily experiences of need satisfaction and need frustration. *Parenting Science and Practice*, *18*, 86–109.

Mabbe, E., Soenens, B., & Vansteenkiste, M. (2022). On the interplay between autonomy-supportive and structuring parenting among toddlers: A circumplex approach. Manuscript in progress.

Matosic, D., & Cox, A. (2014). Athletes' motivation regulations and need satisfaction across combinations of perceived coaching behaviors. *Journal of Applied Sport Psychology*, *26*, 302–317.

Moé, A., Consiglio, P., & Katz, I. (2022). Exploring the circumplex model of motivating and demotivating teaching styles: The role of teacher need satisfaction and need frustration. Teaching and Teacher Education, 118, 103823.

Moller, A. C., Deci, E. L., & Ryan, R. M. (2006). Choice and ego-depletion: The moderating role of autonomy. *Personality and Social Psychology Bulletin*, *32*(8), 1024–1036.

Mouratidis, A., Michou, A., Telli, S., Maulana, R., & Helms-Lorenz, M. (2022). No aspect of structure should be left behind in relation to student autonomous motivation. British Journal of Educational Psychology, *e12489*.

Ntoumanis, N., Ng, J. Y. Y., Prestwich, A., Quested, E., Hancox, J. E., Thogersen-Ntoumani, C., Deci, E., Ryan, R. M., Lonsdale, C., & Williams, G. C. (202). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health Psychology Review*, *15*(2), 214–244. http://dx.doi.org 10.1080/17437199.2020.1718529

Pan, Y., & Gauvain, M. (2012). The continuity of college students' autonomous learning motivation and its predictors: A three-year longitudinal study. *Learning and Individual Differences, 22*(1), 92–99. https://doi.org/10.1016/j.lindif.2011.11.010

Patall, E. A., Cooper, H., & Robinson, J. C. (2008). The effects of choice on intrinsic motivation and related outcomes: A meta-analysis of research findings. *Psychological Bulletin*, *134*(2), 270–300.

Patall, E. A., Steingut, R. R., Vasquez, A. C., Trimble, S. S., Pituch, K. A., & Freeman, J. L. (2018). Daily autonomy supporting or thwarting and students' motivation and engagement in the high school science classroom. *Journal of Educational Psychology, 110*, 269–288.

Patall, E. A., Sylvester, B. J., & Han, C. W. (2014). The role of competence in the effects of choice on motivation. *Journal of Experimental Social Psychology*, *50*, 27–44. http://dx.doi.org/10.1016/j.jesp.2013.09.002

Pelletier, L. G., Séguin-Lévesque, C., & Legault, L. (2002). Pressure from above and pressure from below as determinants of teachers' motivation and teaching behaviors. *Journal of Educational Psychology*, *94*(1), 186–196.

Pianta, R. C., & Hamre, B. K. (2009). Conceptualization, measurement, and improvement of classroom processes: Standardized observation can leverage capacity. *Educational Researcher*, *38*, 109–119.

Redeker, M., de Vries, R. E., Rouckhout, D., Vermeren, P., & De Fruyt, F. (2014) Integrating leadership: The leadership circumplex. *European Journal of Work and Organizational Psychology*, *23*, 435–455. http://dx.doi.org/10.1080/1359432X.2012.738671

Reeve, J. (2006). Teachers as facilitators: What autonomy-supportive teachers do and why their students benefit. *Elementary School Journal*, *106*, 225–236. http://dx.doi.org/10.1086/501484

Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, *44*, 159–175.

Reeve, J. (2015). Giving and summoning autonomy support in hierarchical relationships. *Social and Personality Psychology Compass, 9*(8), 406–418.

Reeve, J. & Cheon, S. H. (2021). Autonomy-supportive teaching: Its malleability, benefits, and potential to improve educational practice. *Educational Psychologist, 56*(1), 54–77.

Reeve, J., Jang, H. R., & Jang, H. (2018). Personality-based antecedents of teachers' autonomy-supportive and controlling motivating styles. *Learning and Individual Differences*, *62*, 12–22.

Reeve, J., Nix, G., & Hamm, D. (2003). Testing models of the experience of self-determination in intrinsic motivation and the conundrum of choice. *Journal of Educational Psychology*, *95*(2), 375–392.

Reynders, B., Van Puyenbroeck, S., Ceulemans, E., Vansteenkiste, M., & Vande Broek, G. (2020). How do profiles of need-supportive and controlling coaching relate to team athletes' motivational outcomes? A person-centered approach. *Journal of Sport & Exercise Psychology*, *42*, 452–462.

Reynders, B., Vansteenkiste, M., Van Puyenbroeck, S., Aelterman, N., De Backer, M., Delrue, J., De Muynck, G.-J., Fransen, K., Haerens, L., & Vande Broek, G. (2019). Coaching the coach: Intervention effects on need-supportive coaching behavior and athlete motivation and engagement. *Psychology of Sport & Exercise*, *43*, 288–300.

Rocchi, M., Pelletier, L., & Desmarais, P. (2017). The validity of the Interpersonal Behaviors Questionnaire (IBQ) in sport. *Measurement in Physical Education and Exercise Science*, *21*(1), 15–25.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, *61*, 101860. http://dx.doi.org/10.1016/j.cedpsych.2020.101860

Ryan, R. M., Deci, E. L., & Vansteenkiste, M. (2016). Autonomy and autonomy disturbances in self-development and psychopathology: Research on motivation, attachment, and clinical process. In D. Cicchetti (Ed.), *Developmental psychopathology, Vol. 1: Theory and method* (3rd ed., pp. 385–438). John Wiley & Sons.

Skinner, E., Johnson, S., & Snyder, T. (2005). Six dimensions of parenting: A motivational model. *Parenting Science and Practice*, *5*, 175–235.

Slemp, G. R., Kern, M. L., Patrick, K. J., & Ryan, R. M. (2018). Leader autonomy support in the workplace: A meta-analytic review. *Motivation and Emotion*, *42*(5), 706–724.

Soenens, B., Sierens, E., Vansteenkiste, M., Dochy, F., & Goossens, L. (2012). Psychologically controlling teaching: Examining outcomes, antecedents, and mediators. *Journal of Educational Psychology*, *104*, 108–120.

Soenens, B., Vansteenkiste, M., & Sierens, E. (2009). How are parental psychological control and autonomy support related? A cluster-analytic approach. *Journal of Marriage and Family*, *71*, 187–202.

Sparks, C., Dimmock, J., Lonsdale, C., & Jackson, B. (2016). Modeling indicators and outcomes of students' perceived teacher relatedness support in high school physical education. *Psychology of Sport and Exercise*, *26*, 71–82.

Steingut, R. R., Patall, E. A., & Trimble, S. S. (2017). The effect of rationale provision on motivation and performance outcomes: A meta-analysis. *Motivation Science*, *3*(1), 19–50.

Van der Kaap-Deeder, J., Soenens, B., Mabbe, E., Dieleman, L., Mouratidis, A., Campbell, R., & Vansteenkiste, M. (2019). From daily need experiences to autonomy-supportive and psychologically controlling parenting via psychological availability and stress. *Parenting: Science and Practice*, *19*, 177–202.

Vansteenkiste, M., Aelterman, A., De Muynck, G-J., Haerens, L., Patall, E., & Reeve, J. (2018). Fostering personal meaning and self-relevance: A self-determination theory perspective on internalization. Journal of Experimental Education, 86, 30–49.

Vansteenkiste, M., Aelterman, N., Haerens, L., & Soenens, B. (2019). Seeking stability in stormy educational times: A need-based perspective on (de)motivating teaching grounded in self- determination theory. In E. N. Gonida & M. S. Lemos (Eds.) *Motivation in education at a time of global change: Theory, research, and implications for practice* (pp. 53–80). Emerald Publishing.

Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist*, *41*(1), 19–31.

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*, 263–280.

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes and future directions. *Motivation and Emotion*, *44*, 1–31.

Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., Dochy, F., Mouratidis, A., Aelterman, N., Haerens, L., & Beyers, W. (2012). Identifying configurations of perceived teacher autonomy support and structure: Associations with self-regulated learning, motivation and problem behavior. *Learning and Instruction*, *22*, 431–439.

Vansteenkiste, M., & Soenens, B. (2015). *Vitamines voor groei: Ontwikkeling voeden vanuit de Zelf-Determinatie Theorie (Vitamins for growth: Nurturing development from a Self-Determination Theory Perspective)*. Acco, Gent, België.

Vasconcellos, D., Parker, P. D., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., Ryan, R., & Lonsdale, C. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. *Journal of Educational Psychology*, *112*, 1444–1469.

Vermote, B., Aelterman, N., Beyers, W., Aper, L., Buysschaert, F., & Vansteenkiste, M. (2020). The role of teachers' motivation and mindsets in predicting a (de)motivating teaching style in higher education: A circumplex approach. *Motivation and Emotion*, *44*, 270–294.

Wallace, R. A., & Wolf, A. (1999). *Contemporary sociological theory: Expanding the classical tradition* (6th ed.). Prentice-Hall.

Waterschoot, J., Vansteenkiste, M., & Soenens, B. (2019). The effects of experimentally induced choice on elementary school children's intrinsic motivation: The moderating role of indecisiveness and teacher-student relatedness. *Journal of Experimental Child Psychology*, *188*, 104692.

Wentzel, K. R. (2009). Students' relationships with teachers as motivational contexts. In K. R. Wenzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 301–322). Routledge/Taylor & Francis Group.

Wubbels, T., Brekelmans, M., den Brok, P., & van Tartwijk, J. (2006). An interpersonal perspective on classroom management in secondary classrooms in the Netherlands. In C. Evertson & C. Weinstein (Eds.), *Handbook of classoom management: Research, practice, and contemporary issues* (pp. 1161–1191). Lawrence Erlbaum Associates.

Wuyts, D., Vansteenkiste, M., Mabbe, E., & Soenens, B. (2017). Effects of social pressure and child failure on parents' use of control: An experimental investigation. *Contemporary Educational Psychology*, *51*, 378–390.

# Neuropsychological Research in Self-Determination Theory

Woogul Lee

## Abstract

Recently, interest in neuroscientific approaches to self-determination theory (SDT) research has increased dramatically. In this chapter, SDT-related neuroscience studies are reviewed, and how these studies contributed to resolving the questions and controversies associated with SDT is discussed. A growing body of neuroscience research has provided converging evidence for well-established theories such on as the undermining effects of extrinsic rewards and choice effects. In addition, SDT-related neuroscience research has examined the neural similarities and differences between experiences of intrinsic (autonomous) and extrinsic (controlled) motivation. The neural consequences of autonomy-supportive versus controlling environments and of individual differences in self-determination have been investigated. Though methodological limitations still exit, neuroscientific approaches are promising for both the development of motivation theories and the refinement of neuroscience theories.

**Key Words:** self-determination theory, intrinsic motivation, motivational neuroscience, anterior insula, anterior cingulate cortex, striatum

Self-determination theory (SDT) is a macro-theoretical framework that explains people's inherent and spontaneous tendency toward positive functioning and development (Ryan & Deci, 2000). SDT has sought to identify the antecedents and consequences of psychological needs and goals, motivation, and behavior, how people internalize socially determined values and goals, and whether individual differences in self-determination exist. The theory has been applied to a diverse range of academic fields, such as education, psychotherapy, counseling, public health, and sports (Ryan & Deci, 2017).

Recently, a number of SDT researchers have become interested in neuroscientific research methods (Di Domenico & Ryan, 2017; Reeve & Lee, 2019b). One of the most significant reasons for this is because many psychological concepts related to SDT, such as basic psychological needs, may not always be consciously perceived. In addition, SDT-based psychological states can change from moment to moment because they can be easily influenced by even subtle changes in the social context. Therefore, accurately measuring the psychological states underlying SDT concepts is extremely challenging. As such, neuroscientific methods offer a potential pathway in SDT research because they can be used

to analyze both conscious and nonconscious processes of the human mind and to monitor momentary changes in both (Lee, 2016).

In this chapter, I first categorize previous empirical neuroscience studies conducted by SDT researchers according to the theoretical questions and controversies their research addresses. I then discuss how these studies have contributed to resolving the questions and controversies in SDT. A summary of SDT-related empirical neuroscience studies is provided in Table 12.1. The reference list is not intended to be comprehensive, but rather illustrative. Categorizing these SDT-based neuroscience studies may be considered somewhat arbitrary because some issues are not independent, and individual studies can aim to address multiple questions and controversies. However, this categorization may help advance the neuroscientific understanding of SDT and provide a theoretical foundation for the possible advancement of SDT.

## Evidence for the Negative Effects of Extrinsic Rewards on Intrinsic Motivation

Some of the earliest SDT-related neuroscience research investigated the detrimental effects of extrinsic rewards on intrinsic motivation. According to SDT, if people become accustomed to receiving extrinsic rewards for task performance, the absence of these rewards can undermine intrinsically motivated task engagement even for those who initially exhibited high intrinsic motivation for that task (Deci, Koestner, & Ryan, 1999). Some researchers have questioned this undermining effect (Eisenberger & Cameron, 1996), though their criticisms have been refuted by a seminal meta-analysis study of SDT researchers (Deci et al., 1999). In traditional empirical studies, intrinsic motivation has generally been measured using behavioral measures of task engagement when offered a free choice of activity, or self-reports of interest or enjoyment. A number of SDT researchers have additionally sought to measure intrinsic motivation using neuroscientific methods and to identify whether their neural findings are consistent with the results of traditional studies (Marsden et al., 2015; Murayama et al., 2010).

For example, Murayama and colleagues (2010) examined the undermining effect of tangible monetary rewards using functional magnetic resonance imaging (fMRI) to measure brain blood flow and neural activations. The neural activations between the reward and nonreward groups were compared. Participants in the reward group performed an interesting stopwatch task with monetary rewards in the first session and then performed the same task without monetary rewards in the second session. In contrast, those in the nonreward group performed the same task without monetary rewards in both sessions. For convergent validity, a traditional intrinsic motivation index (i.e., task engagement during a period of free choice) was also used.

The results showed that brain regions related to reward processing such as the anterior striatum and lateral prefrontal cortex were activated even when the participants performed an interesting task without monetary rewards (i.e., the sessions for

**Table 12.1** Summary of Empirical Neuroscientific Research Related to Self-Determination Theory

| Reference | Research method | Research topic | Related mini-theory |
|---|---|---|---|
| Murayama et al. (2010) | fMRI | Undermining effects of extrinsic rewards on intrinsic motivation | Cognitive evaluation theory |
| Reeve & Tseng (2011) | Saliva cortisol test | Effects of autonomy support on stress and task experiences | Basic psychological needs theory |
| Lee et al. (2012) | fMRI | Simulated experiences of intrinsic motivation | Cognitive evaluation theory |
| Lee & Reeve (2013) | fMRI | Simulated experiences of intrinsic motivation | Cognitive evaluation theory, basic psychological needs theory |
| Legault & Inzlicht (2013) | ERP | Influences of autonomous motivation on self-regulation | Causality orientations theory, cognitive evaluation theory |
| Di Domenico et al. (2013) | fNIRS | Effects of general psychological need satisfaction on self-related conflict resolution | Organismic integration theory, basic psychological needs theory |
| Murayama et al. (2015) | fMRI | Facilitating effects of choice on task performance via failure resilience | Cognitive evaluation theory |
| Marsden et al. (2015) | fMRI | Undermining effects of extrinsic rewards on intrinsic motivation | Cognitive evaluation theory |
| Di Domenico et al. (2016) | ERP | Effects of general psychological need satisfaction on self-related conflict resolution | Organismic integration theory, basic psychological needs theory |
| Zougkou, Weinstein, & Paulmann (2017) | ERP | Effects of autonomy-supportive vs. controlling words and tones | Basic psychological needs theory |
| Lee & Reeve (2017) | fMRI | Actual experiences of intrinsic motivation | Cognitive evaluation theory, basic psychological needs theory |
| Paulmann, Weinstein, & Zougkou (2019) | ERP | Effects of autonomy-supportive vs. controlling tones of voice | Basic psychological needs theory |
| Lee & Reeve (2020a) | VBM | Anatomic differences related to general psychological need satisfaction | Basic psychological needs theory |
| Lee & Reeve (2020b) | fMRI | Memories of intrinsic motivation experiences | Cognitive evaluation theory |

*Note.* fMRI: functional magnetic resonance imaging, ERP: event-related potential, fNIRS: functional near infrared spectroscopy; VBM: voxel-based morphometry

the nonreward group). These neural activations were greater when the participants performed the interesting task with monetary rewards (i.e., the first session for the reward group) but were significantly lower for the same task after the monetary rewards had been removed (i.e., the second session in the reward group). The neural changes related

to reward processing in the reward group were also significantly correlated with the degree of free-choice task engagement.

These results suggest that the brain regions related to reward processing play an important role in both extrinsic and intrinsic motivation. The neural results show that extrinsic rewards, particularly tangible monetary rewards for task performance, can have an effect on human motivation, but this effect can be detrimental when the monetary rewards are withdrawn. These neural findings are noteworthy because they provide neural converging evidence for the undermining effect of extrinsic rewards on intrinsic motivation, though neural evidence related to other types of extrinsic rewards (e.g., verbal rewards) may additionally be needed.

## Evidence for Personal Choice Generating Intrinsically Motivated Behavior

Personal choice generally strengthens intrinsic motivation and subsequently influences behavior and performance (Patall, Cooper, & Robinson, 2008; Zuckerman et al., 1978). Personal choice facilitates intrinsic motivation when it supports the experience of autonomy (Ryan & Deci, 2017). Both SDT researchers and psychologists from various academic backgrounds have investigated the positive influence of personal choice on human motivation and behavior (Katz & Assor, 2007). Neuroscience researchers from a diverse range of fields have also investigated this relationship, finding that choice provision leads to greater ventral striatum and midbrain activations (Leotti, Iyengar, & Ochsner, 2010; Murayama et al., 2016). These neural activations can be observed when the situation is rewarding (Berridge, 2004) or salient (Zink et al., 2006). However, the provision of choice activated the ventral striatum and midbrain even when the saliency of choice cues was controlled for (Leotti & Delgado, 2011). Therefore, these results suggest that personal choice can be inherently rewarding, but not simply attentive (Leotti & Delgado, 2011, 2014).

SDT researchers have specifically paid attention to the beneficial effects of personal choice on task performance via intrinsic motivation. For example, Murayama and colleagues (2015) designed an experiment in which the participants performed a stopwatch task with two within-subject conditions: one in which the participants chose their preferred watch from various options for the task and one in which they performed the task with an assigned watch. The differences in neural activations between the self-determined and forced-choice conditions were examined. Consistent with previous findings from other neuroscience studies, choice provision led to greater neural activations related to reward processing, such as the midbrain and ventromedial prefrontal cortex (VMPFC). The participants also demonstrated better task performance when self-determined choices were provided. In addition, the changes in neural activations of the VMPFC indicated that the participants were less frustrated with failure when offered personal choice. Thus, the neural resilience in the face of failure observed when self-determined choice is available appears to boost task performance.

Legault and Inzlicht (2013) conducted a series of SDT-related neuroscience experiments using the event-related potential (ERP) method, which measures electrical brain activity and identifies the psychological and physiological state of the individual. The participants were asked to perform a self-regulation task (i.e., the Stroop task) that required the suppression of automated semantic processing in achieving the task goal. The immediate error-related negativity (ERN) of the anterior cingulate cortex (ACC) represents neural monitoring of self-regulation failure. The degree of ERN and task performance were compared when participants performed the task with and without personal choice. Compared to the participants who were offered no choice, the participants in the choice condition exhibited higher self-reported autonomous motivation, better sensitivity to self-regulation failure (i.e., larger ERNs), and better task performance.

Many neuroscientific theories have focused on the fact that choice provision activates the brain regions related to reward processing (e.g., the midbrain, striatum, and VMPFC) and the ACC related to conflict monitoring and resolution (Bush, Luu, & Posner, 2000). Interestingly, however, many fMRI studies have consistently observed that choice provision also recruits the anterior insula (Leotti & Delgado, 2011, 2014; Murayama et al., 2015), which is known to be a key brain region for self-involving processing (Damasio, 1999). When people encounter a specific situation (e.g., attending a meeting), they monitor information from interoception (e.g., heartbeat awareness) and subjectively assess social signals (e.g., others' facial expressions). With accumulated experience, people can create their own self schema regarding the situation, and this schema guides their subsequent decision-making (e.g., whether or not to attend the next meeting). Anterior insula activity mediates these self-involving processes to generate a "feeling of self" (Craig, 2009; Damasio, 2003).

According to cognitive evaluation theory, a mini-theory of SDT, personal choice leads to intrinsically motivated behavior and performance because it encourages people to believe that their behavior and performance are the result of the self (i.e., an internal perceived locus of causality; Ryan & Deci, 2017). Considering both the theoretical postulates of SDT and current neuroscientific understanding, the volitional aspect of personal choice is critical to explaining choice provision as an intrinsic reward.

## Qualitative Differences between Types of Motivation

Neuroscientific understanding of human motivation has traditionally been based on neural analysis of extrinsic (or incentive-based) motivation (Berridge, 2004). The brain regions related to reward processing (e.g., the midbrain, striatum, and VMPFC) are known to play a critical role in human motivation. However, SDT-based neuroscience research has shown that intrinsic motivation generated by an interesting task or choice provision is also associated with neural activity related to reward processing (Murayama et al., 2010, 2015).

Neuroscientific studies on the undermining effect of extrinsic rewards and choice provision have observed that some brain regions potentially have unique roles in intrinsic motivation (Leotti & Delgado, 2011, 2014; Murayama et al., 2010, 2015). However, examining the qualitative neural differences between intrinsic (or autonomous) and extrinsic (or controlled) motivation has not been the main research interest of these studies. Some SDT researchers have conducted neuroscientific research focusing on identifying the neural differences between intrinsic and extrinsic motivation; in particular, they have sought to identify the unique neural correlates of intrinsic motivation and the common neural correlates between different intrinsic and extrinsic motivation.

A group of SDT researchers has conducted fMRI analysis to identify the unique neural activations related to simulated intrinsic motivation (Lee et al., 2012; Lee & Reeve, 2013). In these studies, the neural differences between intrinsic and extrinsic motivation were examined when participants imagined experiences using phrases describing well-known intrinsically motivating versus extrinsically motivating situations. Results showed that the anterior insula was more strongly activated under intrinsic motivation. These results might suggest that imagining intrinsic motivation more heavily engages a sense of self (Damasio, 2003; Lee, 2016).

The anterior insula is known as a hub of self-involving processing (Damasio, 1999, 2003). It is also known to deal with specific emotions, not only negative emotions such as disgust and aversion but also positive emotions such as happiness (Craig, 2009). In the study by Lee and Reeve (2013), both intrinsic and extrinsic motivation situations showed similar levels of positive emotional valence. However, the anterior insula was significantly more activated in intrinsic motivation situations than in extrinsic motivation situations. In addition, participants with higher self-reported general psychological need satisfaction in their daily lives exhibited greater anterior insula activations in the intrinsic motivation situations. These results are consistent with the belief that the neural activity of the anterior insula is associated with psychological experiences of self.

In addition to simulated intrinsic motivation experiences, Lee and Reeve (2017) examined neural activity for real experiences of intrinsic motivation during the performance of interesting tasks (i.e., solving anagrams and answering trivia questions). In particular, neural differences were examined when participants experienced intrinsic motivation as satisfying competence versus when their intrinsic motivation was harmed as dissatisfying competence. Participants exhibited greater neural activations of the ventral striatum and anterior insula when experiencing intrinsic motivation (see Figure 12.1). In addition, the anterior insula and medial prefrontal cortex were more strongly activated in the task trials when participants experienced greater intrinsic interest. This converging evidence supported the theoretical link between self-involving processing and intrinsic motivation.
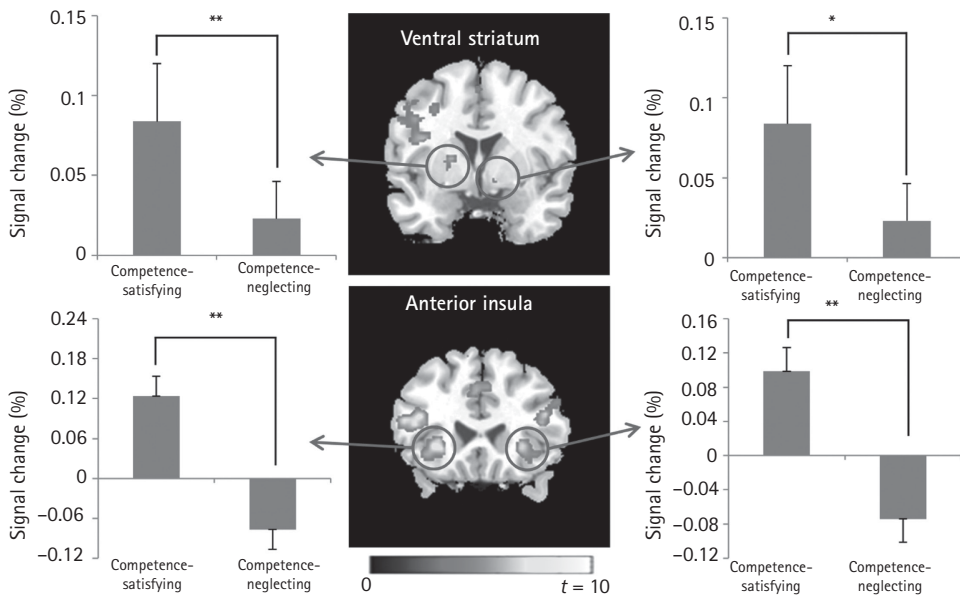
**Figure 12.1** Example of the neural findings from Lee and Reeve (2017). The ventral striatum and anterior insula were more strongly activated when the participants experienced intrinsic motivation as satisfying competence than when their intrinsic motivation was harmed as dissatisfying competence.

*Note*: * *p* < .05, ** *p* < .01.

## Antecedents and Consequences of Autonomy Support versus Control

According to basic psychological needs theory, another mini-theory of SDT, intrinsic (or autonomous) motivation is most robustly expressed when people experience the satisfaction of their basic psychological needs (e.g., autonomy, competence, and relatedness; Ryan & Deci, 2017). Therefore, SDT researchers have been interested in the environments and contexts that satisfy basic psychological needs. One of the most critical aspects of a supportive environment, as opposed to a controlling one, is autonomy support, in which competence and relatedness satisfaction as well as autonomy satisfaction can be experienced (Rocchi et al., 2017). Autonomy-supportive environments and contexts subsequently lead to positive functioning, such as high intrinsic motivation and good performance (Jang et al., 2009).

Reeve and Tseng (2011) conducted a saliva cortisol test to identify the differences in the consequences of autonomy-supportive and controlling instructions. This saliva test assesses cortisol hormone reactivity, which is a well-known biological index of stress. In this study, participants performed an interesting cube puzzle task under three different experimental conditions: autonomy-supportive, controlling, and neutral. The participants reported their psychological need satisfaction and task engagement, while saliva samples were collected to measure cortisol reactivity.

Participants in the autonomy-supportive condition demonstrated less stress (i.e., lower cortisol reactivity) and higher psychological need satisfaction and engagement

during the task. In contrast, participants in the controlling condition demonstrated higher stress levels and lower psychological need satisfaction and engagement. This study provided a biological view on how different motivating styles influence learners' stress and subsequent motivation and engagement during task performance.

Researchers have also conducted neuroscientific analysis to determine which elements of particular environments and contexts are perceived as autonomy-supportive or controlling. Zougkou, Weinstein, and Paulmann (2017) examined neural reactions to motivational speech using the ERP method. Quick electrical activities (e.g., at around 170–230 ms and around 350–600 ms) of the bilateral frontal, central, and posterior regions as well as the midline region were analyzed. The electrical activities were compared when both word use and prosody were autonomy-supportive, controlling, or neutral. The results showed that both autonomy-supportive and controlling speech elicited larger quick electrical activities, particularly within the midline region, compared to neutral speech.

Interestingly, this study was also designed to examine neural reactions to motivational tones of voice. Electrical activities were compared when word use was neutral but prosody was autonomy-supportive or controlling. Quick electrical activities, particularly within the midline region, were stronger in response to a controlling voice than in response to autonomy-supportive or neutral voices. These results suggest that people can immediately detect not only motivational speech but also a controlling tone of voice regardless of message contents.

An ERP study by Paulmann, Weinstein, and Zougkou (2019) again examined neural reactions to motivational prosody using only neutral messages. Unlike their previous study (Zougkou et al., 2017), participants were asked to rate their perceived choice and pressure after listening to each message. This experimental design forced the participants to listen to the messages more actively. Quick electrical activities within the fronto-central regions were stronger in response to autonomy-supportive and controlling voices compared to the neutral voice. The results also indicated that autonomy-supportive and controlling voices continued to be processed, though the neural involvement patterns were slightly different between the two motivational voices. These results suggest that, when people pay attention, they can quickly react to both autonomy-supportive and controlling voices and exhibit slightly different neural processes.

This study also examined neural reactions when the voice tone was switched. Changes from neutral to motivational (i.e., autonomy-supportive or controlling) voices led to stronger quick electrical activities and continued to be processed. Changes from an autonomy-supportive voice to a controlling voice elicited stronger quick electrical activities than changes in the opposite direction, but both changes continued to be processed. These results indicate that people can sensitively and immediately recognize changes in motivational voices, though they can be overwhelmed by a controlling voice.

## Individual Differences in Self-Determination

According to SDT (Ryan & Deci, 2017), people universally pursue basic psychological needs (e.g., autonomy, competence, and relatedness) and universally experience pleasure when the environmental conditions are supportive of psychological need satisfaction (e.g., experiences of personal control, mastery, and close relationships). However, individuals may experience different degrees of psychological need satisfaction under the same environmental conditions depending on their own developmental trajectory. SDT researchers have thus conducted neuroscientific studies to examine individual differences in self-determination.

Causality orientations theory is a mini-theory of SDT dealing with individual differences in the general orientation of perceiving and reacting to situations and of regulating relevant behaviors (Deci & Ryan, 1985). For example, some individuals tend to perceive a situation as more autonomous (i.e., autonomy orientation), while others tend to perceive the same situation as more controlling (i.e., control orientation). Though causality orientations theory has widely been considered in traditional SDT research, only a few neuroscience studies have directly investigated this theory.

In an ERP experiment conducted by Legault and Inzlicht (2013), the participants reported their general causality orientation before performing the Go/No-go task which is a type of self-regulation task requiring the inhibition of habituated actions. Based on this experimental paradigm, the relationships of the participants' causality orientation with their ERN amplitudes of the ACC and task performance were examined. Participants with a stronger autonomous orientation tended to more sensitively monitor self-regulation failure (i.e., exhibit larger ERNs) and to consequently exhibit better task performance. These results suggest that people can differ in their perception of situations as more autonomous, and this individual difference can influence their self-regulatory performance.

There have been neuroscience studies considering other types of individual differences in self-determination. A group of SDT researchers has examined the relationship between general psychological need satisfaction and neural activations when resolving self-related decision conflicts. To do so, these researchers utilized functional near-infrared spectroscopy to examine neural activations with infrared light (Di Domenico et al., 2013) and ERP analysis (Di Domenico et al., 2016). In these studies, participants performed a decision task between occupation options.

Medial prefrontal cortex (MPFC) activations were greater when the decision conflict was greater, such as when the participant's preference for two occupations was similar. This was in accordance with the general understanding that MPFC (or ACC) activity is related to the resolution of self-related conflicts (Bush et al., 2000; Di Domenico & Ryan, 2017). In processing these conflicts, participants with higher levels of basic psychological need satisfaction in their daily lives exhibited greater MPFC involvement. These results are consistent with the idea that people with greater general psychological need

satisfaction may characteristically tend to utilize self-related information, mediated by the MPFC, to more appropriately and more successfully resolve cognitive conflicts.

Lee and Reeve (2020a) conducted voxel-based morphometry analysis to examine the relationship between young adults' general psychological need satisfaction in life and their anatomic brain volumes. The gray matter volumes of the brain regions related to autonomous motivation (e.g., the striatum, orbitofrontal cortex, insula, and ACC) were examined. Changes in the gray matter volume were mostly dependent on synaptic connection density (Gogtay et al., 2004). Within-person decreases in synaptic connection density can represent functional maturation, mainly in infancy and childhood (Lebel & Beaulieu, 2011). In young adults, however, synaptic connection density generally demonstrates individual differences based on variation in genetics and environmental experiences (Ashburner & Friston, 2000).

Of the brain regions of interest related to autonomous motivation, only the gray matter volumes of the ventral striatum were significantly related to the degree of general psychological need satisfaction in life. Considering that the ventral striatum is associated with hedonic reactions to rewarding stimuli or situations (Berridge, 2004), participants with higher general psychological need satisfaction seemed to show greater changes in the brain region related to reactivity to rewarding experiences. This finding is in line with the frequent SDT finding that higher general psychological need satisfaction is predictive of greater wellness and happiness (Ryan & Martela, 2016).

**Memories of Intrinsic Motivation Experiences**

SDT researchers have examined the neural state after intrinsic (or autonomous) motivation is experienced and the subsequent impact on task performance and/or decision-making. This is possible because neuroscientific methods can measure moment-to-moment changes in brain functions and related psychological states. Accumulated neural findings suggest that neural activity related to reward processing (e.g., striatum and orbitofrontal cortex activations) and that related to self-involving processing (e.g., anterior insula and ACC activations) are associated with the experience of intrinsic (or autonomous) motivation, though there could be alternative interpretations.

In SDT, another important research question is how previous experiences of intrinsic motivation are stored and how they subsequently influence learning, behavior, and decision-making. Of course, based on previous neuroscientific findings (Reeve & Lee, 2019a, 2019b), the influences of intrinsic motivation memories on subsequent cognitive processes or task performance can be inferred to a certain degree. However, few neuroscience studies have explicitly addressed this issue.

Lee and Reeve (2020b) conducted an fMRI study to understand how intrinsically motivating episodes are stored neurally. In this study, participants imagined their own previous experiences of intrinsic motivation with the assistance of memory-provoking instructions and questions (e.g., "What was so interesting?"). The results showed that

ACC and VMPFC activations were more strongly observed when participants imagined intrinsically motivating memories compared with non-intrinsically motivating memories. In addition, the neural activations of the ACC and VMPFC were complementary with intrinsic motivation experiences stored relatively more based on VMPFC activity related to reward processing (O'Doherty, 2007) or relatively more based on ACC activity related to self-involving processing (Di Domenico & Ryan, 2017).

One interesting finding of this study was that the neural activation patterns differed slightly between the actual experience of intrinsic motivation and recalling intrinsic motivation memories. When participants actually experienced intrinsic motivation during task performance, both neural activity of the cortical brain (i.e., the ACC and VMPFC) and that of the subcortical brain (i.e., the anterior insula and ACC) were observed (Lee & Reeve, 2017). In contrast, when participants recalled previous memories of intrinsic motivation, only neural activity of the cortical brain was observed (Lee & Reeve, 2020b).

This difference suggests that, similar to the processing of emotional experiences, motivational experiences are initially processed dominantly with the involvement of the subcortical brain, and then the motivational information is stored and utilized primarily with the involvement of the cortical brain (Moscovitch et al., 2016; Reeve, Lee, & Won, 2015). However, further research is required to clearly identify how the stored information for intrinsic motivation memories subsequently influences decision-making and behavior.

**Conclusion and Future Directions**

Over the past decade, the interest of SDT researchers in neuroscientific approaches has increased dramatically. As a result, neuroscientific research has contributed to resolving a number of questions and controversies in SDT, including providing converging evidence for the undermining effect of extrinsic rewards on intrinsic motivation (Murayama et al., 2010) and for the generation of intrinsic motivation via choice provision (Murayama et al., 2015). The neural similarities and differences between experiences of intrinsic (autonomous) and extrinsic (controlled) motivation have been examined (Lee et al., 2012; Lee & Reeve, 2013, 2017), and the environmental factors that cause individuals to perceive situations as either autonomy-supportive or controlling and how they immediately detect these influences have also been examined (Paulmann et al., 2019; Reeve & Tseng, 2011; Zougkou et al., 2017). In addition, a number of SDT-based neuroscience studies have investigated whether individual differences in self-determination exist and how these individual differences influence learning, behavior, and decision-making (Di Domenico et al., 2013, 2016; Legault & Inzlicht, 2013).

Although neuroscientific research has contributed to broadening the neuroscientific understanding of SDT, certain limitations remain. Recognizing these limitations could provide a clear and specific direction for future neuroscience research in SDT. For example, most previous work has focused on intrinsic motivation and less on the issues of internalized and autonomous forms of extrinsic motivation. Goal contents theory and

relationships motivation theory, two more recent mini-theories of SDT, have rarely been directly addressed by SDT-based neuroscience research, though they have been indirectly discussed. Thus, further work should look to extend the neuroscientific understanding of these mini-theories.

In addition, some SDT-based neuroscientific studies have examined other types of individual differences in self-determination, which could assist in further developing causality orientations theory, which deals with a person's tendency to perceive situations as autonomous or controlling. Neuroscientific studies have examined the neural influences of individual differences in general basic psychological need satisfaction (Di Domenico et al., 2013, 2016; Lee & Reeve, 2020a), but not causality orientations. Broadly speaking, individual differences in causality orientation and general basic psychological need satisfaction have similarities because they are related to individual differences in autonomous motivation. However, clarifying the conceptual boundary of causality orientations theory is worth considering.

Researchers should also look to answer theoretical questions regarding SDT using a diverse range of neuroscientific methods, which have different advantages and disadvantages (Huettel, Song, & McCarthy, 2004). For example, the ERP method can detect neural electrical changes to the millisecond, and participants are free to move during the ERP experiment. However, the ERP method has a low spatial resolution, which means that the neural activations of adjacent brain regions cannot easily be distinguished. It is difficult to assess the neural activations of the medial brain regions. In contrast, the neural activations of the medial brain regions can be detected using fMRI, and the functions of specific brain regions can be examined. Despite this, fMRI has a low temporal resolution; thus neural changes on a millisecond scale cannot be accurately detected. In addition, movement is restricted during the fMRI scanning process. Therefore, neuroscientific methods should be selected depending on the research objectives. In addition, SDT researchers need to thoroughly examine whether convergence among different neuroscientific methods emerges.

Reviewing this growing body of research suggests that neuroscientific approaches are promising for both the development of motivation theories and the refinement of neuroscience theories. As an organismic theory, SDT seeks to understand how motivation operates, and thus a more refined grasp of the temporal and functional changes in the brain as people act with different motives can further that aim. In turn, SDT as a theoretical framework offers opportunities for neuroscientists to investigate more comprehensively the multiple processes through which human motivation occurs.

## References

Ashburner, J., & Friston, K. J. (2000). Voxel-based morphometry—The methods. *NeuroImage*, *11*(6), 805–821.

Berridge, K. C. (2004). Motivation concepts in behavioral neuroscience. *Physiology & Behavior*, *81*(2), 179–209.

Bush, G., Luu, P., & Posner, M. I. (2000). Cognitive and emotional influences in anterior cingulate cortex. *Trends in Cognitive Sciences*, *4*(6), 215–222.

Craig, A. D. (2009). How do you feel—now? The anterior insula and human awareness. *Nature Reviews Neuroscience*, *10*(1), 59–70.

Damasio, A. R. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. Harcourt.

Damasio, A. (2003). Feelings of emotion and the self. *Annals of the New York Academy of Sciences*, *1001*(1), 253–261.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668.

Deci, E. L., & Ryan, R. M. (1985). The General Causality Orientations Scale: Self-determination in personality. *Journal of Research in Personality*, *19*(2), 109–134.

Di Domenico, S. I., Fournier, M. A., Ayaz, H., & Ruocco, A. C. (2013). In search of integrative processes: Basic psychological need satisfaction predicts medial prefrontal activation during decisional conflict. *Journal of Experimental Psychology: General*, *142*(3), 967–978.

Di Domenico, S. I., Le, A., Liu, Y., Ayaz, H., & Fournier, M. A. (2016). Basic psychological needs and neurophysiological responsiveness to decisional conflict: An event-related potential study of integrative self-processes. *Cognitive, Affective, & Behavioral Neuroscience*, *16*(5), 848–865.

Di Domenico, S. I., & Ryan, R. M. (2017). The emerging neuroscience of intrinsic motivation: A new frontier in self-determination research. *Frontiers in Human Neuroscience*, *11*, 145.

Eisenberger, R., & Cameron, J. (1996). Detrimental effects of reward: Reality or myth? *American Psychologist*, *51*(11), 1153–1166.

Gogtay, N., Giedd, J. N., Lusk, L., Hayashi, K. M., Greenstein, D., Vaituzis, A. C., Nugent III, T. F., Herman, D. H., Clasen, L, S., Toga, A. W., Rapoport, J. L., & Thompson, P. M. (2004). Dynamic mapping of human cortical development during childhood through early adulthood. *Proceedings of the National Academy of Sciences*, *101*(21), 8174–8179.

Huettel, S. A., Song, A. W., & McCarthy, G. (2004). *Functional magnetic resonance imaging*. Sinauer Associates.

Jang, H., Reeve, J., Ryan, R. M., & Kim, A. (2009). Can self-determination theory explain what underlies the productive, satisfying learning experiences of collectivistically oriented Korean students? *Journal of Educational Psychology*, *101*(3), 644.

Katz, I., & Assor, A. (2007). When choice motivates and when it does not. *Educational Psychology Review*, *19*(4), 429–442.

Lebel, C., & Beaulieu, C. (2011). Longitudinal development of human brain wiring continues from childhood into adulthood. *Journal of Neuroscience*, *31*(30), 10937–10947.

Lee, W. (2016). Insular cortex activity as the neural base of intrinsic motivation. In S. Kim, J. Reeve, & M. Bong (Eds.), *Advances in motivation and achievement: Recent developments in neuroscience research on human motivation* (Vol. 19, pp. 127–148). Emerald Press.

Lee, W., & Reeve, J. (2013). Self-determined, but not non-self-determined, motivation predicts activations in the anterior insular cortex: An fMRI study of personal agency. *Social Cognitive and Affective Neuroscience*, *8*(5), 538–545.

Lee, W., & Reeve, J. (2017). Identifying the neural substrates of intrinsic motivation during task performance. *Cognitive, Affective, and Behavioral Neuroscience*, *17*(5), 939–953.

Lee, W., & Reeve, J. (2020a). Brain gray matter correlates of general psychological need satisfaction: A voxel-based morphometry study. *Motivation and Emotion*, *44*(1), 151–158.

Lee, W., & Reeve, J. (2020b). Remembering pleasure and personal meaning from episodes of intrinsic motivation: An fMRI study. *Motivation and Emotion*, *44*(6), 810–818.

Lee, W., Reeve, J., Xue, Y., & Xiong, J. (2012). Neural differences between intrinsic reasons for doing versus extrinsic reasons for doing: An fMRI study. *Neuroscience Research*, *73*(1), 68–72.

Legault, L., & Inzlicht, M. (2013). Self-determination, self-regulation, and the brain: Autonomy improves performance by enhancing neuroaffective responsiveness to self-regulation failure. *Journal of Personality and Social Psychology*, *105*(1), 123–138.

Leotti, L. A., & Delgado, M. R. (2011). The inherent reward of choice. *Psychological Science*, *22*(10), 1310–1318.

Leotti, L. A., & Delgado, M. R. (2014). The value of exercising control over monetary gains and losses. *Psychological Science*, *25*(2), 596–604.

Leotti, L. A., Iyengar, S. S., & Ochsner, K. N. (2010). Born to choose: The origins and value of the need for control. *Trends in Cognitive Sciences*, *14*(10), 457–463.

Marsden, K. E., Ma, W. J., Deci, E. L., Ryan, R. M., & Chiu, P. H. (2015). Diminished neural responses predict enhanced intrinsic motivation and sensitivity to external incentive. *Cognitive, Affective, & Behavioral Neuroscience*, *15*(2), 276–286.

Moscovitch, M., Cabeza, R., Winocur, G., & Nadel, L. (2016). Episodic memory and beyond: The hippocampus and neocortex in transformation. *Annual Review of Psychology*, *67*, 105–134.

Murayama, K., Izuma, K., Aoki, R., & Matsumoto, K. (2016). "Your choice" motivates you in the brain: The emergence of autonomy neuroscience. In S. Kim, J. Reeve, & M. Bong (Eds.), *Advances in motivation and achievement: Recent developments in neuroscience research on human motivation* (Vol. 19, pp. 95–125). Emerald Press.

Murayama, K., Matsumoto, M., Izuma, K., & Matsumoto, K. (2010). Neural basis of the undermining effect of monetary reward on intrinsic motivation. *Proceedings of the National Academy of Sciences*, *107*(49), 20911–20916.

Murayama, K., Matsumoto, M., Izuma, K., Sugiura, A., Ryan, R. M., Deci, E. L., & Matsumoto, K. (2015). How self-determined choice facilitates performance: A key role of the ventromedial prefrontal cortex. *Cerebral Cortex*, *25*(5), 1241–1251.

O'Doherty, J. P. (2007). Lights, camembert, action! The role of human orbitofrontal cortex in encoding stimuli, rewards and choices. *Annals of the New York Academy of Sciences*, *1121*(1), 254–272.

Patall, E. A., Cooper, H., & Robinson, J. C. (2008). The effects of choice on intrinsic motivation and related outcomes: A meta-analysis of research findings. *Psychological Bulletin*, *134*(2), 270–300.

Paulmann, S., Weinstein, N., & Zougkou, K. (2019). Now listen to this! Evidence from a cross-spliced experimental design contrasting pressuring and supportive communications. *Neuropsychologia*, *124*, 192–201.

Reeve, J., & Lee, W. (2019a). Motivational neuroscience. In R. Ryan (Ed.), *Oxford handbook of human motivation* (2nd ed., pp. 355–372). Oxford University Press.

Reeve, J., & Lee, W. (2019b). A neuroscientific perspective on basic psychological needs. *Journal of Personality*, *87*(1), 102–114.

Reeve, J., Lee, W., & Won, S. (2015). Interest as emotion, as affect, and as schema. In K. A. Renninger, M. Nieswandt, & S. Hidi (Eds.), *Interest in mathematics and science learning* (pp. 79–92). American Educational Research Association.

Reeve, J., & Tseng, C.-M. (2011). Cortisol reactivity to a teacher's motivating style: The biology of being controlled versus supporting autonomy. *Motivation and Emotion*, *35*(1), 63–74.

Rocchi, M., Pelletier, L., Cheung, S., Baxter, D., & Beaudry, S. (2017). Assessing need-supportive and need-thwarting interpersonal behaviours: The Interpersonal Behaviours Questionnaire (IBQ). *Personality and Individual Differences*, *104*, 423–433.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., & Martela, F. (2016). Eudaimonia as a way of living: Connecting Aristotle with self-determination theory. In J. Vittersø (Ed.), *Handbook of eudaimonic wellbeing* (pp. 109–122). Springer.

Zink, C. F., Pagnoni, G., Chappelow, J., Martin-Skurski, M., & Berns, G. S. (2006). Human striatal activation reflects degree of stimulus saliency. *NeuroImage*, *29*(3), 977–983.

Zougkou, K., Weinstein, N., & Paulmann, S. (2017). ERP correlates of motivating voices: Quality of motivation and time-course matters. *Social Cognitive and Affective Neuroscience*, *12*(10), 1687–1700.

Zuckerman, M., Porac, J., Lathin, D., & Deci, E. L. (1978). On the importance of self-determination for intrinsically-motivated behavior. *Personality and Social Psychology Bulletin*, *4*(3), 443–446.

# How Life Events Are Integrated into the Self as Memories: A Memory Approach to Need Satisfaction and Emotion Regulation

Frederick L. Philippe

## Abstract

This chapter proposes a memory approach to the question of integration in self-determination theory. It suggests that life events are critical to the integrative process, as they represent the success or failure of humans' interactions with the environment. Their encoding as memories and their cognitive organizations help to reduce uncertainty by providing humans with the capacity to predict what will occur in similar future situations. Three qualities relative to the integration of life events are presented along with empirical evidence supporting them: (1) the encoding and reconstruction of life events in memory as need satisfying, (2) their incorporation as event memories in need-satisfying memory networks, and (3) their integration in higher-level representations, notably through emotion regulation processes. Overall, it is shown that the organismic concept of integration from self-determination theory is in line with other neurocognitive theories on memory and the functioning of the brain. The combination of memory theories with self-determination theory appears as a fruitful research avenue to the study of the integrative process.

**Key Words:** integrative process, memory, life event, need satisfaction, emotion regulation

A fundamental organismic perspective characterizes the notion of integration in self-determination theory (SDT). This perspective is derived from biology and specifies that all living organisms—in contrast to non-living entities—tend toward negentropy and are therefore constantly oriented toward growth, synthesis, organization, and unity (Ryan & Deci, 2002; Ryan et al., 2019). This negentropy implies that living organisms are made up of, or constituted by, lower order functional unities embedded within higher order ones, and the whole functioning of this system is the unity (Ryan, Kuhl, & Deci, 1997). However, this integrated brain architecture of lower and higher units has not been greatly investigated within SDT. There was a very early interest in SDT in gathering initial evidence of certain brain regions identified as potentially responsible of integrative processes (Ryan et al., 1997), and more recently, the mental processes facilitating this integration

were described (Weinstein et al., 2013) and great advances have been made to unveil brain activity occurring during integrative processing (e.g., Di Domenico et al., 2016; Reeve & Lee, 2019). However, it is still imprecise what exactly this integration and its processes produce in terms of stable and coherent lower and higher levels of cognitive structures in the brain so that a sense of integrity can be subjectively experienced and can lead to (or predict) the consequences of vitality and well-being frequently observed in empirical research.

In this chapter, I present a memory approach onto the question of integration which I believe helps to shed light on the distinct qualities of an integrated mental organization (Weinstein et al., 2013) and how such an organization can lead to the consequences of integration observed in empirical research (e.g., Hodgins & Knee, 2002; Houle & Philippe, 2020; Weinstein et al., 2011). A memory approach to the question of integration is particularly concerned with how past experiences are encoded and stored, the cognitive structures implicated, their processes, functions, and interactive patterns, all to understand how they can produce future experiences and behaviors. A memory approach is also amenable to understand and empirically investigate the combination of lower and higher order units, characteristic of the organismic perspective of SDT, to explain humans' whole functioning. Such an approach should also be translatable into brain and cell functions, thereby bridging distinct levels of information and observation to help developing a full neurocognitive socio-behavioral approach to motivation and personality. Finally, bringing a different spotlight to the question of integration also has the merit of providing new ways of testing the theory and may also yield novel empirical measures that can supplement existing ones.

## Why is integration important?

The purpose of any living organism can be understood as fighting entropy (or being negentropic), that is, as minimally avoiding chaos and as being able to make precise predictions about its living environment (Friston, 2010; Hirsh et al., 2012). Entropy, as defined by the second law of thermodynamics, is the law that all isolated or closed system constantly tends toward randomness. It predicts that your bedroom will get more and more messy and dirty as time passes—in other words, entropy will increase. When you clean your bedroom, you fight entropy and temporarily reduce it. But your bedroom will always tend toward messiness. As humans, we live in an ever-changing environment and we learn to reduce entropy by making predictions about the external world and test their adequacy (Friston, 2010). Doing so, we learn which predictions are fairly adequate and which ones should be modified or plainly wrong. We therefore learn how to reduce uncertainty—we integrate the actions that are effective at reducing this uncertainty, and we also learn which ones are not effective and should be avoided. As such, we build self-knowledge (what works for us) and knowledge about the external world (what works in the world). Importantly, this active interaction and exchange with the external environment

is a constant activity (Ryan & Deci, 2017), potentially occurring in a Bayesian process (Knill & Pouget, 2004), that regularly updates itself and continually develops its internal organization and extends it toward greater unity.

The only way organisms have to access their environment and reduce uncertainty about it is through their perceptions and senses (Friston, 2010). Sensory data is therefore critical to understand whether events occurring are something that should be approached or avoided and how. This sensory data is processed according to the living organism's genotype and phenotype that has developed over its evolutionary history as indicators of what information from the internal and external environments provide value states to the organism (Niven & Laughlin, 2008). In humans, satisfaction of the three basic psychological needs correspond to a small number of innate value states orienting individuals in their exploration of the world toward what to seek and what to avoid. Satisfaction or frustration of autonomy, competence, and relatedness, following an interaction with the environment or what is called a life event, provides critical information to consider when learning whether such an event should be approached or avoided in the future. Satisfaction of these needs therefore reduces entropy and increases one's certainty about which actions to undertake to successfully interact with the environment in a given context.

## Interacting with the environment: Why are life events important?

Life events are critical in the developmental process of humans. They are the output of the interaction between a person (and his phenotype) and the environment. As such, life events are indicators of the success or failure of our interactions with the environment. They represent important learning about how to behave in that environment and this learning needs to be encoded, but also organized with other learned experiences. As such, life events create *priors* (see Table 13.1 for terms definition) in the form of mental representations that can later be used to determine the most optimal way to act in a future similar event. Such priors

| Table 13.1 Chapter Concepts and Their Definition | |
|---|---|
| Prior | Internalized mental representation determining whether a situation should be approached or avoided and what action policy to undertake as a function of the contextual detail of that situation. |
| Policy | An action or sequences of action or meaning to ascribe to a situation likely to bring the desired outcome in a specific situation. |
| Episodic memory | The sensory-motor information related to a life event, including the cognitive-affective experiential component of what has been experienced during the event. |
| Autobiographical memory | The narrative form of an episodic memory, combining the details of the episodic memory with the generic knowledge of semantic memory. |
| Memory network | All the memories, main or target memory and networked memories, that are activated within a given situation. |
| Networked memories | The memories associated with a main or target memory |

encode the sensory input related to the contextual detail of the event with a specific action, sequence of actions to undertake, or meaning, called *policy*. These action and meaning policies motivate and orient short- and long-term actions (i.e., goals) and create expectations or beliefs regarding the probability of success of these actions and goals in the future.

### How are life events integrated?

In the present chapter, I will describe three qualities relative to the integration of a life event: A) To be encoded and reconstructed in memory as need satisfying, B) to be incorporated as an event memory in a need-satisfying memory network, and C) to be integrated in higher-level representations.

Life events are initially encoded as *episodic memories*, which consist of the sensory components of a past event, including imagery and other sensory-motor information such as a smell or a physiological arousal, and a cognitive-affective experiential component of what has been experienced during the event (Conway, 2009). When this sensory-motor information is reconstructed within a narrated story that occurred at a specific time and place and in a specific order, it becomes an *autobiographical memory* (Cabeza & St Jacques, 2007). This is a more abstracted form of the episodic memory. When several similar autobiographical memories are combined, they become general event memories (e.g., all the lessons I taught at university vs. when a student threw up in the classroom, which would be a specific memory), which can be rearranged to form higher-level abstractions (e.g., themes, life periods, when I was teaching at X university), and self-aspects (e.g., I am a professor). The self-memory system is for certain parts constructed hierarchically with episodic memories at its bottom and more abstract self-aspects (e.g., identities, values, worldviews) at the upper level (Conway, 2009). Thus, episodic memories are some of the ingredients of autobiographical memories, providing the visual imagery and sensory components.

Within that memory system, episodic memories can also be understood in terms of prediction error (Haque et al., 2020; Philippe, 2021). They will be encoded in long-term memory only if they provide some information about prediction error. Prediction error takes place when an event occurred and there was something surprising about it that could not be predicted by the person's prior expectations (den Ouden et al., 2012). For instance, an event that was supposed to lead to relatedness satisfaction ends up with a rejection. Prediction error can also occur for positive events. An event that initially appeared ordinary, but which brings a feeling of competence will generate a prediction error. In consequences, most mundane events are quickly forgotten or rendered inaccessible, because they are easily predictable and do not add new information about the self or the world (Brown, 2016). For instance, you probably do not remember all the sensory details of brushing your teeth five days ago, unless something unusual occurred (e.g., you broke a tooth). However, events that are not predicted by priors are more likely to be preserved as episodic memories and then seek integration within the more abstract

representations of the self. Once integrated or that enough information has been gathered to form aggregates of events or semantic knowledge, episodic information is slowly lost (Conway & Pleydell-Pearce, 2000). Thus, episodic memories are information in progress of integration (Philippe, 2021), but they have not yet settled as complex autobiographical memories, semantic knowledge, or self-aspects. As such they represent information about the person, but not yet about the self or only partial information. One important empirical consequence for this is that measures related to episodic memories will not be redundant with self-conceptual measures that assess abstract and general self-aspects or behaviors across multiple occasions (e.g., traits, schemas, general self-perceptions). I will return to this point later.

Sensory components of episodic memories are the basic information individuals use to navigate the world and identify whether an event is worthy of encoding in the memory system as a new representation (or as a new prior). Indeed, over and above the perceptual details of an event, the key information is how useful or thwarting the event is to the organism. This strongly defines whether the event is significant for the individual and whether one should strive to reexperience such type of event or should strictly avoid it at all cost.

Psychological needs of autonomy, competence, and relatedness are the basic motivational, but also sensory elements orienting humans toward fulfilling situations (Ryan & Deci, 2017). Their satisfaction or frustration triggers a clear response from the striatum, the motivational dopaminergic region of the brain, which encodes which situations should be pursued again in the future or avoided (Reeve & Lee, 2019). Unsurprisingly, need satisfaction has been found to be a core experiential component of memories, one that defines all important and significant memories that are preserved over years. Need satisfaction in memories has also been found to be distinct from other memory characteristics that have been investigated in memory research, including valence, vividness, sharing of the memory, motives (Woike et al., 1999) or redemption and contamination narratives (McAdams et al., 2001). It has also been found to be a strong predictor of well-being, over and above these other memory characteristics, in both cross-sectional (e.g., Philippe et al., 2011, 2015) and longitudinal studies (e.g., Philippe et al., 2012; Houle & Philippe, 2017).

It is worth noting at this stage that one important contribution of the concept of need satisfaction to memory and narrative research is that needs clarify what is positive or negative in a past event. Hereby, need satisfaction avoids tautological explanations, such that one found an event to be positive because they experienced positive emotions. Rather, the event was positive and one experienced positive emotions *because* they mastered something important, felt connected to one or more people, or experienced volition in their actions. It also disentangles the valence of an event from the felt experience. Even a negative memory or an event that would be considered negative from a sociocultural perspective can be need satisfying to some extent. For example, in an interpersonal conflict, one

can feel that their need for autonomy was somewhat satisfied given their capacity to self-affirm themselves. This would not be the case if one had felt passive and had kept ruminating about the same interpersonal conflict. Thus, need satisfaction provides a greater variability and more nuance to explain the psychological effect and motivational orientation of events than mere valence or emotions (Philippe, Koestner, Lecours et al., 2011).

The nature of memories in terms of their level of need satisfaction therefore informs what should be expected in the environment. The hippocampus constantly filters environmental cues and reactivates mental representations and memories that are similar in nature (Yonelinas et al., 2019). As such, a new situation can trigger a memory because both occurred at the same place, involved the same person, the same emotion, theme, or lesson/meaning (Philippe et al., 2009). Their need-satisfying or need-frustrating nature can thereby orient decision and action as to whether approach this novel situation with openness or avoid it and defend oneself (Hodgins & Knee, 2002). This has been demonstrated experimentally by unconsciously priming people with an important episodic memory using keywords derived from their memory narrative. One week after the memory description, those keywords were used in an unscrambled sentences task (Philippe et al., 2012) or a subliminal priming task (Philippe & Bernard-Desrosiers, 2017). People were either primed with their own memory or the memory of another participant—a control group which should have no priming effect. Participants primed with their own need-satisfying memory reported a greater increase in situational well-being immediately after the priming task compared to the control group. Conversely, participants primed with their own need-frustrating memory reported a greater decrease in situational well-being.

This goes beyond the valence of the event or the rewarding nature of the event. For instance, Lekes et al. (2014) asked participants to recall a memory anchoring an event reflecting an intrinsic value (e.g., a better understanding of yourself; acceptance of something about yourself; finding meaning in your life; helping someone, a group or a community; developing an intimate friendship or romantic relationship with someone) or an extrinsic value (e.g., social recognition from someone or after receiving a prize; popularity; a financial gain; being recognized for your physical attractiveness). All recalled memories were thus positive in nature. However, only participants randomly assigned to recall a memory anchoring an intrinsic value increased in vitality between pre- and post-memory description. Moreover, this increase in vitality was predicted by the level of need satisfaction of their intrinsic memory.

Although experimentally induced in these studies (implicit or explicit recall), some memories are thought to be chronically accessible and therefore to be frequently triggered by environmental cues in people's lives. As a consequence, they should frequently exert their effect and thereby predict changes in long-term outcomes over time. Indeed, it was shown that need satisfaction in significant memories that are chronically accessible (called self-defining memories) predicted increases in well-being over one year (Philippe et al., 2012). This result was also obtained after controlling for personality traits (big five) and

general need satisfaction. As mentioned above, memories represent information in progress of being integrated and they therefore do not overlap with more abstract contextual or trait-level variables in predicting outcomes.

Houle and Philippe (2017) showed that need satisfaction in significant memories predicted increased positive mood upon recall. However, need satisfaction in memories that increased the most positive mood upon recall predicted increases in well-being over three months. In other words, memories which boosted mood the most upon deliberate recall were also the ones that could increase well-being over time and this increase was predicted by their level of need satisfaction. Importantly in this study, this effect occurred for both positive and negative memories, highlighting again that need satisfaction is a key experiential component of memories, beyond valence.

Need satisfaction as an experiential component of memories has also been shown to predict outcomes in several important life spheres. Because memories related to a domain are more likely to be triggered by features of that domain, domain-related memories should predict domain-related outcomes and not domain-unrelated ones. In one study (Philippe, Koestner, Lecours et al., 2011), participants were randomly assigned to describe either memories related to having been treated unfairly or about having committed an important error (two distinct types of high-arousal negative memories). Two weeks later, all participants watched a film excerpt depicting someone being treated unfairly and then reported on their felt anger. While there was no difference on anger reactivity between the two groups, the level of need frustration for the unfair-treatment memories positively predicted anger reactivity, but not need frustration in the error-related memories.

In the relationship domain, Philippe et al. (2013) showed with several studies that need satisfaction in couple-related memories assessed at baseline was associated with relationship quality, but not with friend relationship quality, and predicted increases in relationship quality over two years. Moreover, need satisfaction in couple-related memories at baseline also significantly predicted who remained with their partner and who broke up two years later. These results were obtained after controlling for attachment or need satisfaction in the couple, highlighting again the distinct nature of memories and more general self-perceptual and self-conceptual measures. Need satisfaction in key work-related memories (e.g., a memory of a positive evaluation from the executive committee or a false accusation of psychological harassment by an employee) was also shown in a cross-lagged model to predict increases in self-determined motivation and work satisfaction, and decreases in burnout over two years in college employees (Philippe et al., 2019).

Bouizegarene and Philippe (2016, 2018) further demonstrated the contextual nature of memories. They showed in a cross-lagged panel that need satisfaction in friend-related memories of young adults predicted increases in friend satisfaction over two years, as well as increases in friend informational identity style, as opposed to a friend normative identity style. They also showed that need satisfaction in school-related memories was associated with school informational identity style and school satisfaction, but not

with friend informational identity style and friend satisfaction (Bouizegarene & Philippe, 2016). Interestingly, people using an informational identity style can flexibly modify their self-aspects when their personal experiences provide evidence that it should. Conversely, normative identity style implicates a more rigid preservation of self-views, even when facing disconfirming evidence (Berzonsky, 2011). This provides some evidence that experiencing need satisfaction in a life event may facilitate the reinterpretation of internalized policies about the self and the world to build a more coherent identity and self (Soenens & Vansteeenkiste, 2011).

Thus, a first quality of the integration of a life event is whether the memory of this event was experienced and interpreted as need satisfying or need frustrating. As stated by self-determination theory (Ryan & Deci, 2017), this represents a core ingredient of integration and one that can orient individuals toward either openness and well-being or defenses and ill-being. When encoded in memories, it can be used to predict what to expect and what orientation to choose when facing future similar events.

## On the Organization of Memories

A memory is never activated alone. Indeed, memories associate with other memories to form *networks of memories* (Brown & Schopflocher, 1998). A network of memories is actually a pattern of activation in the brain that is typically activated whenever a situation triggers a particular memory or that a memory is thought about (McClelland et al., 1986). In such cases, other memories sharing common features with the activated memory, such as a same location, person, emotion, theme, or meaning will be activated as well (Demblon & D'Argembeau, 2016; Philippe et al., 2009).

Imagine that Tom has water dripping from a pipe under the sink in his house, and he does not know anything about plumbing. Watching this water drip on his floor, he recalls a memory of a similar event that occurred 15 years ago in his apartment where his roommate had temporarily put a bucket under the sink to catch the dripping water. This also triggers a memory of when he was a child and a water pipe had broken in his parents' garage and his mother was successfully able to repair it. This makes him think of putting a water bucket under the sink and call his mother for help with the water leakage. This simple example illustrates how distinct memories, associated with some related features (water leakage), can optimally orient actions according to the need-satisfying nature of these memories (e.g., relational connection with the roommate and the mother, identification with the roommate's and mother's competence, and autonomy of having control over the problems), despite the negative valence of the event.

However, memory networks are not always that optimal. Imagine that Tom is currently eating in a restaurant with his brother. This triggers a memory of the last time he has been eating in this restaurant. That last time, he had broken up with his partner during a diner. Moreover, because the server resembles his former partner, other memories of the breakup period about the partner are also activated. The need-frustrating nature of

these activated networked memories is likely to negatively affect Tom's discussion with his brother at this specific time in the restaurant.

The role of these other activated memories part of a network (called *networked memories*) is to facilitate decision making and action in the situation experienced. If the brain only relies on a single memory to make a decision, the probability of being wrong would be too high. By combining information from multiple related memories (akin to using multiple sources of information), the final decision is likely to be better informed and adaptive. Still, the brain probably relies only on a limited number of plausible possibilities, as using too much information would reduce certainty from a probabilistic standpoint (Peters et al., 2017). The need-satisfying or need-frustrating nature of these networked memories is therefore critical.

These principles have been corroborated by empirical studies. In these studies, participants are initially asked to think of an important life event that defines them or of a specific past event that was significant (e.g., couple-related memory, memory for an important event that occurred recently like a natural disaster). Next, participants are invited to think of other memories that are related to the main memory they have just described; they are asked to make links with other memories that are somehow related in some ways to their main memory (Philippe et al., 2009). They are instructed to do this task spontaneously and to describe the other memories (i.e., networked memories) that come to mind, even if the link between their memories is not obvious or apparent. In a series of studies, Philippe et al. (2012) showed that the level of need satisfaction characterizing the main memory and the level of need satisfaction characterizing the networked memories were only moderately correlated and each were independently and uniquely associated with well-being. Moreover, need satisfaction in networked memories associated with distinct main memories were only weakly correlated and were also independently associated with well-being, including peers' rated well-being. Need satisfaction in memory networks was also associated with well-being and predicted changes in well-being, even after controlling for traits, general need satisfaction, or psychological symptoms. This further suggests that memory networks are also independent of self-conceptual measures.

While both the main memory and its networked memories may each independently contribute to some outcome, networked memories may also mitigate or exacerbate the negative effect of a main need-frustrating memory. In one study (Philippe & Houle, 2020), participants who were directly affected by a recent flooding event were recruited along with participants who only witnessed the flood in their community. All participants were asked to describe a memory about these floods and to think of networked memories. These networked memories, although not directly related to the current floods consisted of priors that were idiosyncratically associated with the floods that the participants had experienced or witnessed. For example, other experienced natural disasters, the death of a close other, or moving to a new house were described as networked memories. Results showed that need satisfaction in these networked memories were a significant predictor

of increases in well-being and decreases in psychological symptoms of depression and anxiety 1.5 month later, even after accounting for the level of need satisfaction/frustration of the main flood-related memory and dispositional emotion regulation styles. Moreover, although those having been affected by the floods reported more psychological symptoms than those who only witnessed them, floods experience did not moderate the results. In other words, being affected by the floods or just witnessing them triggered networked memories that influenced people's well-being and mental health over time as a function of the level of need satisfaction of these activated networked memories.

The mitigation of networked memories has also been found to moderate the effect of attachment schemas. In two studies (Lejeune et al., 2021), participants engaged in a romantic relationship described couple-related memories and networked memories. Results replicated the classical finding that attachment anxiety and avoidance were negatively associated with couple adjustment (e.g., Roisman et al., 2005). However, results further showed that need satisfaction in networked memories moderated these associations. While most individuals reported a need-satisfying couple-related memory, the networked memories had more variance in terms of need satisfaction and need frustration. Individuals with need-frustrating networked memories had the strongest negative association between attachment anxiety and avoidance and couple adjustment, whereas individuals who reported need-satisfying networked memories had significantly reduced negative associations between their negative attachment schemas and couple adjustment. In other words, the negative effect of anxious and avoidant attachment on couple adjustment was mitigated by relying on couple-related need-satisfying networked memories. This result held even after controlling for need satisfaction experienced within the couple relationship in general.

Thus, a second quality of integration of a life event is whether its memory, need satisfying or need frustrating, is embedded into a need-satisfying memory network. Need-satisfying memory networks can mitigate the need-frustrating nature of an initial memory or amplify the need-satisfying aspect of a main memory.

## Integration of Memories in Higher-Level Self-Representations

The notion of integration in self-determination theory is not only about how past events and their policies are encoded or learned, but also about how these event memories and policies are coherently organized together to facilitate the satisfaction of the psychological needs and avoid conflict among policies. One way to avoid conflicting policies is to build more abstract self-representations to coherently organize lower-level information from episodic and autobiographical memories. A third quality of the integration of life events is thus whether they are integrated or not within higher-order representations of the self.

As mentioned above, current life events that are not predicted by priors create a prediction error (positive or negative) and the memory system will encode these events as episodic memories with their sensory data. These episodic memories may then create a

new pattern of associations with other episodic and autobiographical memories, forging associative networks (Brown, 2016). From this point, these networks can then be reflected on to build higher-order representations of the self, more abstract in nature, but also more inclusive, often through a process called autobiographical reasoning (Habermas & Bluck, 2000). These more abstract self-representations can represent perceived traits (John et al., 2008), self-aspects (McConnell, 2011), strivings and values (Kasser & Ryan, 1996), or life stories (McAdams & McLean, 2013). It is the coherence among the episodic and autobiographical memories and these more abstract self-representations that facilitates the integrity of the self and its harmonious functioning, and reduces conflicting representations, thereby providing a sense of well-being.

Abstract representations provide two important qualitative functions to episodic and autobiographical representations. First, they will provide a greater cohesiveness among the activated priors, which will reduce uncertainty (and increase autonomy) about which policy to select. This process is illustrated in Figure 1. When several representations are activated by a given sensory input (e.g., a researcher asked to give a media interview), there is uncertainty about which policy should be chosen. Moreover, these policies may oppose one another, thereby creating conflict (e.g., need-thwarting priors on speaking in front of others, but need-satisfying priors on talking about science, see Figure 13.1A). However, when these representations are integrated within a higher-level abstract representation (e.g., the value of knowledge diffusion, see Figure 13.1B), it provides the lower-level representations an overarching organizational structure (Morrissey et al., 2017). Instead of experiencing indecision among three alternative action policies, their combination under some more abstract rule or meaning provides greater coherence and certainty about the selected
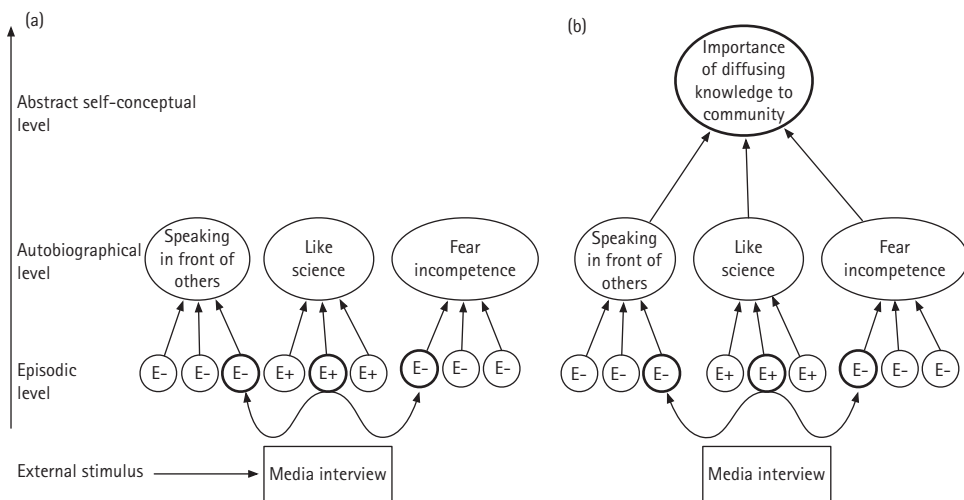


**Figure 13.1** Schematization of the absence of a higher-level self-conceptual representation (A) and the presence of one (B) as providing a coherence function to lower-levels need-satisfying (+) and need-thwarting (-) episodes and autobiographical knowledge

policy (e.g., I should give the interview to facilitate knowledge diffusion). Moreover, acting in line with these more abstract representations (i.e., herein a core intrinsic value) also provides a greater sense of self-determination (Kasser & Ryan, 1996). This also illustrates why tasks, activities, or norms that are internalized out of external pressure or introjected regulation, for instance, can create priors that are independent and detached from other self-representations. It is indeed difficult to coherently organize under a higher-level abstract representation core to the self some other external or introjected representations as they will likely be conflicting, which should reduce well-being and vitality over time (Ryan & Deci, 2017).

The second function of abstract representations over episodic and autobiographical representations is that they can inhibit the activated priors that do not conform to the policies of the more abstract representations, thereby providing greater self-control and less conflicting representations.

Higher-level representations are situated in the neocortex, mostly the medial prefrontal cortex (D'Argembeau et al., 2014; Demblon & D'Argembeau, 2017; Eichenbaum, 2017). When a stimulus is perceived in a given context, they send downward inhibitory signals to the hippocampus that explain away its activation (Barron et al., 2020). This predictive coding can then inhibit lower-level representations that are considered inappropriate in the activated context (Jin & Maren, 2015). For example, the fears of speaking in front of others and of incompetence are more likely to be reduced by the action policy of the higher-level representation shown in Figure 1B than in Figure 1A, as these negative feelings should be bypassed and inhibited by the larger personal importance of contributing to diffuse knowledge.

If lower-level representations are detached from higher-level representations of the neocortex, these representations are unlikely to be inhibited by downward activation from the neocortex. Consequently, these representations are more likely to trigger their lower-level associated policy and can lead to perceived threat or impulsive actions in inappropriate context. Recently, we investigated these effects applied to sexuality by showing that sexual representations that are not well integrated with other representations, such as relational representations, are associated with a sexuality that is intrusive, experienced as controlling by the person, and which leads to unnuanced judgment in relational contexts and negative relational consequences (Philippe et al., 2017).

Similarly, certain episodic memories may not be amenable to such an integration and may remain unassociated or incoherently integrated with other more abstract self-representations. When episodic memories are not well integrated into higher-level representations, two consequences are in order. First, the brain will often try to achieve integration by replaying the episodic memories, which can lead to intrusive thoughts, flashbacks, and re-enacting of the event in other situations (Brewin, 2014). Second, these episodic memories will then be more likely to get activated by external cues because the neocortex cannot provide downward inhibitory activation of these representations

in contexts where activation of the episodic memory would be deemed inadequate or maladaptive.

Here is an illustration of this process. Imagine that Tom is a full-time runner, and he has trained hard to run a marathon. On the day of the run, he feels great and has a lot of energy. But during the marathon, he starts to feel unwell, and his finish is more than five minutes above the time he expected to do. Tom feels ashamed and incompetent and feels that he has disappointed his coach (see Lopes & Philippe, 2022). This event will be encoded in Tom's memory system because it is at odds with what was predicted by Tom (e.g., his policies about training) and his basic psychological needs (therefore triggering a prediction error). Failure at running therefore becomes a threat and produces a dose of uncertainty about his self-efficacy at running. If this memory is not positively integrated, it runs the risk of being reactivated during training and other races and could negatively affect Tom's well-being and performance. However, if Tom is able to reflect on this event, understand the mistakes he might have made in his preparation, and recognize the felt pressure he is experiencing due to his introjected belief that his coach has to be proud of him, he will be able to integrate this event into more abstract self-representations (Tom as a runner; Tom preparing himself for a run; Tom who should be careful not to try to achieve others' standards). This is likely to forge novel policies aimed at improving Tom's next marathon performance (reduce uncertainty) and produce emergent abstract properties (e.g., it is important to absorb more carbohydrates before the marathon; I have the right to only focus on what makes me proud and not feel controlled by others' expectations of me).

This example illustrates how emotion regulation plays a big part in the process of integration (Weinstein et al., 2013). In that sense, the emotion regulation style used to face a particular life event will often be decisive in whether this event will be integrated or not and the consequences this event will have in the person's life afterward, independently of its level of need satisfaction. It also highlights how a need-frustrating event can lead to either decrease well-being and symptoms or engender more personal resources and resilience.

## Emotion Regulation as an Integrative Action Policy

Recently, self-determination theory has developed a model of emotion regulation that is helpful to understand how the style of emotion regulation chosen can have important consequences for the integration of life events as memories. This model consists of three emotion regulation styles.

Integrative regulation is characterized by openness, interest, and tolerance toward one's emotions, even if they are threatening, and as having a capacity to reflect on them and use the emotional information to forge better policies of action and meaning (Roth et al., 2014; Ryan et al., 2006). Controlling regulation is characterized by a rigid intolerance toward negative emotions and a strong urge to hide, ignore, and suppress their experience or expression (Roth et al., 2014, 2018, 2019). Finally, amotivated regulation

or dysregulation corresponds to a lack of capacity to adequately and effectively regulate one's negative emotions, which results in an emotional overflow and a sense of being over-whelmed by emotions. These three emotional regulation styles are also in line with recent theoretical models (e.g., Nolen-Hoeksema, 2012) and meta-analyses of emotion regulation strategies (e.g., Naragon-Gainey et al., 2017), which highlighted that most existing measures of emotion regulation and coping strategies fall into three similar styles.

An extension of the emotion regulation model of self-determination theory is to look at how a life event has been regulated in the past. In addition to the sensory components of the event, the emotion regulation strategy used to process the event is encoded with the memory of the event. Thus, the emotion regulation style used will leave an encoded trace in memory and we can understand this trace as an action policy, indicating how a similar event should be emotionally processed in the future (or how to act on a similar event). Whenever the memory is reactivated, the same action policy will be evoked as the best action to undertake when facing a similar situation.

Imagine that Tom's mother had a car accident two years ago. She was lucky and was not injured, but the car was a total loss. Seeing his mother's wrecked car, Tom experienced a great fear, but he tried to conceal this fear to his mother and made great effort to stop thinking about this mental image of the heavily damaged vehicle that kept popping in his mind. Since that event, an unbeknownst to him, Tom has slowly started to feel more and more anxious and stressed when driving. Since Tom used controlled regulation to suppress his fear relative to his mother's accident, this type of regulation became an action policy for Tom whenever a car is involved. Therefore, Tom has also tried to reduce his stress while driving by ignoring his feelings and by dissociating himself from them. This strategy has worked for a while until one day, Tom was unable to get in his car because he was panicking and was afraid something terrible might happen, but he had no clue why he was feeling this way.

This example illustrates two things. First, using an emotion regulation style with respect to an event makes it more likely to use the same regulation style again when a simi-lar event or one that will reevoke it will take place. Because Tom initially used a controlled regulation to deal with his mother's car accident event, he was more likely to use the same regulation style when his mother's accident memory was reactivated by the external stimulus of a car. If Tom had rather taken interest in his stress and tried to understand why he was experiencing it while driving—an integrative regulation—he might have been able to realize that driving is reminiscent of his mother's accident and that at the time of the accident, he avoided processing his fear of losing his mother. This would then help connect the two events into a more abstract representation and a meaning policy might emerge from this connection (e.g., it is important to cherish those I love, because life can be fragile). Similarly, experiencing a new event that reactivates memories with an encoded integrative regulation policy will increase the likelihood that the person will again use integrative regulation to process the novel event (see Houle & Philippe, 2020).

Second, controlled and amotivated emotion regulation as action policies are unlikely to facilitate event and memory integration, as they only serve to temporarily reduce sensory input (i.e., ignore or expel the emotion). Need thwarting events usually signal that an action or meaning policy may need to be changed or that something needs to be done differently in the future. Therefore, continuous avoidance or amotivated regulation prevent changes to the priors and to their policies and hinder the construction of higher-level representations. Thus, Tom's mother car accident would remain as an unintegrated episodic memory, which would be likely to resurface through rumination, intrusive thoughts, and flashbacks. Only an integrative regulation is likely to achieve event integration by remaining aware and nondefensive of the felt sensory input (Weinstein et al., 2013). This would then facilitate the coherent integration of memories in more abstract representations of the self. Thus, whether an event is approached with avoidance, amotivated, or integrative regulation has important consequences for the action policy that will be encoded with that memory and for the capacity of integration of that memory and of future life events.

Recent empirical research has examined those claims (Philippe et al., 2021). A measure of emotion regulation in memories was initially developed based on the emotion regulation scale (Roth et al., 2009, 2014). To examine the encoded emotion regulation style used in a past event, participants were assessed on the emotion regulation style they used while thinking of a significant negative past event. The measure assessed controlled regulation (e.g., I try to avoid thinking back to this event), amotivated regulation (e.g., I still feel an overflow of emotion), and integrative regulation (e.g., I realize that this event helped me learn new things about myself). Then participants were asked to recall networked memories, that is, other memories associated with the main memory they had just described, and rate each memory for emotion regulation. The results showed that similar to need satisfaction, memories regulated by one style of emotion regulation were more likely to associate with other networked memories characterized by the same style of regulation. Moreover, this clustering was not due to individual differences in emotion regulation in general, as assessed with the emotion regulation scale for negative emotions in general and was independent of the level of need satisfaction assessed in the memories (see also van der Kaap-Deeder et al., 2016).

In two subsequent studies (Philippe, Geoffroy et al., 2022), we examined the effect of traumatic events on the development of posttraumatic stress disorder (PTSD) symptoms. A sample of participants whose houses were flooded during a natural flooding disaster and a second community sample of adults recruited during the COVID-19 pandemic described a central event related to the floods or the pandemic, respectively, and described networked memories related to this central event. They were also assessed for their emotion regulation of each described event memory. Results showed that the way the main event memory (flood or pandemic) was emotionally regulated and the emotion regulation characterizing networked memories associated with these main memories were associated with PTSD symptoms and predicted increases in symptoms over six months. More

specifically, memories characterized with controlled or amotivated regulation predicted increased PTSD symptoms over time, whereas memories of integrative regulation were unrelated to PTSD symptoms.

Controlled and amotivated regulation encoded in memories as policies will only seek to reduce the sensory input upon similar events reactivation. Doing so, they reduce the likelihood that the episodic memory of an event regulated with these styles will be integrated into high-level representations that could potentially change the policy of this event. As such, past events regulated with controlled or amotivated regulation are more likely to constantly trigger the same controlled and amotivated regulation over time, which if chronically activated, are likely to disrupt functioning and induce the avoidance and arousal characteristic of PTSD symptoms.

Conversely, when integrative regulation is used, the priors (i.e., networked memories and their policies) are changed. First, since integrative regulation facilitates the openness toward one's subjective experience, the sensory input is richer, and a greater number of associations can be made with priors. As a consequence, more profound and complex associations can be made, and a deeper meaning from the lived experience can emerge. It is with integrative regulation that one may find profound self-understanding (e.g., I am a strong person), thereby allowing for emergent properties, novel representations, and more coherent organizational structures. These more complex self-structures associated with a specific sensory input can later be used to reduce the perceived threat of this sensory input (through top-down inhibitory pathways), develop more adaptive and precise actions (policies), which can provide again greater inhibitory control, affect tolerance, or delay of gratification. This ultimately builds what is often called resilience. Such an integrative processing with respect to difficult or traumatic experiences, however, is more likely to occur within a need supportive therapeutic encounter.

## Summary and Conclusion

In this chapter, I described three qualities that facilitate the integration of significant life events in what self-determination theory has called the self. I used a memory approach to highlight how the concept of integration of self-determination, originating from an organismic perspective, conforms to other neurocognitive theories on memory and the brain. Obviously, more research is needed to better understand the role of emotion regulation as action policy of memories and how to facilitate the positive integration of difficult and traumatic memories in higher-level representations. These future research avenues appear as fruitful paths to pursue to develop clinical interventions as well. Given the space constraint, I did not cover the important role of the social environment and of other people in the interpretation of life events as need satisfying, but also in transforming memories (e.g., Chua et al., 2021), and in facilitating integrative emotion regulation (Roth et al., 2009) and the integration of events in higher-level representations. These are important areas that also need to be expanded by future investigations.

# References

Barron, H. C., Auksztulewicz, R., & Friston, K. (2020). Prediction and memory: A predictive coding account. *Progress in Neurobiology*, *192*, 101821. https://doi.org/10.1016/j.pneurobio.2020.101821

Berzonsky, M. D. (2011). A social-cognitive perspective on identity construction. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 55–76). Springer.

Bouizegarene, N., & Philippe, F. L. (2016). Episodic memories as building blocks of identity processing styles and life domains satisfaction: Examining need satisfaction and need for cognitive closure in memories. *Memory*, *24*(5), 616–628. https://doi.org/10.1080/09658211.2015.1034138

Bouizegarene, N., & Philippe, F. L. (2018). Longitudinal directive effect of need satisfaction in self-defining memories on friend related identity processing styles and friend satisfaction. *Self and Identity*, *17*(2), 127–138. https://doi.org/10.1080/15298868.2017.1327453

Brewin, C. R. (2014). Episodic memory, perceptual memory, and their interaction: Foundations for a theory of posttraumatic stress disorder. *Psychological Bulletin*, *140*(1), 69–97. https://doi.org/10.1037/a0033722

Brown, N. R. (2016). Transition theory: A minimalist perspective on the organization of autobiographical memory. *Journal of Applied Research in Memory and Cognition*, *5*(2), 128–134. https://doi.org/10.1016/j.jarmac.2016.03.005

Brown, N. R., & Schopflocher, D. (1998). Event cueing, event clusters, and the temporal distribution of autobiographical memories. *Applied Cognitive Psychology*, *12*, 305–319.

Cabeza, R., & Jacques, P. S. (2007). Functional neuroimaging of autobiographical memory. *Trends in Cognitive Sciences*, *11*(5), 219–227. https://doi.org/10.1016/j.tics.2007.02.005

Chua, S. N., Philippe, F. L., & Bouizegarene, N. (2021). The association of autonomy support on memory need satisfaction and goal progress. *Motivation and Emotion*, *45*(3), 265–279. https://doi.org/10.1007/s11031-021-09872-8

Conway, M. A. (2009). Episodic memories. *Neuropsychologia*, *47*(11), 2305–2313. https://doi.org/10.1016/j.neuropsychologia.2009.02.003

Conway, M., & Pleydell-Pearce, C. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, *107*(2), 261–288. https://doi.org/10.1037//0033-295x.107.2.261

D'Argembeau, A., Cassol, H., Phillips, C., Balteau, E., Salmon, E., & Van der Linden, M. (2014). Brains creating stories of selves: The neural basis of autobiographical reasoning. *Social Cognitive and Affective Neuroscience*, *9*(5), 646–652. https://doi.org/10.1093/scan/nst028

Demblon, J., & D'Argembeau, A. (2016). Networks of prospective thoughts: The organisational role of emotion and its impact on well-being. *Cognition & Emotion*, *30*(3), 582–591. https://doi.org/10.1080/02699931.2015.1015967

Demblon, J., & D'Argembeau, A. (2017). Contribution of past and future self-defining event networks to personal identity. *Memory*, *25*(5), 656–665. https://doi.org/10.1080/09658211.2016.1205095

den Ouden, H. E. M., Kok, P., & de Lange, F. P. (2012). How prediction errors shape perception, attention, and motivation. *Frontiers in Psychology*, *3*, 548. https://doi.org/10.3389/fpsyg.2012.00548

Di Domenico, S. I., Le, A., Liu, Y. Ayaz, H., & Fournier, M. A. (2016). Basic psychological needs and neurophysiological responsiveness to decisional conflict: An event-related potential study of integrative self processes. *Cognitive Affective Behavioral Neurosciences*, 16, 848–865. https://doi.org/10.3758/s13415-016-0436-1

Eichenbaum, H. (2017). Prefrontal-hippocampal interactions in episodic memory. *Nature Reviews Neuroscience*, *18*(9), 547–558. https://doi.org/10.1038/nrn.2017.74

Friston, K. (2010). The free-energy principle: A unified brain theory? *Nature Reviews Neuroscience*, *11*(2), 127–138. https://doi.org/10.1038/nrn2787

Habermas, T., & Bluck, S. (2000). Getting a life: The emergence of the life story in adolescence. *Psychological Bulletin*, *126*(5), 748–769. https://doi.org/10.1037//0033-2909.126.5.748

Haque, R. U., Inati, S. K., Levey, A. I., & Zaghloul, K. A. (2020). Feedforward prediction error signals during episodic memory retrieval. *Nature Communications*, *11*(1), 6075. https://doi.org/10.1038/s41467-020-19828-0

Hirsh, J. B., Mar, R. A., & Peterson, J. B. (2012). Psychological entropy: A framework for understanding uncertainty-related anxiety. *Psychological Review*, *119*(2), 304–320. https://doi.org/10.1037/a0026767

Hodgins, H. S., & Knee, C. R. (2002). The integrating self and conscious experience. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 87–100). University of Rochester Press.

Houle, I., & Philippe, F. L. (2017). Need satisfaction in episodic memories impacts mood at retrieval and well-being over time. *Personality and Individual Differences*, *105*(C), 194–199. https://doi.org/10.1016/j.paid.2016.09.059

Houle, I., & Philippe, F. L. (2020). Is the negative always that bad? Or how emotion regulation and integration of negative memories can positively affect well-being. *Journal of Personality*, *88*(5), 965–977. https://doi.org/10.1111/jopy.12544

Jin, J., & Maren, S. (2015). Prefrontal-hippocampal interactions in memory and emotion. *Frontiers in Systems Neuroscience*, *9*, 170. https://doi.org/10.3389/fnsys.2015.00170

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 114–158). Guilford.

Kasser, T., & Ryan, R. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*(3), 280–287.

Knill, D. C., & Pouget, A. (2004). The Bayesian brain: The role of uncertainty in neural coding and computation. *Trends in Neurosciences*, *27*(12), 712–719. https://doi.org/10.1016/j.tins.2004.10.007.

Lejeune, A., Bouizegarene, N., & Philippe, F. L. (2021). The moderating effect of couple-related memory networks on the association between attachment insecurity and couple adjustment. *Personal Relationships* *28*, 39–60. https://doig.org/10.1111/pere.12360.

Lekes, N., Guilbault, V., Philippe, F. L., & Houle, I. (2014). Remembering events related to close relationships, self-growth, and helping others: Intrinsic autobiographical memories, need satisfaction, and well-being. *Journal of Research in Personality*, *53*(C), 103–111. https://doi.org/10.1016/j.jrp.2014.09.002

Lopes, M., & Philippe, F. L. (2022). *The role of growth and acceptance in sports-related memories*. Manuscript submitted for publication.

McAdams, D. P., & McLean, K. C. (2013). Narrative identity. *Current Directions in Psychological Science*, *22*(3), 233–238. https://doi.org/10.1177/0963721413475622

McAdams, D. P., Reynolds, J., Lewis, M., Patten, A., & Bowman, P. (2001). When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narrative and their relation to psychosocial adaptation in midlife adults and in students. *Personality and Social Psychology Bulletin*, *27*(4), 474–485.

McClelland, J. L., Rumelhart, D. E., & Hinton, G. E. (1986). The appeal of parallel distributed processing. In D. E. Rumelhart, J. L. McClelland, and the PDP Research Group (Eds.), *Parallel distributed processing* (Vol. 1, pp. 3–40). MIT Press.

McConnell, A. R. (2011). The multiple self-aspects framework: Self-concept representation and its implications. *Personality and Social Psychology Review*, *15*(1), 3–27. https://doi.org/10.1177/1088868310371101

Morrissey, M. D., Insel, N., & Takehara-Nishiuchi, K. (2017). Generalizable knowledge outweighs incidental details in prefrontal ensemble code over time. *ELife*, *6*, e22177. https://doi.org/10.7554/elife.22177

Naragon-Gainey, K., McMahon, T. P., & Chacko, T. P. (2017). The structure of common emotion regulation strategies: A meta-analytic examination. *Psychological Bulletin*, *143*(4), 384–427. https://doi.org/10.1037/bul0000093

Niven, J. E., & Laughlin, S. B. (2008). Energy limitation as a selective pressure on the evolution of sensory systems. *Journal of Experimental Biology*, *211*(11), 1792–1804. https://doi.org/10.1242/jeb.017574

Nolen-Hoeksema, S. (2012). Emotion regulation and psychopathology: The role of gender. *Annual Review of Clinical Psychology*, *8*(1), 161–187. https://doi.org/10.1146/annurev-clinpsy-032511-143109

Peters, A., McEwen, B. S., & Friston, K. (2017). Uncertainty and stress: Why it causes diseases and how it is mastered by the brain. *Progress in Neurobiology*, *156*, 164–188. https://doi.org/10.1016/j.pneurobio.2017.05.004

Philippe, F. L. (2021). Episodic memories as proxy or independent representations: A theoretical review and an empirical test of distinct episodic memories on work outcomes. *New Ideas in Psychology*, *64*, 10091. https://doi.org/10.1016/j.newideapsych.2021.100913

Philippe, F. L., & Bernard-Desrosiers, L. (2017). The odyssey of episodic memories: Identifying the paths and processes through which they contribute to well-being. *Journal of Personality*, *85*(4), 518–529. https://doi.org/10.1111/jopy.12257

Philippe, F. L., Bouizegarene, N., Guilbault, V., Rajotte, G., & Houle, I. (2015). The chicken or the egg? Systematic investigation of the effect of order of administration of Memory Questionnaires and Well-being Scales. *Memory*, *23*(7), 1056–1069. https://doi.org/10.1080/09658211.2014.953547

Philippe, F. L., Geoffroy, M.-C., Ouellette-Morin, I., & Orri, M. (2022). *Emotion regulation styles characterizing memory networks predict increases in PTSD symptoms: Examining the cases of a flooding and a pandemic*. Manuscript in preparation.

Philippe, F. L., & Houle, I. (2020). Cognitive integration of personal or public events affects mental health: Examining memory networks in a case of natural flooding disaster. *Journal of Personality*, *88*(5), 861–873. https://doi.org/10.1111/jopy.12531

Philippe, F. L., Koestner, R., Beaulieu-Pelletier, G., & Lecours, S. (2011). The role of need satisfaction as a distinct and basic psychological component of autobiographical memories: A look at well-being. *Journal of Personality*, *79*(5), 905–938. https://doi.org/10.1111/j.1467-6494.2010.00710.x

Philippe, F. L., Koestner, R., Beaulieu-Pelletier, G., Lecours, S., & Lekes, N. (2012). The role of episodic memories in current and future well-being. *Personality and Social Psychology Bulletin*, *38*(4), 505–519. https://doi.org/10.1177/0146167211429805

Philippe, F. L., Koestner, R., Lecours, S., Beaulieu-Pelletier, G., & Bois, K. (2011). The role of autobiographical memory networks in the experience of negative emotions: How our remembered past elicits our current feelings. *Emotion*, *11*(6), 1279–1290. https://doi.org/10.1037/a0025848

Philippe, F. L., Koestner, R., & Lekes, N. (2013). On the directive function of episodic memories in people's lives: A look at romantic relationships. *Journal of Personality and Social Psychology*, *104*(1), 164–179. https://doi.org/10.1037/a0030384

Philippe, F. L., Lecours, S., & Beaulieu-Pelletier, G. (2009). Resilience and positive emotions: Examining the role of emotional memories. *Journal of Personality*, *77*(1), 139–175. https://doi.org/10.1111/j.1467-6494.2008.00541.x

Philippe, F. L., Lopes, M., Houlfort, N., & Fernet, C. (2019). Work-related episodic memories can increase or decrease motivation and psychological health at work. *Work & Stress*, *8*(1), 1–19. https://doi.org/10.1080/02678373.2019.1577311

Philippe, F. L., Vallerand, R. J., Bernard-Desrosiers, L., Guilbault, V., & Rajotte, G. (2017). Understanding the cognitive and motivational underpinnings of sexual passion from a dualistic model. *Journal of Personality and Social Psychology*, *113*(5), 769–785. https://doi.org/10.1037/pspp0000116

Reeve, J., & Lee, W. (2019). A neuroscientific perspective on basic psychological needs. *Journal of Personality*, *87*, 102–114. https://doi.org/10.1111/jopy.12390

Roisman, G. I., Collins, W. A., Sroufe, L. A., & Egeland, B. (2005). Predictors of young adults' representations of and behavior in their current romantic relationship: Prospective tests of the prototype hypothesis. *Attachment & Human Development*, *7*, 105–121.

Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and academic consequences of parental conditional regard: Comparing conditional positive regard, conditional negative regard, and autonomy support as parenting practices. *Developmental Psychology*, *45*(4), 1119–1142. https://doi.org/10.1037/a0015272

Roth, G., Benita, M., Amrani, C., Shachar, B.-H., Asoulin, H., Moed, A., Bibi, U., & Kanat-Maymon, Y. (2014). Integration of negative emotional experience versus suppression: Addressing the question of adaptive functioning. *Emotion*, *14*(5), 908–919. https://doi.org/10.1037/a0037051

Roth, G., Shahar, B.-H., Zohar-Shefer, Y., Benita, M., Moed, A., Bibi, U., Kanat-Maymon, Y., & Ryan, R. M. (2018). Benefits of emotional integration and costs of emotional distancing. *Journal of Personality*, *86*(6), 919–934. https://doi.org/10.1111/jopy.12366

Roth, G., Vansteenkiste, M., & Ryan, R. M. (2019). Integrative emotion regulation: Process and development from a self-determination theory perspective. *Development and Psychopathology*, *31*(3), 945–956. https://doi.org/10.1017/s0954579419000403

Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic-dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3–33). University of Rochester Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., Deci, E. L., Grolnick, W. S., & LaGuardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti & D. Cohen (Eds.), *Developmental psychology* (2nd ed., Vol. 1, pp. 295–849). Wiley.

Ryan, R. M., Kuhl, J., & Deci, E. L. (1997). Nature and autonomy: An organizational view of social and neurobiological aspects of self-regulation in behavior and development. *Development and Psychopathology*, *9*(4), 701–728. https://doi.org/10.1017/S0954579497001405

Ryan, R. M., Soenens, B., & Vansteenkiste, M. (2019). Reflections on self-determination theory as an organizing framework for personality psychology: Interfaces, integrations, issues, and unfinished business. *Journal of Personality*, *87*(1), 115–145. https://doi.org/10.1111/jopy.12440

Soenens, B., & Vansteenkiste, M. (2011). When is identity congruent with the self? A self-determination theory perspective. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 381–402). Springer.

Van der Kaap-Deeder, J., Vansteenkiste, M., van Petegem, S., Raes, F., & Soenens, B. (2016). On the integration of need-related autobiographical memories among late adolescents and late adults: The role of depressive symptoms and self-congruence. *European Journal of Personality*, *30*(6), 580–593. https://doi.org/10.1002/per.2079

Weinstein, N., Deci, E. L., & Ryan, R. M. (2011). Motivational determinants of integrating positive and negative past identities. *Journal of Personality and Social Psychology*, *100*(3), 527–544. https://doi.org/10.1037/a0022150

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2013). The integrative process. *Current Directions in Psychological Science*, *22*(1), 69–74. https://doi.org/10.1177/0963721412468001

Woike, B., Gershkovich, R., Piorkowski, R., & Polo, M. (1999). The role of motives in the content and structure of autobiographical memory. *Journal of Personality and Social Psychology*, *76*(4), 600–612.

Yonelinas, A. P., Ranganath, C., Ekstrom, A. D., & Wiltgen, B. J. (2019). A contextual binding theory of episodic memory: Systems consolidation reconsidered. *Nature Reviews Neuroscience*, *20*(6), 364–375. https://doi.org/10.1038/s41583-019-0150-4

# Toward a Neurobiology of Integrative Processes

Stefano I. Di Domenico *and* Richard M. Ryan

### Abstract

Integrative processes refer to people's strivings to develop and exercise their capacities for autonomous self-regulation. This chapter highlights the importance of integration within Self-Determination Theory (SDT), surveys the psychological research on the topic, and reviews the burgeoning neuroscience research on integrative processes. This chapter proposes that integration is multifaceted and that different neural networks orchestrate specific integrative processes. Different brain regions are seen as nodes operating within and across multiple decentralized networks that support the experiential and behavioral aspects of integrative processes already known to SDT scholars. This chapter additionally reviews some of the neuroscientific methods available to SDT researchers and flags conceptual difficulties in this emerging area of research that seeks to connect complex phenomenology with biology.

**Key Words:** autonomy, basic psychological needs, conflict, integrative processes, neurobiology, neuroscience, self, Self-Determination Theory, self-regulation

The concept of integration has been variously expressed within the history of psychology. Freud (1927/1960), and especially the ego psychologists after him (e.g., Hartmann, 1958; Nunberg, 1931), emphasized the *synthetic functions* of the ego. They used this term to describe the ego's strivings to reconcile conflicting desires "so that there is a unanimity of feeling, action, and will" (Nunberg, 1931, p. 124). Loevinger (1976, p. 59) recast these ideas using the cognitive developmental framework of Piaget and argued that "the striving to master, to integrate, and to make sense of experience is not one ego function among many but the essence of the ego." According to Loevinger, the highest levels of personality functioning entail thinking integratively about oneself and others, having the ability to articulate one's feelings and motives, and developing the "courage (and whatever other qualities it takes) to acknowledge and deal with conflict rather than ignoring it or projecting it onto the environment" (p. 23).

Within the humanistic movement in psychology, Rogers (1951) developed a similar set of ideas. He argued that "psychological adjustment exists when the concept of the self is such that all the sensory and visceral experiences of the organism are, or may be,

assimilated on a symbolic level into a consistent relationship with the concept of self" (p. 513). He postulated the existence of *organismic valuing processes* through which people explore and evaluate the subjective meanings of their experiences and strive to make decisions that are congruent with their felt needs and sensibilities. Rogers described the fully functioning individual as one who is autonomous or self-governing and whose self-concept is able to continually integrate disparate and even conflicting aspects of his or her experience into a coherent yet ever-changing unity.

Freud and Rogers represent just two of the many historical figures who have placed integrative processes at the heart of their theories of personality and development (see Ryan, 1995). Others include Angyal (1941), who argued that living entities, including humans, have inherent developmental trajectories toward greater autonomy and homonomy, terms which he used to respectively describe expanding self-regulation and growing harmony with the environment. Working within the psychodynamic tradition, Winnicott (1965) characterized the "True Self" as the capacities of people to access their feelings and needs and to act with a sense of genuineness and spontaneity, capacities that he believed are developmentally related to one having had responsive and validating caregivers. In contrast, Winnicott described "False Self" as the denial or distortion of inner experience. He saw pathological degrees of false-self behavior as reactions to chronically controlling and neglectful caregiving. Each of these theories highlights the central importance of personality integration, which is critical to understanding the coherence, unity and effectiveness of people's actions.

The concept of integration is also central to Self-Determination Theory (SDT). As Ryan and Deci (2017, p. 648, italics added) stated, "self-determination, as it turns out, *is ultimately a problem of integration.*" Within SDT, *integrative processes* describe people's inherent strivings to continually develop, coordinate, and organize their capacities for autonomous self-regulation. Different motivational phenomena are seen as specific expressions of this general trajectory toward integrative functioning. For example, *intrinsic motivation*, the earliest focus of SDT research in Cognitive Evaluation Theory (Reeve, this volume), describes assimilative and integrative processes through which people learn new skills, explore their curiosities, and develop their interests. *Internalization*, described within Organismic Integration Theory (Pelletier & Rocchi, this volume), describes integrative processes entailed in people's inclinations to assimilate and transform social regulations into personal values and autonomously motivated self-regulations. Basic Psychological Needs Theory (Vansteenkiste et al., this volume) specifies the supportive conditions under which integrative processes operate most robustly and thereby enhance wellness. Integrative emotion regulation (Roth & Benita, this volume) addresses the assimilation and management of the informational inputs provided by emotions. When SDT scholars stipulate that the satisfaction of autonomy, competence, and relatedness is essential for people's growth, integrity, and wellness, the phrase "growth, integrity, and

wellness" thus refers to these multiple propensities toward integrated functioning and psychological health that follow from them.

Outside these mini-theories, but still under the "SDT umbrella," researchers have further described and operationalized integrated functioning in terms of *awareness*, *ownership*, and *nondefensive responding* (Weinstein, Przybylski, & Ryan, 2013). Studies examining *mindfulness*, a quality of attention in which people are receptive to what is occurring in the present moment (Brown & Ryan, 2003), have shown it to be positively associated with these aspects of integrated functioning (e.g., Levesque & Brown, 2007; Weinstein et al. 2009; Ryan et al., 2021). Integration has also been researched with respect to *identity development* (see Ratelle & Guay, this volume). For example, Duriez et al. (2012) found that adolescents who pursue need-fulfilling goals evidence more cognitive engagement, complexity, and deliberation when thinking about their identity commitments and less avoidance of identity-related information and decisions. Luyckx et al., (2009) showed that adolescents who experience higher levels of need fulfillment exhibit greater levels of identity exploration and commitment and lower levels of identity rumination. Integrative processes also concern the continuity and assimilation of identity contents across time. Weinstein, Deci, and Ryan (2011) found that, when reflecting upon past identities, autonomously oriented individuals feel closer to and are more accepting of both positive and negative past identities. Philippe (this volume) describes the integration of negative experiences into memory, and how the need frustrations embedded in associated or networked events affect people's capacities to process information and to cope.

Although SDT is primarily psychological in its focus, SDT scholars, taking an organismic approach, have long been interested in the neurobiological underpinnings of integrated functioning (Ryan, Kuhl, & Deci, 1997). Organismic approaches conceptualize living entities as self-regulating organizations that strive to maintain and elaborate themselves (Ryan & Deci, 2017; Ryan & Vansteenkiste, this volume). In this view, organisms are hierarchically organized systems with *inherent capabilities* to operate coherently toward the satisfaction of their needs and to adaptively reconfigure and differentiate their lower-order functions when they make contact with the environment. This view of people as *active organisms* contrasts with often implicit neobehaviorist notions that construe people as sophisticated stimulus-response machines. Within SDT, the organizational or integrative processes that theoretical biologists ascribe to living organisms are presumed to be reflected in psychological processes as well. The *self* is "both the agent that integrates and the structure to which new functions, values, and propensities are integrated" (Ryan, 1993, p. 5); when behavior is regulated by the self, it is described as being autonomous. It is in this sense that self-determination is said to ultimately be a problem of integration.

With its concept of integrative processes, SDT also rejects postmodern perspectives (e.g., Gergen, 1991) that deny the existence of a "core self" (Ryan & Deci, 2017). Such postmodern views are echoed in some contemporary social-cognitive approaches that peripheralize the self and impress the view that personality is a storehouse of identity-related

schemata (e.g., Mischel & Shoda, 1995). Far from being a mere "academic" disagreement, this matter has applied significance. If important socializing agents, say, teachers in the domain of education, adopt the postmodern view that the individual psyche is comprised of compartmentalized social identities that are determined, entirely and arbitrarily, by one's ambient culture, then the use of controlling methods logically follow. When there is no inherent self to nurture, encourage, and scaffold, education becomes the practice of programming social identities instead of promoting students' intellectual, personal, and social development (Hicks, 2004). By contrast, in the organismic view, students have inherent capacities to grow and develop and to coherently make decisions about what is interesting, important, and meaningful. This leads to a focus on supporting and nurturing those propensities.

It is also tempting to treat this *phenomenological* account of the *self* as referring to some homunculus, which leaves one vulnerable to the problem of infinite regress. It is perhaps for this reason that researchers with an ardent psychological focus may be inclined to treat imports from theoretical biology cautiously as "metaphors of organism" (Blasi, 1976) that nonetheless have served as generative axiomatic building blocks of SDT. Still, other researchers may wish to eschew metaphor and venture toward a realist stance using neuroscience methods. Such researchers would be keenly interested in discovering the biological substrates of integrative functioning. SDT's organismic and consilience-oriented perspective favors the latter approach—to understand not only the experiential aspects of integrative processes but also their coordination through mechanistic underpinnings within the organism.

Many introductory textbooks note that cognitive and sensory neuroscientists have long been interested in the *binding problem*, the question of how the brain unites various perceptual elements, initially processed by different brain systems, into a holistic scene (e.g., Reisberg, 2006). By analogy, SDT researchers may consider integrative processes to be a higher-order binding problem, one that must be addressed by personality and motivational psychologists.

In doing so we might first consider different aspects of integration and then seek out the different functional brain networks that subserve their operation. In such a scheme, different brain regions would be seen as nodes in decentralized functional assemblies that support the experiential and behavioral aspects of integrative processes already known to SDT scholars. Just as different types of memory (e.g., semantic, episodic) rely on different functional brain networks, for example, so too different integrative processes may be orchestrated by different neural systems. These considerations combined with a recent proliferation of neuroscience techniques (e.g., Di Domenico et al., 2019; Lee, this volume) have led to a burgeoning SDT literature examining the neurobiology of intrinsic motivation and other integrative processes. Our purpose in this chapter is to situate this small but enthusiastic body of work within the broader context of SDT scholarship, to review its findings, and to share principles that may help guide and inspire future research.

## Researching Integrative Processes in the Brain

There are a number of reasons why bringing neuroscience tools to bear on the study of integrative processes is important (Di Domenico & Ryan, 2017). First, people's experience and behavior are mediated by the brain. A complete account of integration therefore requires an understanding of the neural systems that support its many aspects. Second, neuroscience methods allow researchers to examine internal processes that are not accessible via self-reports or direct behavioral recordings. Depending on the technology that is used, neuroscience methods can also afford a level of resolution that cannot be attained with traditional research methods alone. Electroencephalographic (EEG) recordings, for example, offer researchers a level of temporal resolution on the order of milliseconds, sometimes faster than respondents become conscious of their own perceptions. Neuroscience methods can also potentially help refine psychological accounts by identifying the granular neurobiological systems and processes that support integrative functioning. For example, the mammalian brain appears to be equipped with two distinct systems for intrinsic motivation: whereas intrinsic motivation associated with curious exploration appears anchored in midbrain dopaminergic systems, intrinsic motivation associated with social play—in childhood, often expressed as a love for rough-and-tumble play—is modulated by endogenous opioids (Panksepp, 1998). These neurobiological distinctions suggest that exploration and social play, both of which are primarily intrinsically motivated in early childhood, may be productively disaggregated at the psychological level of analysis and offer interesting directions for psychological research (Di Domenico & Ryan, 2017). For example, whereas satisfaction of the need for relatedness seems to be distal support for curious exploration (e.g., a solitary crossword puzzle), its satisfaction may be central for intrinsically motivated social play (e.g., tag and play-wrestling among children, the game charades among adults). This exemplifies how psychological and physiological research can be coordinated and harnessed toward consilient understanding (Ryan & Di Domenico, 2016).

## Connecting Experience with Biology: Pitfalls and Promises

Researchers examining the neurobiology of integrative processes must pay careful attention to the manner in which the potential relationships between psychological and physiological states are construed (Cacioppo & Tassinary, 1990). A psychological phenomenon may be associated with more than one physiological event; conversely, a physiological event may be associated with a multitude of psychological events. Moreover, some psychophysiological relationships may be situation specific; others may be cross-situational. For example, some integrative processes may be associated with activity within the medial prefrontal cortex (MPFC; Brodmann's area 10), particularly when people must access self-knowledge to make choices that are consistent with their preferences. Yet activity in this region may be attenuated when people are intensely intrinsically motivated, especially in tasks that do not require self-reflection but rather absorption and flow (Di Domenico &

Ryan, 2017; Ryan & Di Domenico, 2016). Researchers must also be cognizant of making *reverse inferences*, which, on the basis of previous studies, treat activity in a particular brain region as suggestive that some psychological event is occurring (Poldrack, 2006). An example of reverse inference would be a researcher, upon observing activity within the anterior cingulate cortex (ACC), concluding that their participants were experiencing feelings of social pain during a decision-making task because previous studies have linked social pain to activity within the ACC. If not explicitly recognized as reverse inference, this conclusion would be problematic because ACC activity has been associated with a variety of other psychological experiences, including more attention to potential conflicts or errors.

Still, reverse inferences are common in cognitive neuroimaging and, when thoughtfully used, can suggest novel, testable hypotheses (Poldrack, 2006). For example, based on cognitive evaluation theory, we expect that intrinsic motivation involves a sense of autonomous agency, or a perceived internal locus of causality. Accordingly, Lee and Reeve (2013) hypothesized that areas within the insula—a region previously correlated with feelings of agency—would be preferentially active during the enactment of intrinsically motivated activities. Their studies have supported this view. Indeed, studies of curiosity-based intrinsic motivation have implicated a network of areas, including the insula, striatial, and lateral prefrontal activations; these activations offer clues about how the volitional, rewarding, and engaging experiences reported by people who are intrinsically motivated are orchestrated in the brain (see Lee, this volume).

Beyond studies of intrinsic motivation, studies examining integrative processes involved in making difficult choices or decisions have also applied reverse inferences, focusing particularly on the MPFC. Several neuroanatomical features of the MPFC make it a natural starting point for researching such integrative processes in humans (cf. Moran, Kelley, & Heatherton, 2013). First, the MPFC is proportionately larger than any other prefrontal region (Ongur, Ferry, & Price, 2003). Second, compared to other cortical areas, the MPFC has a greater density of dendritic spines and a smaller density of cell bodies, suggesting complex associative processing capacities (Jacobs et al., 2001). Third, the MPFC is reciprocally interconnected with other heteromodal cortical regions. These anatomical characteristics suggest that the MPFC is computationally well-suited for the integrative functioning necessary for people to endorse their "actions at the highest order of reflection" (Ryan & Deci, 2017, p. 55).

Regions within the MPFC are also preferentially engaged by a wide variety of laboratory tasks that entail self-referential cognition (Denny et al., 2012; Northoff & Bermpohl, 2004; Northoff et al., 2006; Wager, Haxby, & Heatherton, 2012). Self-referential tasks include reflecting on one's own physical attributes, feelings, and personality traits and expressing one's attitudes and preferences. The involvement of the MPFC in such tasks is one of the most robust findings in all of social and personality neuroscience (Di Domenico et al., 2019). Capitalizing on the previously established role of the MPFC in various types

of self-referential cognition, while also modifying self-referential paradigms for use in experimental studies examining integrated functioning, is a theme that runs through each of the studies we review below.

## Operationalizing Integrative Processes

Integrative processing can be difficult to measure (Weinstein et al., 2013). Outside the laboratory, some aspects of integration can be assessed using standard questionnaire assessments tailored for particular life domains (e.g., a self-regulation questionnaire for the exercise domain measures respondents' degree of internalization). Such assessments can be described as reflecting people's "typical behavior" (Cronbach, 1949), or at least the behavior that is typical for individuals when they inhabit a particular domain. In the laboratory, however, the measurement of integrative processing is often more akin to tests of *maximal performance* (Cronbach, 1949), behavior when individuals are presented with some event or task that challenges their integrative capacities. Exemplifying this strategy, Weinstein et al. (2011) had participants reflect on emotionally difficult memories. People's integrative propensities were most strongly expressed when they were able to experience autonomy, either due to conditions of autonomy support or because of a strong autonomy causality orientation.

## Decision-Making Conflict

Decision-making tasks that challenge respondents to resolve conflicts on the basis of their personal preferences are a useful way to examine integrative processes in a laboratory setting. Di Domenico et al. (2013) adapted an experimental paradigm from Nakao, Osumi et al. (2010) to this end. In an earlier fMRI study, Nakao and colleagues developed a decision-making paradigm in which university undergraduates were asked to make a series of forced choices (Nakao, Osumi et al., 2009). Specifically, these participants completed a series of trials in which occupational words were presented side by side (e.g., "Doctor," "Plumber") while they were asked to select the occupation that they believed they could perform better. Occupational choice tasks are highly suited to university students because career decisions are meaningful and salient to these emerging adults (Arnett, 2000). Alongside this task, participants also completed a task in which they were told to simply select the longer word in each pair. Nakao, Osumi et al. (2010) found that, relative to the word-length task, the occupational-choice task elicited greater activity in the MPFC. These results were interpreted as evidence consistent with the hypothesis that the MPFC, given its involvement in self-referential cognition, plays an important role is representing the self-knowledge (e.g., personal goals, preferences) that is necessary for regulating personal decision-making.

Di Domenico et al. (2013) reasoned that, if self-knowledge represented by the MPFC is necessary for regulating decisional conflicts and need satisfaction promotes people's abilities to make choices that are aligned with their abiding interests and preferences

(integrated functioning), then people who experience greater need satisfaction should more reliably engage the MPFC when facing difficult choices. In their modified task, university students were asked to respond to trials with prompts like "Which occupation would you prefer, Dancer or Chemist?" Importantly, the degree of decisional conflict was manipulated on an idiographic basis. Seven to ten days before neuroimaging, participants were given a long list of occupations and were asked to rate the extent to which they thought they might experience personal satisfaction and joy in each occupation. Pairings with similarly rated occupations formed the trials for the high-conflict condition. Pairings with occupations that varied in their ratings formed the low-conflict condition. During this first laboratory session, participants also completed a standard measure of basic psychological need satisfaction that assessed the degree to which they experience autonomy, competence, and relatedness in their lives.

When they came back to the lab approximately one week later, participants ($N = 64$) were administered the modified occupational choice task while the activity of their MPFCs was measured using functional near-infrared spectroscopy (fNIRS; Di Domenico et al., 2019). Like fMRI, fNIRS measures neuronal activity based on the brain's hemodynamic response. fNIRS uses infrared light introduced at the scalp and spectroscopic methods as a basis for inferring brain activations in cortical areas. Consistent with predictions, the results of this study found that participants reporting greater need satisfaction showed greater MPFC activity when they made high-conflict decisions compared to when they made low-conflict decisions. Those reporting lower need satisfaction, however, showed a pattern of MPFC activity that did not distinguish between the high- and low-conflict choices. This pattern of MPFC activity was also mirrored by participants' reaction times. Those reporting greater need satisfaction predictably took more time deliberating the high- relative to the low-conflict choices. Because the decision-making trials in this task comprised a series of forced choices, these results suggest that need satisfaction promotes people's abilities to flexibly and adaptively respond to decision-making challenges. That is, respondents with greater need satisfaction discriminately and economically responded to decisional challenges, expending more neural resources in the MPFC for high- relative to low-conflict situations. More interestingly, building off Nakao, Osumi et al.'s (2010) earlier interpretations of the role of the MPFC, these results offered evidence consistent with the hypothesis that integrated functioning entails the ability to bring one's self-knowledge, a process supported by the MPFC, to bear on personal decision-making situations. One question, ripe for future research that emerges from this study, is whether greater MPFC activity during personal decision-making is phenomenologically associated with feelings of autonomy, which might suggest some intrinsic motivation or valuing of self-exploration.

In a follow-up study using EEG, Di Domenico et al. (2016) examined how need satisfaction and integrated functioning might involve the ACC during personal decision-making. Once again, an earlier set of studies by Nakao and his colleagues were useful.

Using similar occupational choice paradigms, they had previously shown that a pronounced flection on EEG appears within 60 ms of making a behavioral selection, a waveform they called the *conflict negativity*, or CN (Nakao, Mitsumoto et al., 2010; Nakao, Takezawa et al., 2009). This CN is believed to be generated by a conflict-monitoring system within the ACC, implicated in feelings of anxious uncertainty that arise when people face decisional conflicts (Hirsh, Mar, & Peterson, 2012), that functions like a "cortical alarm bell." This alarm bell may signal the need for top-down inputs to guide decision-making. Supporting that idea, Nakao, Osumi, et al., (2010) used fMRI to show that the dorsal ACC and MPFC are functionally connected during decision-making, suggesting that while the ACC plays an evaluative role in personal decision-making, the MPFC and the self-knowledge it purportedly recruits play an executive role.

Because integrated functioning entails nondefensive, receptive responding to decisional conflicts (Weinstein et al., 2013), Di Domenico et al. (2016) hypothesized and found that people reporting greater need satisfaction showed larger CN amplitudes when facing high- relative to low-conflict decisions. The CN amplitudes of participants reporting lower need satisfaction did not distinguish the decision-making situations. Interestingly, those reporting greater need satisfaction showed particularly large CN amplitudes when making a forced choice between two unattractive occupations, because in this condition the available choice selections could not be reconciled with people's preferences. The results therefore suggest that people experiencing greater need satisfaction are not only more attuned to decisional conflict but also more receptive to situations in which their existing self-knowledge representations need to be updated and refined in the service of self-congruent decision-making. It appears that, for people who experience ample need satisfaction, decisional conflicts can serve as informational inputs for development (Ryan & Deci, 2017).

Beyond decision-making, the results of Di Domenico et al.'s (2016) study may also shine light on the specific processes through which need satisfaction promotes the development of well-internalized forms of behavioral regulation. Specifically, one way need satisfaction may promote internalization is by raising people's awareness and focusing systematic processing of the internal conflicts that the internalization process may elicit. Accepting a novel behavioral regulation may sometimes require a reprioritization of one's goals and deeper insight about one's core values. These self-reflective operations often require sorting out emergent conflicts. As Deci and Ryan (1985, p. 130) put it, "Transforming an outer regulation into an inner one requires that one reorganize one's capacities and propensities, and it may require that one shift one's perspective or values. Such modifications, like all developmental acquisitions, require active work." By increasing people's receptivity to the potential conflicts that are sometimes part of the internalization process, need fulfillment may aid the development of integrative value frameworks that enable people to autonomously regulate their activities. A clear hypothesis for future research that may be derived from Di Domenico et al. (2016) is that need satisfaction

helps people internalize important but unappealing tasks by bolstering their ability to work through the motivational conflicts those tasks impose en route to becoming identified or even integrated regulations.

### Integrating Remembered Past, Perceived Present, and Imagined Future Identities

Another expression of integration concerns how people synthesize temporally distinct representations of themselves into a more unified self-representation and sense of identity (e.g., Weinstein et al., 2011; Philippe, this volume). Here too, previous neuroimaging studies examining the MPFC have provided a useful point of entry for SDT scholars.

In one study, D'Argembeau et al. (2008) asked university students to make trait judgments about themselves and a person with whom they were very familiar (i.e., a sibling or close friend). These judgments were made for both the present (i.e., during their undergraduate studies) and the past (i.e., five years earlier). Results indicated that activity within the MPFC was greater when participants judged their present identities relative to when they judged their past identities. Interestingly, MPFC activity did not distinguish judgments about one's own past identities from judgments about the past and present identities of familiar others. It therefore seems that, in the MPFC, people generally process their own past identities in ways that are comparable to the way they process the identities of other people (see also D'Argembeau et al., 2010). One hypothesis to explain these findings is that the MPFC may play some role in processing the "self-relevance" of specific stimuli (D'Argembeau, 2013; Northoff & Bermpohl, 2004; Schmitz & Johnson, 2007). For example, Moran et al. (2006) asked participants to rate the self-descriptiveness of trait adjectives during fMRI and found that activity within regions of the MPFC increased as a function of participants' ratings of self-descriptiveness. D'Argembeau and Salmon (2012) found that MPFC activity increased as a function of both the self-descriptiveness and personal importance that participants attributed to specific word stimuli.

Some researchers have thus converged on the hypothesis that the MPFC contributes to the process of relating particular stimuli to one's subjective sense of self, with increasing levels of activity being associated with higher degrees of personal relevance (D'Argembeau, 2013; Northoff & Bermpohl, 2004; Schmitz & Johnson, 2007). As D'Argembeau and Salmon (2012, p. 283) put it, "[T]he MPFC might sustain the process of identifying oneself with versus distancing oneself from particular mental contents (e.g., thoughts, opinions, preferences), which would therefore be regarded as 'me' (or 'mine') versus 'not-me' (or 'not-mine')."

If integration entails assimilating temporally distant identities, then it stands to reason that the marked differences in MPFC activity observed by D'Argembeau and colleagues when participants reflected on their past and future identities ought to be reduced in people experiencing greater need satisfaction. Accordingly, Di Domenico et al. (2018) hypothesized that people reporting greater need satisfaction ought to show similarly high levels of MPFC activity when reflecting on remembered past, perceived present, and

imagined future identities; in contrast, those reporting lower need satisfaction ought to show a pattern of MPFC activity similar to the results documented by D'Argembeau et al. (2010). Di Domenico et al. (2018) asked young adults (*N* = 110) to complete a trait-judgment task while activation of the MPFC was assessed using fNIRS recording. Task trials required participants to indicate whether or not Big Five personality trait adjectives (Goldberg, 1992) described their personality five years earlier (past identity; *Five years ago, I was . . .*), their current personality (present identity: *At present, I am . . .*), and their imagined personality five years into the future (future identity; *In five years, I will be . . .*). Even after controlling for participants' perceptions of personality trait changes, those reporting greater need satisfaction showed similarly high levels of MPFC activity across the three judgment conditions, whereas those with lower need satisfaction showed more variability, suggestive of less integration or more distancing of self from both past and future identities.

These results, though consistent with the idea that MPFC plays a role in integration of temporally distant self-representations, not only await replication but also raise a number of additional questions of interest. For example, Di Domenico et al. (2018) focused on semantic self-knowledge; is the MPFC similarly recruited for episodic contents? What role might other brain structures play? Indeed, the MPFC is part of a network of so-called cortical-midline structures (CMS) that are also commonly recruited during self-referential tasks (Denny et al., 2012; Northoff & Bermpohl, 2004; Northoff et al., 2006). The CMS includes the anterior cingulate cortex, the posterior cingulate cortex, the medial parietal cortex, the retrosplenial cortex, as well as the more dorsal aspects of the MPFC (BA 9). Interestingly, activations within the posterior cingulate cortex, for example, have been associated with successful autobiographical retrieval (Maddock, Garret, & Buonocore, 2001). Need satisfaction may affect activity within this region during the retrieval of autobiographical memories, particularly those that are laden with negatively affective and even traumatic content, memories that pose a greater integrative challenge, as described by Philippe (this volume).

## Homonomy: Integration with Others

SDT sees people's tendencies toward *homonomy* (Angyal, 1941), or the development of social bonds and connecting with others, as being complementarily entwined with their tendencies toward autonomy (Knee & Browne, this volume). For example, people's capacities to internalize and integrate social regulations enable them to be autonomous participants in society (Pelletier & Rocchi, this volume). As such, homonomy is another aspect of integration that warrants investigation using neuroscience methods (Ryan & Vansteenkiste, this volume).

Di Domenico et al. (2022) conducted an fNIRS study comparing how MPFC activity varied when participants (*N* = 109) were asked to make trait judgments of themselves and a friend. In the self-condition, participants were shown trait adjectives (e.g., "assured,"

"shy") and were asked, "How accurately does this word describe you?" They indicated their response using a Likert-type rating scale. In the friend condition, participants were asked to rate how descriptive those same adjectives were of their friend. This self- and other-referential task has been used in a wide range of studies and has meta-analytically been shown to result in greater activity within the MPFC during the self- relative to the other-referential condition (Northoff et al., 2006; van der Meer et al., 2010; Martinelli et al., 2013).

Exploiting this previously documented effect, Di Domenico et al. (2022) asked participants to rate their perceptions of need satisfaction within their relationship with the target friend. The researchers surmised that if relationship need satisfaction promotes greater social integration, then MPFC activity across the self and friend conditions should be similarly high in those respondents reporting greater relationship need satisfaction. In contrast, those reporting lower need satisfaction ought to show the typical high level of MPFC activity in the self-condition and markedly lower levels in the friend condition. Even after controlling for relationship length, global need satisfaction, and trait similarity between respondents and their target friends, relationship need satisfaction significantly moderated the results and was associated with similarly high MPFC activity across the self and friend conditions.

The results of Di Domenico et al. (2022) suggest that the MPFC differentially represents others on the basis of the need satisfaction experienced within the relationship. Greater relationship need satisfaction was associated with greater self-friend overlap within the MPFC. These findings correspond with what we know about relationship closeness (e.g., Philippe, Koestner, & Lekes, 2013). The study also converges with other relationship research (e.g., Aron et al., 2013) showing that people expand their self-concept to include representations of others with whom they have close relationships. Indeed, within SDT, Deci et al. (2006) found that perceived need support from a close friend predicted the extent to which people incorporate that friend into their self-concept. The functional significance of this "MPFC self-other overlap" is now waiting to be further understood. A natural question for future work is whether this MPFC activity overlap mediates the link between relationship need fulfillment and positive relationship outcomes.

## Conceptualizing Integrative Processes in the Brain

Neuroscience research on integrative processes within SDT is still nascent and has been pursued in several research directions, including intrinsic motivational processes, resolution of decisional conflicts, memory integration, and mindfulness, to name a few. In attempting to model the neurophysiological systems that comprise the various integrative processes associated with healthy development, SDT researchers need not go it alone because important insights from functional neuroimaging research in other domains of psychological science are ready to be adopted (see also Reeve & Lee, 2019).

Research on memory systems is particularly useful in this regard. Not only is memory a subsidiary cognitive phenomenon upon which integrative processes clearly depend, but there is much consensus among memory researchers about the manner in which distinct neural structures work together to mediate specific types of memory processes. Cabenza and Moscovitch (2013) pointed out that researchers generally conceptualize different memory processes as being supported by distinct groupings of neural regions that orchestrate specific cognitive operations. Importantly, individual brain regions often contribute to different component systems. The way they do so depends on their interactions with other regions within a functional network. Cabenza and Moscovitch (2013, p. 52) called these functional networks *process-specific alliances* (PSAs):

> A PSA is small group of brain regions working together to achieve a cognitive process. This small "team" is rapidly assembled in response to task demands and is rapidly disassembled when no longer needed. Thus, we view PSAs as flexible, temporary, and opportunistic. . . . An example of a PSA in the episodic memory domain is the [ventral lateral prefrontal cortex] VLPFC-hippocampus alliance assumed to mediate the encoding of new information into episodic memory (Simons & Spiers, 2003). During the process, the VLPFC is assumed to process and organize incoming information, which is stored in the hippocampus (Moscovitch, 1992). Thus, each component of a PSA has its own function, but together they mediate a more complex operation. An example of a PSA in the emotion domain is the VLPFC-amygdala alliance mediating emotion regulation (Ochsner & Gross, 2005): The amygdala responds relatively automatically to emotional stimuli, but the VLPFC can dampen this activity to prevent alteration of behavioral goals. . . . Although the same brain region is likely to mediate a similar function in different PSAs (e.g., a control function for the VLPFC), the way this function is applied varies depending on the PSA (e.g., control of memory vs. control of emotion).

The interaction between the dorsal ACC and MPFC during personal decision-making, described earlier, when we reviewed the study by Di Domenico et al. (2016), is an example of a PSA. When people are asked to make decisions on the basis of their personal preferences, they must mobilize a PSA, within which the dorsal ACC is believed to play a conflict-monitoring function and the MPFC is believed to play an executive role, namely, the recruitment of self-knowledge that helps resolve conflicts. Similarly, when we reviewed Di Domenico et al. (2016), we considered the MPFC as a component in a broader network of cortical midline structures that are recruited during self-reflection processes; in that context, MPFC activity was assumed to reflect the degree of self-relevance attributed to specific mental representations.

Thus, rather than a theory about a particular neural system, process, or region that subserves all aspects of integrated functioning, it is likely that researchers will find themselves on surer footing by constructing PSA models that address specific integrative processes. Importantly, a PSA orientation in no way contradicts SDT's organismic tenets of holism and organization; rather, PSAs refer to the type of "working together" or coordination within and among the multiple functional unities that comprise an organism (Ryan et al., 1997, p. 704). As Cabenza and Moscovitch (2013, p. 53) argued, PSAs are the building blocks for theories of cognition because to understand "any given cognitive act, it is necessary to identify the separate components that mediate it and appreciate the nature of their interaction." We believe neuroscience studies will be optimally disposed to inform and elaborate previous work in SDT by articulating PSAs and venturing hypotheses about the elemental cognitive processes that they support to comprise specific aspects of integrated functioning.

Being mindful of our reverse inference (Poldrack, 2006), we may hazard the hypotheses that conflict monitoring during personal decision-making and the processing of self-relevance during self-reflection are two such elemental components of integrated functioning. The MPFC, a key region in processing information about the self, contributes to the PSAs theorized to support these two aspects of integrated functioning. However, the meaning of its activity during neuroimaging is most precisely interpreted within the context of its respective interactions with other neural structures.

Given that SDT is a widely practiced framework, the question of how neuroscience methods may be used in more applied research is also important. Much of the discussion in this chapter has focused on "brain mapping," that is, traditional neuroimaging research in which the neural correlates of various motivational phenomena are examined. However, for work in applied settings, research on integration may also benefit from adopting a "brain-as-predictor" approach (Berkman & Falk, 2013). Studies using the brain-as-predictor approach use task-related brain activations, often obtained in a laboratory, to predict real-world outcomes. This research strategy may be useful for both advancing our knowledge of the neurobiological substrates of integrative processes and developing a more nuanced understanding of how integrative processes help people function in more effective and vital ways.

## Concluding Thoughts

In this chapter, we reviewed studies examining the neurobiological correlates of integrative functioning. These studies took as their starting point the "bottom-up" view that integrative processes represent the operation of real brain systems that produce measurable biological events. SDT aspires to more deeply describe the integrative processes assumed to lie behind active self-development, in all their complexity, as both psychological and biological phenomena.

# References

Angyal, A. (1941). *Foundations for a science of personality*. Commonwealth Fund.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*, 469–480. doi:10.1037//0003-066X.55.5.469

Aron, A., Lewandowski, G. W., Jr., Mashek, D., & Aron, E. N. (2013). The self-expansion model of motivation and cognition in close relationships. In J. A. Simpson & L. Campbell (Eds.), *Oxford library of psychology: The Oxford handbook of close relationships* (pp. 90–115). Oxford University Press.

Berkman, E. T., & Falk, E. B. (2013). Beyond brain mapping: Using neural measures to predict real-world outcomes. *Current Directions in Psychological Science*, *22*, 45–50. doi:10.1177/0963721412469394

Blasi, A. (1976). Concept of development in personality theory. In J. Loevinger (Ed.), *Ego development: Conceptions and theories* (pp. 29–67). Jossey-Bass.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*, 822–848. doi:10.1037/0022-3514.84.4.822

Cabenza, R., & Moscovitch, M. (2013). Memory systems, processing modes, and components: Functional neuroimaging evidence. *Perspectives on Psychological Science*, *8*, 49–55. doi:10.1177/1745691612469033

Cacioppo, J. T., & Tassinary, L. G. (1990). Inferring psychological significance from physiological signals. *American Psychologist*, *45*, 16–28. doi:10.1037/0003-066X.45.1.16

Cronbach, L. J. (1949). *Essentials of psychological testing*. Harper and Row.

D'Argembeau, A. (2013). On the role of the ventromedial prefrontal cortex in self-processing: The valuation hypothesis. *Frontiers in Human Neuroscience*, *7*, 372. doi:10.3389/fnhum.2013.00372

D'Argembeau, A., Feyers, D., Majerus, S., Collette, F., Van der Linden, M., Maquet, P., & Salmon, E. (2008). Self-reflection across time: Cortical midline structures differentiate between present and past selves. *Social Cognitive & Affective Neuroscience*, *3*, 244–252. doi:10.1093/scan/nsn020

D'Argembeau, A., & Salmon, E. (2012). The neural basis of semantic and episodic forms of self-knowledge: Insights from functional neuroimaging. *Advances in Experimental Medicine and Biology*, *739*, 276–290. doi:10.1007/978-1-4614-1704-0_18

D'Argembeau, A., Stawarczyk, D., Majerus, S., Collette, F., Van der Linden, M., & Salmon, E. (2010). Modulation of medial prefrontal and inferior parietal cortices when thinking about past, present, and future selves. *Social Neuroscience*, *5*, 187–200. doi:10.1080/17470910903233562

Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the benefits of giving as well as receiving autonomy support: Mutuality in close friendships. *Personality and Social Psychology Bulletin*, *32*, 313–327. doi:10.1177/0146167205282148

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.

Denny, B. T., Kober, H., Wager, T. D., & Ochsner, K. N. (2012). A meta-analysis of functional neuroimaging studies of self- and other judgments reveals a spatial gradient for mentalizing in medial prefrontal cortex. *Journal of Cognitive Neuroscience*, *24*, 1742–1752. doi:10.1162/jocn_a_00233

Di Domenico, S. I., Fournier, M. A., Ayaz, H., & Ruocco, A. C. (2013). In search of integrative processes: Basic psychological need satisfaction predicts medial prefrontal activation during decisional conflict. *Journal of Experimental Psychology: General*, *142*, 967. doi:10.1037/a0030257

Di Domenico, S. I., Fournier, M. A., Rodrigo, A. H., Dong, M., Ayaz, H., & Ruocco, A. C. (2018). Need fulfillment and the modulation of medial prefrontal activity when judging remembered past, perceived present, and imagined future identities. *Self and Identity*, *17*, 259–275. doi:10.1080/15298868.2017.1327452

Di Domenico, S. I., Fournier, M. A., Rodrigo, A. H., Dong, M., Ayaz, H., Ryan, R. M., & Ruocco, A. C (2022) Medial prefrontal activity during self-other judgments is modulated by relationship need fulfillment, *Social Neuroscience*, *17*, 236–245. doi:10.1080/17470919.2022.2074135

Di Domenico, S. I., Le, A., Liu, Y., Ayaz, H., & Fournier, M. A. (2016). Basic psychological needs and neurophysiological responsiveness to decisional conflict: An event-related potential study of integrative self processes. *Cognitive, Affective & Behavioral Neuroscience*, *16*, 848–865. doi:10.3758/s13415-016-0436-1

Di Domenico, S. I., Rodrigo, A. H., Dong, M., Fournier, M. A., Ayaz, H., Ryan, R. M., & Ruocco, A. C. (2019). Functional near-infrared spectroscopy: Proof of concept for its application in social neuroscience. In H. Ayaz, & F. Dehais (Eds.) *Neuroergonomics* (pp. 169–173). Academic Press.

Di Domenico, S. I., & Ryan, R. M. (2017). The emerging neuroscience of intrinsic motivation: A new frontier in self-determination research. *Frontiers in Human Neuroscience*, *11*, 145.

Duriez, B., Luyckx, K., Soenens, B., & Berzonsky, M. (2012). A process-content approach to adolescent identity formation: Examining longitudinal associations between identity styles and goal pursuits. *Journal of Personality*, *80*, 135–161. doi:10.1111/j.1467-6494.2011.00729.x

Freud, S. (1960). *The ego and the id*. Norton. (Original work published 1927)

Gergen, K. J. (1991). *The saturated self: Dilemmas of identity in contemporary life*. Basic Books.

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment*, *4*, 26–42. https://doi.org/10.1037/1040-3590.4.1.26

Hartmann, H. (1958). *Ego psychology and the problem of adaptation* (D. Rapaport, Trans.) International Universities Press.

Hicks, S. R. C. (2004). *Explaining postmodernism: Skepticism and socialism from Rousseau to Foucault*. Scholargy Publishing.

Hirsh, J. B., Mar, R. A., & Peterson, J. B. (2012). Psychological entropy: A framework for understanding uncertainty-related anxiety. *Psychological Review*, *119*, 304–320. doi:10.1037/a0026767

Jacobs, B., Schall, M., Prather, M., Kapler, E., Driscoll, L., Baca, S., Jacobs, J., Ford, K., Wainwright, M., & Treml, M. (2001). Regional dendritic and spine variation in human cerebral cortex: A quantitative Golgi study. *Cerebral Cortex 11*, 558–571. doi:10.1093/cercor/11.6.558

Lee, W., & Reeve, J. (2013). Self-determined, but not non-self-determined, motivation predicts activations in the anterior insular cortex: An fMRI study of personal agency. *Social Cognitive Affective Neuroscience*, *8*, 538–545. doi:10.1093/scan/nss029

Levesque, C., & Brown, K. W., (2007). Mindfulness as a moderator of the effect of implicit motivational self-concept on day-to-day behavioral motivation. *Motivation and Emotion*, *31*, 284–299. doi.org/10.1007/s11031-007-9075-8

Loevinger, J. (1976). *Ego development: Conceptions and theories*. Jossey-Bass.

Luyckx, K., Vansteenkiste, M., Goossens, L., & Duriez, B. (2009). Basic need satisfaction and identity formation: Bridging self-determination theory and process-oriented identity research. *Journal of Counseling Psychology*, *56*, 276–288. doi:10.1037/a0015349

Maddock, R. J., Garrett, A. S., Buonocore, M. H. (2001). Remembering familiar people: the posterior cingulate cortex and autobiographical memory retrieval. *Neuroscience*, *104*, 667–76. doi:10.1016/s0306-4522(01)00108-7.

Martinelli, P., Sperduti, M., & Piolino, P. (2013). Neural substrates of the self-memory system: New insights from a meta-analysis. *Human Brain Mapping*, *34*, 1515–1529. doi:10.1002/hbm.22008

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, *102*, 246. doi:10.1037/0033-295X.102.2.246

Moran, J. M., Kelley, W. M., & Heatherton, T. F. (2013). What can the organization of the brain's default network tell us about self-knowledge. *Frontiers in Human Neuroscience*, *7*, 391. doi:10.3389/fnhum.2013.003931

Moran, J. M., Macrae, C. N., Heatherton, T. F., Wyland, C. L., & Kelley, W. M. (2006). Neuroanatomical evidence for distinct cognitive and affective components of self. *Journal of Cognitive Neuroscience*, *18*, 1586–1594. doi:10.1162/jocn.2006.18.9.1586

Moscovitch, M. (1992). Memory and working-with-memory: Evaluation of a component process model based on modules and central systems. *Journal of Cognitive Neurosciences*, *4*, 257–267. doi:10.1162/jocn.1992.4.3.257

Nakao, T., Osumi, T., Ohira, H., Kasuya, Y., Shinoda, J., & Yamada, J. (2009). Neural bases of behavior selection without an objective correct answer. *Neuroscience Letters*, *459*, 30–34. doi:10.1016/j.neulet.2009.04.056

Nakao, T., Osumi, T., Ohira, H., Kasuya, Y., Shinoda, J., Yamada, J., & Northoff, G. (2010). Medial prefrontal cortex-dorsal anterior cingulate cortex connectivity during behavior selection without an objective correct answer. *Neuroscience Letters*, *482*, 220–224. doi:10.1016/j.neulet.2010.07.041

Nakao, T., Mitsumoto, M., Nashiwa, H., Takamura, M., Tokunaga, S., Miyatani, M., Ohira, H., Katayama, K., Okamoto, A., & Watanabe, Y. (2010). Self-knowledge reduces conflict by biasing one of plural possible answers. *Personality and Social Psychology Bulletin*, *36*, 455–469. doi:10.1177/0146167210363403

Nakao, T., Takezawa, T., Shiraishi, M., & Miyatani, M. (2009). Activation of self-knowledge reduces conflict during occupational choice: An ERP study. *International Journal of Neuroscience*, *119*, 1640–1654. doi:10.1080/00207450802336790

Northoff, G., & Bermpohl, F. (2004). Cortical midline structures and the self. *Trends in Cognitive Science*, *8*, 102–107. doi:10.1016/j.tics.2004.01.004

Northoff, G., Heinzel, A., de Greck, M., Bermpohl, F., Dobrowolny, H., & Panksepp, J. (2006). Self-referential processing in our brain—A meta-analysis of imaging studies on the self. *Neuroimage*, *31*, 440–457. doi:10.1016/j.neuroimage.2005.12.002

Nunberg, H. (1931). The synthetic function of the ego. *International Journal of Psychoanalysis*, *12*, 123–140.

Ochsner, K. N., & Gross, J. J. (2005). The cognitive control of emotion. *Trends in Cognitive Sciences*, *9*, 242–249. doi:10.1016/j.tics.2005.03.010

Ongur, D., Ferry, A. T., & Price, J. L. (2003). Architectonic subdivision of the human orbital and medial pre-frontal cortex. *Journal of Comparative Neurology*, *460*, 425–449. doi:10.1002/cne.10609

Panksepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions*. Oxford University Press.

Philippe, F. L., Koestner, R., & Lekes, N. (2013). On the directive function of episodic memories in people's lives: A look at romantic relationships. *Journal of Personality and Social Psychology*, *104*(1), 164–179. https://doi.org/10.1037/a0030384

Poldrack, R. A. (2006). Can cognitive processes be inferred from neuroimaging data? *Trends in Cognitive Sciences*, *10*, 59–63. doi:10.1016/j.tics.2005.12.004

Reeve, J., & Lee, W. (2019) Motivational neuroscience. In R. Ryan (Ed.), *Oxford handbook of human motivation* (2nd ed., pp. 355–372). Oxford University Press.

Reisberg, D. (2006). *Cognition: Exploring the science of mind* (3rd ed.). W. W. Norton.

Rogers, C. R. (1951). *Client-centered therapy: Its current practice, implications, and theory*. Houghton Mifflin.

Ryan, R. M. (1993). Agency and organization: Intrinsic motivation, autonomy and the self in psychological development. In J. Jacobs (Ed.), *Nebraska Symposium on Motivation: Developmental perspectives on motivation* (Vol. 40, pp. 1–56). University of Nebraska Press.

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, *63*, 397–427. doi:10.1111/j.1467-6494.1995.tb00501.x

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., Deci, E. L., Vansteenkiste, M., & Soenens, B. (2021). Building a science of motivated persons: Self-determination theory's empirical approach to human experience and the regulation of behavior. *Motivation Science*, *7*, 97–110. doi.org/10.1037/mot0000194

Ryan, R. M., & Di Domenico, S. I. (2016). Distinct motivations and their differentiated mechanisms: Reflections on the emerging neuroscience of human motivation. In S. Kim, J. Reeve, and M. Bong (Eds.), *Advances in motivation and achievement: Recent developments in neuroscience research on human motivation* (pp. 349–369). Emerald Group.

Ryan, R. M., Kuhl, J., & Deci, E. L. (1997). Nature and autonomy: Organizational view of social and neurobiological aspects of self-regulation in behavior and development. *Development and Psychopathology*, *9*, 701–728. doi:10.1017/S09545794970014056494.2009.00589.x

Schmitz, T. W., & Johnson, S. C. (2007). Relevance to self: A brief review and framework of neural systems underlying appraisal. *Neuroscience and Biobehavioral Reviews*, *31*, 585–596. doi:10.1016/j.neubiorev.2006.12.003

Simons, J. S., & Spiers, H. J. (2003). Prefrontal and medial temporal lobe interactions in long-term memory. *Nature Reviews Neuroscience*, *4*, 637–648. doi:10.1038/nrn1178

van der Meer, L., Costafreda, S., Aleman, A., & David, A. S. (2010). Self-reflection and the brain: A theoretical review and meta-analysis of neuroimaging studies with implications for schizophrenia. *Neuroscience & Behavioral Reviews*, *34*, 935–946. doi:10.1016/j.neubiorev.2009.12.004

Wagner, D. D., Haxby, J. V., & Heatherton, T. F. (2012). The representation of self and person knowledge in the medial prefrontal cortex. *Wiley Interdisciplinary Reviews: Cognitive Science*, *3*, 451–470. doi:10.1002/wcs.1183

Weinstein, N., Brown, K. W., & Ryan, R. M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal of Research in Personality*, *43*, 374–385. doi:10.1016/j.jrp.2008.12.008

Weinstein, N., Deci, E. L., & Ryan, R. M. (2011). Motivational determinants of integrating positive and negative past identities. *Journal of Personality and Social Psychology*, *100*, 527–544. doi:10.1037/a0022150

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2013). The integrative process: New research and future directions. *Current Directions in Psychological Science*, *22*, 69–74. doi:10.1177/0963721412468001

Winnicott, D. W. (1965). *The maturational process and the facilitating environment*. International Universities Press.

# Self-Determination Theory as the Science of Eudaimonia and Good Living: Promoting the Better Side of Human Nature

Frank Martela

## Abstract

What makes life good, and what should we ultimately strive for in order to have a valuable and flourishing existence? One of the key appeals of self-determination theory (SDT) is that it provides an empirical research program that can illuminate many of the fundamental issues revolving around the question of good living. Within SDT, eudaimonia is seen as a way of living characterized by intrinsic goals, autonomous motivation, and psychological need satisfaction that are all conducive to produce subjective well-being. This chapter reviews how SDT defines eudaimonia, the role of psychological needs in eudaimonia, and what empirical research tells us about more eudaimonic motives and activities for human beings. It concludes by discussing prosocial motivation and the crucial role of social contexts in nurturing or thwarting basic psychological needs, thus significantly affecting whether the brighter or darker side of human nature becomes prominent, and whether the person is able to flourish.

**Key Words:** basic psychological needs, eudaimonia, eudaimonic well-being, good life, flourishing, self-determination theory, well-being

## Introduction

What makes life good? What should we ultimately seek out in life to have a valuable, significant, and flourishing existence? Or, as Aristotle (2012, p. 2 [1094a: 18]) asked, what is "some end of our actions that we wish for an account of itself, the rest being things we wish for on account of this end"? These are the key questions of eudaimonia, understood as the art of good living. From ancient philosophers to modern psychologists, myriad thinkers have sought to answer these grand questions of life, providing many important insights on how to live. And for good reason: to paraphrase Camus (1955), examining how life becomes worth living amounts to answering the fundamental question of human existence.

The current renaissance of interest in eudaimonia, meaning, and the science of good living stems from a few historical developments. The modern individualistic worldview

has left it increasingly up to the individual to decide what to value and pursue in life (Baumeister, 1987; Taylor, 1991). Instead of shared traditions and religion providing us with an overarching cultural framework with clear norms, values, and goals to pursue, modernism has freed us to choose what to believe in, what to pursue in life, and, ultimately, who to become (MacIntyre, 1984; Martela, 2020). This has liberated us from the often oppressive and intolerant "bonds of pre-individualistic society," but the lack of clear answers to fundamental questions of life has left many feeling isolated, anxious, without direction, and in a desperate search for any guiding framework (Fromm, 1965, p. viii). On a societal level, politics after World War II focused on GDP growth with the implicit assumption that the expanding pie would ultimately give more to everyone (Coyle, 2014). In recent decades, the dominance of GDP as the measuring stick of societal progress has been increasingly challenged for being blind to detrimental environmental effects, increased inequality, and those fundamentally important human goods that don't have a market value, such as security and safety, autonomy and freedom from oppression, and high-quality human relationships (Costanza et al., 2014; Hoekstra, 2019; OECD, 2013; Stiglitz, Fitoussi, & Durand, 2018). The fact that constantly increasing material wealth and consumerism hasn't necessarily yielded the expected rise in happiness or well-being (Clark, Frijters, & Shields, 2008; Jebb et al., 2018; Kasser et al., 2007) has left many disillusioned, searching for better ways of living and arranging our societies. This is thus the fundamental question for our current era: What is the good life we should pursue as individuals and promote as societies?

One of the key appeals of self-determination theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2017) is the fact that it provides an empirical research program providing much clarity around many of the fundamental issues revolving around this grand question. By distinguishing between more autonomous and controlled forms of motivation, by identifying more intrinsic and extrinsic types of goals, by aiming to discern the basic psychological needs shared by all humans, and through examinations of what contexts nurture and what contexts thwart human flourishing and well-being, SDT has been able to provide crucially important insights into our shared human nature and the situations, behaviors, and goals that promote the wellness, growth, and flourishing of creatures like us. Besides being an empirical inquiry into human psychology, SDT is thus also very much an attempt to understand what is the human good—in other words, what is the good life for us humans.

During its decades of research, SDT has approached the eudaimonic questions from many angles, many of which are reviewed in other chapters of this book. Here I will focus on a few topics most directly relevant for understanding the links between eudaimonia and SDT. First, the nature of the concept of eudaimonia has received much attention from SDT researchers (e.g. Deci & Ryan, 2008; Ryan, Huta, & Deci, 2008; Ryan & Deci, 2001; Ryan & Martela, 2016). Thus, we need to start by examining what is meant by *eudaimonia,* both in general and within SDT. Having defined eudaimonia, I

will examine the role of the basic psychological needs as key elements and indicators of more eudaimonic ways of living, and more broadly review what empirical research currently tells us about the more eudaimonic motives and activities. Given the importance of prosocial motivations and activities in characterizations of eudaimonia, this will include a review of the research linking prosocial behavior with SDT (e.g., Martela & Ryan, 2016a, 2020; Weinstein & Ryan, 2010). I will conclude the chapter with a discussion on the bright and dark sides of human nature and how nurturing the basic psychological needs in our development can play a crucial role in determining whether the better angels of our nature will be able to flourish in our motivations and in our behaviors, thus making more eudaimonic ways of living possible.

## Defining Eudaimonia as a Way of Living

Eudaimonia is a concept we have inherited from ancient Greek philosophers, in particular Aristotle. For people of that era, eudaimonia denoted a "broad idea of a life's going well" and the kind of life all people sought to live (Annas, 1995, p. 44). There were many competing ideas about what this *life well lived* consisted of, some emphasizing honor and fulfillment of social roles, others material prosperity, still others health, pleasure, or living according to virtues. But it was Aristotle (2012) who, in his *Nicomachean Ethics,* laid out the first systematic work on eudaimonia.

Aristotle believed that every living being has a *telos,* some ultimate good that it naturally strives to actualize. The purpose of the eye is to see well; the purpose of the horse is to run and carry the rider well. Thus, in identifying the characteristic human good, we must examine what is specific about human nature. Here, Aristotle saw that what separates us from animals is our ability to live in accord with reason, and the most complete way to live according to reason was to live virtuously. Thus Aristotle (2012, p. 23) arrived at his famous conclusion that eudaimonia is about a "certain activity of soul in accord with complete virtue." The bulk of his investigation is then devoted to identifying the virtues specific to human beings, which include personal excellences such as courage, moderation, and the greatness of soul, and other-oriented virtues such as friendliness, justice, and truthfulness. Aristotle thus saw that we fulfill our human nature by living virtuously, so a life characterized by living according to the personal and civic virtues is how we come to live in a eudaimonic way.

Eudaimonia entered the psychological discourse in the 1990s and 2000s as a way of expanding ideas about human well-being from narrow hedonic concerns to better take into account themes such as growth, virtue, human nature, and actualization of human potential (Ryan & Deci, 2001; Waterman, 1993). The literature on eudaimonia and eudaimonic well-being is expansive (reviewed in Heintzelman, 2018; Huta, 2016; Kashdan, Biswas-Diener, & King, 2008), but three distinct approaches can be identified (Martela & Sheldon, 2019): objectivism, an emphasis on the hedonic versus eudaimonic distinction, and a focus on eudaimonic activity.

First, the *objectivists* claim that eudaimonia is not about any subjective feelings but rather refers to specific objective qualities of a life (see, e.g., Haybron, 2008; Kristjánsson, 2010). There are certain key qualities inherent to good living, and when those qualities are present in a person's way of living, that life is seen as eudaimonistic—no matter how the person in question is feeling. Objectivists are thus "trying to give accounts of what it is to live well" rather than provide a theory of well-being (Haybron, 2008, p. 171).

Second, those emphasizing *the hedonic versus eudaimonic distinction* argue that such a distinction can be drawn on many different levels: there are hedonic and eudaimonic motives, hedonic and eudaimonic activities, hedonic and eudaimonic relationships, as well as hedonic and eudaimonic feelings (e.g., Huta, 2016; Huta & Waterman, 2014). Hedonic motives, activities, and feelings revolve around pleasure and comfort, while eudaimonic motives, activities, and feelings revolve around authenticity, meaning, excellence, and growth. The idea is that eudaimonic motives would lead to eudaimonic activities, which would lead to eudaimonic feelings, with an analogous chain operant on the hedonic side (Huta, 2016; Huta & Waterman, 2014). Already Aristotle (2012) thought that different activities are associated with different types of pleasures, recommending especially the pleasures associated with contemplation.

Third, those focusing on *eudaimonic activity* argue that eudaimonia is mainly a matter of motives and activities, some of which exhibit more eudaimonic qualities (Ryan et al., 2008; Ryan & Martela, 2016; Sheldon, 2016). This is the approach with which SDT is most closely aligned. In accord with the ancient Greeks, eudaimonia is thus not a subjective experience but is primarily about a certain way of living. Given our shared human nature, "there are certain ways of living that are more conducive to, and reflective of a good life and a well person" (Ryan & Martela, 2016, p. 110). Eudaimonia should thus be primarily understood as *a good and fulfilling way of life,* focusing on a person's motives and actions in life (Annas, 1995; Martela & Sheldon, 2019; Ryan, Curren, & Deci, 2013).

Well-being, in this account, is seen as something that a eudaimonic way of living typically produces. In contrast to those emphasizing the distinction between hedonic and eudaimonic well-being, subjective well-being is thus not juxtaposed with "eudaimonic well-being." Rather subjective well-being is seen as a *key outcome* of eudaimonic activity (Martela & Sheldon, 2019; Ryan & Martela, 2016; Sheldon, 2016). Eudaimonia is not "a special type of immediate experience" or a "deeper, richer feeling of happiness" (Ryan & Martela, 2016, p. 111) but focuses on "the functions and processes through which subjective states accrue" (Ryan & Huta, 2009, p. 203). Living well and eudaimonically tends to produce positive subjective experiences, including not only joy and pleasure but also experiences of vitality, meaning, connection, and growth. However, happiness is not the primary aim of the eudaimonic activities, but rather a byproduct of living well. Living eudaimonically is rewarding and valuable as such, so it should not be reduced to mere production of positive feelings.

Having said that, empirically examining what motives and activities actually bring forth sustainable happiness and well-being is key to identifying the more eudaimonic motives and activities (Sheldon, 2016, 2018). What empirical research tells us is that the motives and activities typically seen as eudaimonic and virtuous tend to lead to well-being (Huta & Ryan, 2010; Sheldon, Corcoran, & Prentice, 2019). A eudaimonic way of living thus typically *causes* subjective well-being, but it is not a *type* of subjective well-being (Ryan et al., 2008). This was also how Aristotle (2012, p. 16) thought about eudaimonia: the actions in accord with virtue are not only "good as well as noble" in themselves but also pleasant, and thus "feeling pleasure" is an outcome of living eudaimonically.

## The Eudaimonic Activity Model

A further point of convergence between Aristotle's and SDT's view on eudaimonia is the emphasis on human nature in identifying what is good for us humans. Living according to the virtues was a central part of eudaimonia for Aristotle because they presented "the activity and hence the way of life that are best for human beings as such, as the kind of beings we are" (Bartlett & Collins, 2012, p. x). In this spirit, research within SDT has emphasized that the satisfaction of human psychological needs is a key indicator of eudaimonic activity. According to SDT, there are certain basic psychological needs, the fulfillment of which is essential for human wellness, integrity, and growth (Deci & Ryan, 2000; Ryan & Deci, 2017), mediating the effects of more distal behavioral and contextual factors upon subjective well-being, and explaining a large proportion of variance in subjective well-being and other well-being indicators, such as work engagement (Van den Broeck et al., 2008, 2016), vitality (Ryan, Bernstein, & Brown, 2010; Ryan & Frederick, 1997), and meaningfulness (Martela, Ryan, & Steger, 2018; Martela & Riekki, 2018). Given that the three needs for autonomy, competence, and relatedness are deeply integrated in our human nature, "the fulfillment of these three needs is an experiential sign that the person in question has been able to create a life yielding the nutrients most required by human nature" (Ryan & Martela, 2016, p. 112). As universally important "nutrients" for the psychological health and well-being of the person, their satisfaction is arguably a key feature of more eudaimonic ways of living.

Living in concordance with our basic human nature by having our needs for autonomy, competence, and relatedness met is thus, according to SDT, a key marker of eudaimonic activity and more eudaimonic ways of living. Accordingly, building on previous conceptualizations within SDT (Ryan et al., 2008; Ryan & Huta, 2009; Sheldon, 2016, 2018), Martela and Sheldon (2019) recently presented a model of eudaimonic activity and well-being (see Figure 15.1) that presents a process view of well-being with three separate categories. First, as emphasized by the eudaimonic activity approach, eudaimonia is about "doing well" rather than "feeling well," thus being centrally about various eudaimonic motives and activities such as the pursuit of intrinsic goals and aspirations. Second, these eudaimonic motives and activities tend to lead to "feeling well" in the sense of producing
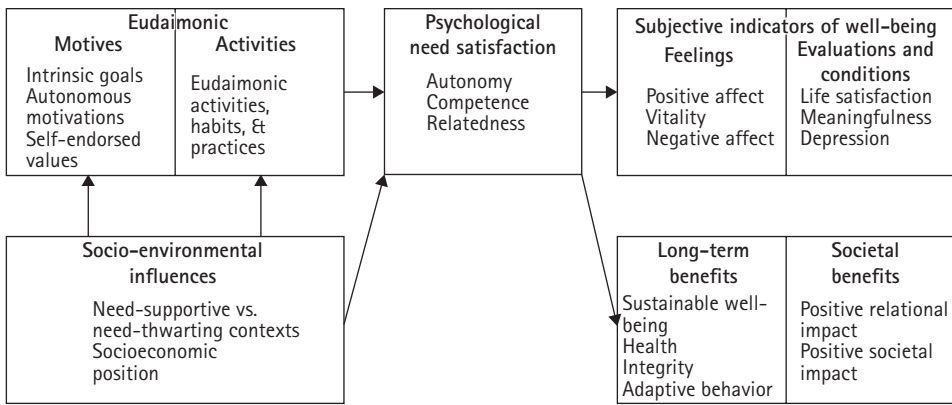
**Figure 15.1** The extended eudaimonic activity model (building on the eudaimonic activity model in Martela & Sheldon, 2019)

subjectively experienced well-being. Third, the relation between eudaimonic activities and subjective well-being is typically mediated by the satisfaction of basic psychological needs, which represent the universal aspects of what living well means for the kind of organism we humans are. SDT thus emphasizes how the influence of eudaimonic motives and activities on well-being typically flows through psychological need satisfaction. Eudaimonia in this model thus comes to be understood as a way of living consisting of motives and activities that are in congruence with human good and that tend to satisfy our basic psychological needs and lead to well-being. We can thus identify eudaimonic activity by examining its effect on psychological need satisfaction and subjective well-being.

Note however, that in Figure 15.1 I wanted to highlight two additional features besides the main path in the upper row. *First*, the institutional and social contexts we are embedded in significantly influence our motives, activities, need satisfaction, and well-being. We'll return to this theme in the last section of this chapter, but it is crucial to emphasize here that instead of seeing eudaimonic living as being completely up to individual choice, we should never forget how the broader social context can support or thwart the opportunities an individual has to live eudaimonically and experience need satisfaction and well-being.

*Second*, although the potential well-being benefits are arguably one crucially important way of identifying more eudaimonic motives and activities, "there are other things that should be considered when evaluating a life as more or less eudaimonic" (Ryan & Martela, 2016, p. 113). Of these, I want to highlight (1) the long-term individual benefits and (2) the societal benefits. Most important, we should examine not only what activities cause immediate well-being benefits but also what activities provide sustainable well-being for the individual. Eudaimonic ways of living should be broadly good for the person, supporting one's growth, integrity, health, and wellness in the longer term. While hedonic orientations have been associated with positive affect (e.g., Huta & Ryan, 2010),

eudaimonic orientations should be associated with longer-term well-being and coping (Giuntoli et al., 2021).

Furthermore, eudaimonic living should not be strictly self-focused, as *a life well lived* is also about one's place within and contribution to the society and wider world around oneself (Pearce, Huta, & Voloaca, 2021). In identifying the more eudaimonic ways of living, we should also examine what motives and activities allow one to live in harmony with and contribute to one's social context. Accordingly, while experienced well-being is one of the key symptoms of good ways of living, we should also look at the societal impact of various ways of living to identify the truly eudaimonic motives, goals, activities, and practices.

I am thus arguing that when considering whether certain motives and activities are eudaimonic, at least three dimensions should be considered: (1) whether they bring well-being to the individual carrying them out, (2) whether they are individually sustainable in the sense of having beneficial long-term consequences for the individual, and (3) whether they are socially sustainable in the sense of having beneficial consequences for the people and society around the individual. Purely hedonic activities such as eating junk food might bring joy in the short term but are not good for the individual in the long term. Some other activities might be good for the individual but socially harmful. Eudaimonia requires a more holistic assessment of the activity and its outcomes for the individual and the larger society. Eudaimonia as a way of living is thus constituted by motives and activities that produce well-being in a personally and socially sustainable way.

## What Empirical Research Reveals about Eudaimonic Motives and Activities

Defining eudaimonia as a good way of living conducive to wellness—as focusing on "the process of living well" (Ryan et al., 2008, p. 139)—allows us to see how much of research within SDT already contributes to this aim of identifying what are the motives, activities, and ways of living that are eudaimonic in nature.

**Psychological need satisfaction.** First, as noted above, research on basic psychological needs theory is directly relevant in identifying the organismic, universally shared requirements for good living for us humans (Martela, 2018). The psychological needs mediate the influence of various environmental factors and activities on well-being, and their satisfaction should be seen as a key criterion for more eudaimonic ways of living (Martela & Sheldon, 2019; Ryan et al., 2008).

**Intrinsic goals**. Second, research on goal contents theory has distinguished between intrinsic goals (e.g., pursuit of personal growth, relationships, and contributing to community) and extrinsic goals (e.g., pursuit of wealth, fame, and image), demonstrating that the former are associated with well-being while the latter have neutral or even negative relations with well-being (Grouzet et al., 2005; Kasser & Ryan, 1993, 1996; Martela, Bradshaw, & Ryan, 2019; Niemiec, Ryan, & Deci, 2009). This research stream is thus

directly relevant in identifying what are the more eudaimonic goals we should pursue in life if we are interested in our wellness.

**Autonomous motivation.** Similarly, both organismic integration theory (Pelletier & Rocchi, this volume) and causality orientations theory (Koestner & Levine, this volume) can help us to identify the more eudaimonic forms of motivations humans can have for their actions, as these theories have demonstrated the well-being benefits of more autonomous and integrated forms of motivation (Deci & Ryan, 2000; Ryan & Deci, 2017). Whether action is autonomous also plays a central role in evaluations of virtuous action as being voluntary is typically one prerequisite for an action to be considered virtuous.

**Eudaimonic motives for action.** A more direct attempt within SDT to identify eudaimonic motives involves distinguishing between key hedonic motives for activities, such as pleasure, enjoyment, and comfort, and key eudaimonic motives for activities, such as authenticity, mastery, growth, and meaning (Huta & Ryan, 2010; Huta & Waterman, 2014). Later research sometimes divided hedonic motives into pleasure-oriented and relaxation-oriented (Giuntoli et al., 2021). Empirical studies examining this distinction in motives has demonstrated that while hedonically motivated activities tend to be more strongly related to positive affect and carefreeness, eudaimonic activities tend to be more strongly related to meaning and elevation (Henderson, Knight, & Richardson, 2013; Huta & Ryan, 2010). A longitudinal study found that pursuit of hedonic activities predicted more positive affect at immediate follow-up, but eudaimonic activities predicted more positive affect at three-month follow-up, thus demonstrating that the latter could be a source of more sustainable well-being (Huta & Ryan, 2010). Other research utilizing the Hedonic and Eudaimonic Motives for Activities scale has demonstrated that compared to the hedonic motives, the eudaimonic motives are associated with more adaptive coping strategies (Giuntoli et al., 2021) and higher grade point averages among college students (Kryza-Lacombe, Tanzini, & O'Neill, 2019).

**Mindfulness.** Mindfulness has been examined as a key intrapersonal process supporting self-regulation, more eudaimonic ways of living, basic need satisfaction, and wellness (Ryan et al., 2008; Ryan & Deci, 2017). Defined as open receptive awareness of what is happening both internally and externally in the present moment, mindfulness has been associated with more autonomous motivation (Brown & Ryan, 2003) and more intrinsic aspirations (Brown & Kasser, 2005). Mindfulness also allows people to cope less defensively with various stressful situations (Weinstein, Brown, & Ryan, 2009) and can buffer employee wellness against the negative impact of controlling management styles (Schultz et al., 2015). Mindfulness thus allows persons to live less defensively and more aligned with their personality and values, and more generally promotes enhanced self-regulation, thus providing an important pathway to more eudaimonic ways of living.

**Prosocial motivations and behavior.** A growing body of research has demonstrated how various forms of prosocial behavior predict well-being (reviewed in two recent meta-analyses: Curry et al., 2018; Hui et al., 2020) and even better health (e.g., Whillans et al.,

2016). Helping others and contributing to society thus seem to be important forms of eudaimonic activities, given their beneficial effects on both individual (Aknin et al., 2013, 2020; Dunn, Aknin, & Norton, 2008) and societal levels. Research within SDT has demonstrated that these well-being benefits of prosocial behavior are to a significant degree mediated through psychological need satisfaction (Martela & Ryan, 2016b; Weinstein & Ryan, 2010). However, a sense of prosocial impact seems to also have a direct positive association with well-being, not fully accounted for by the three needs (Martela et al., 2018; Martela & Ryan, 2016a). This led to speculations on whether *beneficence*—defined as a sense of prosocial impact—could be an enhancement need, with a universally positive effect on well-being (Martela & Ryan, 2020; see also Aknin et al., 2013). That is still an open question (see especially Martela & Ryan, 2020; Titova & Sheldon, 2022), but it is clear that, when identifying eudaimonic motivations and activities, prosocial motivations and prosocial behaviors should be prime candidates on any such list.

## Supporting the Better Angels of Our Nature

Thus far the emphasis of this chapter has been on identifying the more eudaimonic motives, activities, and ways of living. However, another perspective on eudaimonia asks about the conditions under which our more eudaimonic nature is able to grow into full bloom. In other words, how can we ensure life choices that are more in accordance with eudaimonic motives and basic psychological needs? We thus now return to the lower-left box of Figure 15.1, examining the environmental and societal conditions predicting more eudaimonic ways of living.

Let's start with a classic question about human nature: Are we inherently selfish and hedonically inclined, or is our basic nature more eudaimonic, prosocial, and growth-oriented? SDT is built on the assumption that "humans indeed do have a positive proclivity—if they are positively nurtured" (Ryan & Martela, 2016, p. 117). Under the right circumstances, the best of our human nature comes to the fore, and we are able to live out our more eudaimonic motives through various autonomically selected, growth-oriented, and prosocial activities (Ryan & Hawley, 2017). However, under conditions of threat, maltreatment, and chronic need frustration, the darker and more violent side of our nature gains ground, partially as an adaptive response to such harsh conditions, partially as a pathological result of them. Humans thus have both altruistic and constructive as well as egoistic and destructive dispositions, and our social surroundings play a crucial role in determining which of them is expressed (Ryan & Hawley, 2017).

SDT argues that as regards these social conditions, we should especially determine whether they are need-supportive or need-thwarting. Although the sources for antisocial behavior, violence, defensiveness, prejudice, and other darker sides of human nature are complex, "a meaningful part of the explanation for their expression lies in conditions that thwart basic psychological need satisfactions in both individual development and in broader cultural contexts" (Ryan & Deci, 2017, p. 617). For example, mothers' controlling parenting style increases children's physical aggression during elementary school,

above and beyond other known risk factors, such as the child's temperament (Joussemet et al., 2008). Similarly, prisoners who experienced prison officers as controlling reported more aggression and more irritation toward them (van der Kaap-Deeder et al., 2019). Perceiving teachers as controlling has been associated with more self-reported bullying (Montero-Carretero, Barbado, & Cervelló, 2020); perceiving parents as controlling has been associated with more self-reported cyberbullying (Legate, Weinstein, & Przybylski, 2019); competitive sports athletes perceiving their coach to be controlling report more moral disengagement and more antisocial behavior toward teammates and opponents (Hodge & Lonsdale, 2011). In virtually all of these studies, an autonomy-supportive style and psychological need satisfaction produced the opposite patterns, being associated with less antisocial behavior. For example, autonomy-supportive teaching in high school has been associated with less self-reported bullying in class (Roth, Kanat-Maymon, & Bibi, 2011). It has been argued that similar dynamics could be true at the societal level, with "harsher parenting, more brutal retaliation for crimes, and more 'eye-for-eye' mentalities" increasing rather than decreasing violence (Ryan & Deci, 2017, p. 645; Staub, 2011).

The social environment also significantly influences what we aspire to in life. Williams et al. (2000) found that the less autonomy support teenagers reported receiving from parents, the more they placed value on extrinsic, relative to intrinsic, aspirations, and the more they reported using tobacco, alcohol, and marijuana. Less nurturant parenting has been associated with teenagers having more extrinsic aspirations (Kasser et al., 1995); overall parental support has been associated with less adolescent materialism (Chaplin & John, 2010); and authoritarian parenting style has been associated with more need frustration and extrinsic life goals (Roman et al., 2015). Supporting adolescents' self-esteem, in turn, has been shown to reduce materialism (Chaplin & John, 2007). The social context thus not only affects whether we are able to achieve our aspirations but also what we aspire to in the first place.

Humans are thus not "born good" or "born evil" but rather adaptively (and sometimes pathologically) react to their environment by expressing traits and behavior necessary for functioning and survival in that environment. Thus, if we want the better angels of our nature to thrive and flourish, the political context, parenting styles, educational institutions, workplaces, and other influential environmental conditions should be autonomy-supportive and need-supportive more generally, to ensure people's capacity to function fully while pursuing more eudaimonic ways of living.

**Conclusion**

A science of eudaimonia is needed because humans as goal-oriented, intentional beings cannot be understood without understanding what they are ultimately aiming at. Thus, any scientific inquiry of humanity, be it psychological, sociological, economical, or anthropological, operates always with implicit or explicit assumptions of what humans strive for. A science of eudaimonia makes these assumptions more explicit and allows us to choose

better goals for humans to strive for, by empirically identifying those goals, motives, and activities that produce well-being in a personally and socially sustainable way.

So how to engage in more eudaimonic ways of living? The current answer provided by SDT is that you would aim to pursue intrinsic goals rather than extrinsic goals. You would ensure that your motivations for engaging in various activities are autonomous, integrated, and intrinsic rather than pressure-based and extrinsic. You would pay heed to your basic psychological needs for autonomy, competence, and relatedness to ensure that the social contexts and your activities promote rather than thwart them. Mindfulness, prosocial inclinations, and being growth-oriented are also good tools for more eudaimonic living. Mindfulness, in particular, can help you to be better in touch with your intrinsic aspirations and psychological needs.

SDT also reminds us that the ability to live in eudaimonic ways is not completely up to us but is crucially dependent on the institutional and social contexts we are embedded in. Living eudaimonically in soul-crushing schools, corporations, or other institutions is much harder than living eudaimonically in supportive and encouraging contexts. Here, there is much scientific work to be done to "critically evaluate and compare lifestyles, organizations, and cultures in terms of their support for the good life and the outcomes that accompany it" (Ryan et al., 2013, p. 69).

Identifying the constituents of good living is a valuable inquiry. In fact, what could be more significant than figuring out what are the goods we should be aiming at in life? The empirically derived insights of what fully functioning humanity comprises can then be used to build more normative theories about human good, in line with the Aristotelian vision of seeing eudaimonia as "a life of pursuing aims that are inherently worthy and admirable" (Ryan & Deci, 2017, p. 240). SDT has much to offer to the more normative, philosophical, and political discourses about what aims and values our policies and institutions ought to promote in the future (Arvanitis, 2017; Arvanitis & Kalliris, 2017; Bradshaw et al., 2021; Martela, 2018). The art of living is partly about *how to achieve* our targets and goals, a mastery of the means to get where we want to get. But to get somewhere we must first have somewhere to get. *How to choose* good targets and goals, the art of knowing what to strive for in life, is thus the question we should resolve first. This was the grand question for Aristotle more than two millennia ago. This is the grand question for our times. And as reviewed here, SDT has provided many crucial insights to these questions of eudaimonia and good living.

## References

Aknin, L. B., Barrington-Leigh, C. P., Dunn, E. W., Helliwell, J. F., Burns, J., Biswas-Diener, R., Kemeza, I., Nyende, P., Ashton-James, C. E., & Norton, M. I. (2013). Prosocial spending and well-being: Cross-cultural evidence for a psychological universal. *Journal of Personality and Social Psychology*, *104*(4), 635–652.

Aknin, L. B., Dunn, E. W., Proulx, J., Lok, I., & Norton, M. I. (2020). Does spending money on others promote happiness? A registered replication report. *Journal of Personality and Social Psychology*, *119*(2), e15–e26. https://doi.org/10.1037/pspa0000191

Annas, J. (1995). *The morality of happiness*. Oxford University Press.

Aristotle. (2012). *Nicomachean ethics* (R. C. Bartlett & S. D. Collins, Trans.). University of Chicago Press.

Arvanitis, A. (2017). Autonomy and morality: A self-determination theory discussion of ethics. *New Ideas in Psychology*, *47*, 57–61.

Arvanitis, A., & Kalliris, K. (2017). A self-determination theory account of self-authorship: Implications for law and public policy. *Philosophical Psychology*, *30*(6), 763–783.

Bartlett, R. C., & Collins, S. D. (2012). Introduction. In Aristotle, *Nicomachean ethics* (pp. vii–xiv). University of Chicago Press.

Baumeister, R. F. (1987). How the self became a problem: A psychological review of historical research. *Journal of Personality and Social Psychology*, *52*(1), 163–176.

Bradshaw, E. L., DeHaan, C. R., Parker, P., Curren, R., Duineveld, J., Di Domenico, S. I., & Ryan, R. (2021). The perceived conditions for living well: Positive perceptions of primary goods linked with basic psychological needs and wellness. *Journal of Positive Psychology*, Advance Online Publication.

Brown, K. W., & Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Social Indicators Research*, *74*(2), 349–368.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848.

Camus, A. (1955). *Myth of Sisyphus* (J. O'Brien, Trans.). Vintage Books.

Chaplin, L. N., & John, D. R. (2007). Growing up in a material world: Age differences in materialism in children and adolescents. *Journal of Consumer Research*, *34*(4), 480–493. https://doi.org/10.1086/518546

Chaplin, L. N., & John, D. R. (2010). Interpersonal influences on adolescent materialism: A new look at the role of parents and peers. *Journal of Consumer Psychology*, *20*(2), 176–184.

Clark, A. E., Frijters, P., & Shields, M. A. (2008). Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles. *Journal of Economic Literature*, *46*(1), 95–144.

Costanza, R., Kubiszewski, I., Giovannini, E., Lovins, H., McGlade, J., Pickett, K. E., Ragnarsdóttir, K. V., Roberts, D., De Vogli, R., & Wilkinson, R. (2014). Time to leave GDP behind. *Nature*, *505*(7483), 283–285. https://doi.org/10.1038/505283a

Coyle, D. (2014). *GDP—A brief but affectionate history* (revised and expanded ed.). Princeton University Press.

Curry, O. S., Rowland, L. A., Van Lissa, C. J., Zlotowitz, S., McAlaney, J., & Whitehouse, H. (2018). Happy to help? A systematic review and meta-analysis of the effects of performing acts of kindness on the well-being of the actor. *Journal of Experimental Social Psychology*, *76*, 320–329. https://doi.org/10.1016/j.jesp.2018.02.014

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268.

Deci, E. L., & Ryan, R. M. (2008). Hedonia, eudaimonia, and well-being: An introduction. *Journal of Happiness Studies*, *9*(1), 1–11.

Dunn, E. W., Aknin, L. B., & Norton, M. I. (2008). Spending money on others promotes happiness. *Science*, *319*(5870), 1687–1688.

Fromm, E. (1965). *Escape from freedom*. Avon Books.

Giuntoli, L., Condini, F., Ceccarini, F., Huta, V., & Vidotto, G. (2021). The different roles of hedonic and eudaimonic motives for activities in predicting functioning and well-being experiences. *Journal of Happiness Studies*. 22, 1657-1671. https://doi.org/10.1007/s10902-020-00290-0

Grouzet, F. M. E., Kasser, T., Ahuvia, A., Dols, J. M. F., Kim, Y., Lau, S., Ryan, R. M., Saunders, S., Schmuck, P., & Sheldon, K. M. (2005). The structure of goal contents across 15 cultures. *Journal of Personality and Social Psychology*, *89*(5), 800–816.

Haybron, D. M. (2008). *The pursuit of unhappiness: The elusive psychology of well-being*. Oxford University Press.

Heintzelman, S. J. (2018). Eudaimonia in the contemporary science of subjective well-being: Psychological well-being, self-determination, and meaning in life. In E. Diener, S. Oishi, & L. Tay (Eds.) *Handbook of well-being* (pp. 1–18). DEF Publishers. www. nobascholar.com

Henderson, L. W., Knight, T., & Richardson, B. (2013). An exploration of the well-being benefits of hedonic and eudaimonic behaviour. *Journal of Positive Psychology*, *8*(4), 322–336.

Hodge, K., & Lonsdale, C. (2011). Prosocial and antisocial behavior in sport: The role of coaching style, autonomous vs. controlled motivation, and moral disengagement. *Journal of Sport and Exercise Psychology*, *33*(4), 527–547. https://doi.org/10.1123/jsep.33.4.527

Hoekstra, R. (2019). *Replacing GDP by 2030*. Cambridge University Press.

Hui, B. P. H., Ng, J. C. K., Berzaghi, E., Cunningham-Amos, L. A., & Kogan, A. (2020). Rewards of kindness? A meta-analysis of the link between prosociality and well-being. *Psychological Bulletin.* 146(12), 1084-1116. https://doi.org/10.1037/bul0000298

Huta, V. (2016). Eudaimonic and hedonic orientations: Theoretical considerations and research findings. In J. Vittersø (Ed.), *Handbook of eudaimonic wellbeing* (pp. 215–230). Springer.

Huta, V., & Ryan, R. M. (2010). Pursuing pleasure or virtue: The differential and overlapping well-being benefits of hedonic and eudaimonic motives. *Journal of Happiness Studies*, 11(6), 735–762.

Huta, V., & Waterman, A. S. (2014). Eudaimonia and its distinction from hedonia: Developing a classification and terminology for understanding conceptual and operational definitions. *Journal of Happiness Studies*, 15(6), 1425–1456.

Jebb, A. T., Tay, L., Diener, E., & Oishi, S. (2018). Happiness, income satiation and turning points around the world. *Nature Human Behaviour*, 2(1), 33–38.

Joussemet, M., Vitaro, F., Barker, E. D., Côté, S., Nagin, D. S., Zoccolillo, M., & Tremblay, R. E. (2008). Controlling parenting and physical aggression during elementary school. *Child Development*, 79(2), 411–425.

Kashdan, T. B., Biswas-Diener, R., & King, L. A. (2008). Reconsidering happiness: The costs of distinguishing between hedonics and eudaimonia. *Journal of Positive Psychology*, 3(4), 219–233.

Kasser, T., Cohn, S., Kanner, A. D., & Ryan, R. M. (2007). Some costs of American corporate capitalism: A psychological exploration of value and goal conflicts. *Psychological Inquiry*, 18(1), 1–22.

Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, 65(2), 410–422.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, 22(3), 280–287.

Kasser, T., Ryan, R. M., Zax, M., & Sameroff, A. J. (1995). The relations of maternal and social environments to late adolescents' materialistic and prosocial values. *Developmental Psychology*, 31(6), 907–914.

Kristjánsson, K. (2010). Positive psychology, happiness, and virtue: The troublesome conceptual issues. *Review of General Psychology*, 14(4), 296–310.

Kryza-Lacombe, M., Tanzini, E., & O'Neill, S. (2019). Hedonic and eudaimonic motives: Associations with academic achievement and negative emotional states among urban college students. *Journal of Happiness Studies*, 20(5), 1323–1341. https://doi.org/10.1007/s10902-018-9994-y

Legate, N., Weinstein, N., & Przybylski, A. K. (2019). Parenting strategies and adolescents' cyberbullying behaviors: Evidence from a preregistered study of parent-child dyads. *Journal of Youth and Adolescence*, 48(2), 399–409. https://doi.org/10.1007/s10964-018-0962-y

MacIntyre, A. (1984). *After virtue*. University of Notre Dame Press.

Martela, F. (2018). Four reasonable, self-justifying values—How to identify empirically universal values compatible with pragmatist subjectivism. *Acta Philosophica Fennica*, 94, 101–128.

Martela, F. (2020). *A wonderful life: Insights on finding a meaningful existence*. Harper Design.

Martela, F., Bradshaw, E. L., & Ryan, R. M. (2019). Expanding the map of intrinsic and extrinsic aspirations using network analysis and multidimensional scaling: Examining four new aspirations. *Frontiers in Psychology*, 10, 1–21. https://doi.org/10.3389/fpsyg.2019.02174

Martela, F., & Riekki, T. J. J. (2018). Autonomy, competence, relatedness, and beneficence: A multicultural comparison of the four pathways to meaningful work. *Frontiers in Psychology*, 9, 1–14. https://doi.org/10.3389/fpsyg.2018.01157

Martela, F., & Ryan, R. M. (2016a). The benefits of benevolence: Basic psychological needs, beneficence, and the enhancement of well-being. *Journal of Personality*, 84(6), 750–764. https://doi.org/10.1111/jopy.12215

Martela, F., & Ryan, R. M. (2016b). Prosocial behavior increases well-being and vitality even without contact with the beneficiary: Causal and behavioral evidence. *Motivation and Emotion*, 40(3), 351–357.

Martela, F., & Ryan, R. M. (2020). Distinguishing between basic psychological needs and basic wellness enhancers: The case of beneficence as a candidate psychological need. *Motivation and Emotion*, 44, 116–133. https://doi.org/10.1007/s11031-019-09800-x

Martela, F., Ryan, R. M., & Steger, M. F. (2018). Meaningfulness as satisfaction of autonomy, competence, relatedness, and beneficence: Comparing the four satisfactions and positive affect as predictors of meaning in life. *Journal of Happiness Studies*, 19(5), 1261–1282. https://doi.org/10.1007/s10902-017-9869-7

Martela, F., & Sheldon, K. M. (2019). Clarifying the concept of well-being: Psychological need-satisfaction as the common core connecting eudaimonic and subjective well-being. *Review of General Psychology*, *23*(4), 458–474.

Montero-Carretero, C., Barbado, D., & Cervelló, E. (2020). Predicting bullying through motivation and teaching styles in physical education. *International Journal of Environmental Research and Public Health*, *17*(87), 1–12. https://doi.org/10.3390/ijerph17010087

Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The path taken: Consequences of attaining intrinsic and extrinsic aspirations in post-college life. *Journal of Research in Personality*, *43*(3), 291–306.

OECD. (2013). *OECD guidelines on measuring subjective well-being*. OECD Publishing.

Pearce, K., Huta, V., & Voloaca, M. (2021). How eudaimonic and hedonic orientations map onto seeing beyond the "me, now, and tangible." *Journal of Positive Psychology.* 16(5), 610-621. https://doi.org/10.1080/17439760.2020.1791943

Roman, N. V., Davids, E. L., Moyo, A., Schilder, L., Lacante, M., & Lens, W. (2015). Parenting styles and psychological needs influences on adolescent life goals and aspirations in a South African setting. *Journal of Psychology in Africa*, *25*(4), 305–312.

Roth, G., Kanat-Maymon, Y., & Bibi, U. (2011). Prevention of school bullying: The important role of autonomy-supportive teaching and internalization of pro-social values. *British Journal of Educational Psychology*, *81*(4), 654–666.

Ryan, R. M., Bernstein, J. H., & Brown, K. W. (2010). Weekends, work, and well-being: Psychological need satisfactions and day of the week effects on mood, vitality, and physical symptoms. *Journal of Social and Clinical Psychology*, *29*(1), 95–122.

Ryan, R. M., Curren, R. R., & Deci, E. L. (2013). What humans need: Flourishing in Aristotelian philosophy and self-determination theory. In A. S. Waterman (Ed.), *The best within us: Positive psychology perspectives on eudaimonia* (pp. 57–75). APA Press.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, *52*(1), 141–166.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*(3), 529–565.

Ryan, R. M., & Hawley, P. H. (2017). Naturally good? Basic psychological needs and the proximal and evolutionary bases of human benevolence. In K. W. Brown & M. R. Leary (Eds.), *The Oxford handbook of hypo-egoic phenomena* (pp. 205–222). Oxford University Press.

Ryan, R. M., & Huta, V. (2009). Wellness as healthy functioning or wellness as happiness: The importance of eudaimonic thinking (response to the Kashdan et al. and Waterman discussion). *Journal of Positive Psychology*, *4*(3), 202–204.

Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies*, *9*(1), 139–170.

Ryan, R. M., & Martela, F. (2016). Eudaimonia as a way of living: Connecting Aristotle with self-determination theory. In J. Vittersø (Ed.), *Handbook of eudaimonic wellbeing* (pp. 109–122). Springer.

Schultz, P. P., Ryan, R. M., Niemiec, C. P., Legate, N., & Williams, G. C. (2015). Mindfulness, work climate, and psychological need satisfaction in employee well-being. *Mindfulness*, *6*(5), 971–985. https://doi.org/10.1007/s12671-014-0338-7

Sheldon, K. M. (2016). Putting eudaimonia in its place: On the predictor, not the outcome, side of the equation. In J. Vittersø (Ed.), *Handbook of eudaimonic wellbeing* (pp. 531–541). Springer.

Sheldon, K. M. (2018). Understanding the good life: Eudaimonic living involves well-doing, not well-being. In J. P. Forgas & R. F. Baumeister (Eds.), *The social psychology of living well* (pp. 116–136). Routledge.

Sheldon, K. M., Corcoran, M., & Prentice, M. (2019). Pursuing eudaimonic functioning versus pursuing hedonic well-being: The first goal succeeds in its aim, whereas the second does not. *Journal of Happiness Studies*. 20, 919-933. https://doi.org/10.1007/s10902-018-9980-4

Staub, E. (2011). *Overcoming evil: Genocide, violent conflict, and terrorism*. Oxford University Press.

Stiglitz, J. E., Fitoussi, J.-P., & Durand, M. (2018). *Beyond GDP: Measuring what counts for economic and social performance*. OECD Publishing.

Taylor, C. (1991). *The ethics of authenticity*. Harvard University Press.

Titova, L., & Sheldon, K. M. (2022). Thwarted beneficence: Not getting to help lowers mood. *Journal of Positive Psychology.* 17(1), 21-33.

Van den Broeck, A., Ferris, D. L., Chang, C.-H., & Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *Journal of Management*, *42*(5), 1195–1229. https://doi.org/10.1177/0149206316632058

Van den Broeck, A., Vansteenkiste, M., De Witte, H., & Lens, W. (2008). Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work & Stress*, *22*(3), 277–294. https://doi.org/10.1080/02678370802393672

van der Kaap-Deeder, J., Audenaert, E., Van Petegem, S., Vandevelde, S., Van Mastrigt, S., Aelterman, N., & Vansteenkiste, M. (2019). The internalization of and defiance against rules within prison: The role of correctional officers' autonomy-supportive and controlling communication style as perceived by prisoners. *Motivation and Emotion*, *43*(5), 771–785. https://doi.org/10.1007/s11031-019-09766-w

Waterman, A. S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of Personality and Social Psychology*, *64*(4), 678–691.

Weinstein, N., Brown, K. W., & Ryan, R. M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal of Research in Personality*, *43*(3), 374–385.

Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, *98*(2), 222–244.

Whillans, A. V., Dunn, E. W., Sandstrom, G. M., Dickerson, S. S., & Madden, K. M. (2016). Is spending money on others good for your heart? *Health Psychology*, *35*(6), 574–583. https://doi.org/10.1037/hea0000332

Williams, G. C., Hedberg, V. A., Cox, E. M., & Deci, E. L. (2000). Extrinsic life goals and health-risk behaviors in adolescents. *Journal of Applied Social Psychology*, *30*(8), 1756–1771.

# Special Topics and Models

# The Role of Motivation in the Lifecycle of Personal Goals

Anne C. Holding *and* Richard Koestner

**Abstract**

Personal goals are central to the attainment of well-being because they organize people's lives and help them to realize visions for their future. However, not every goal is accomplished, and not every accomplished goal translates into greater well-being. This chapter provides a critical review and synthesis of the self-determination theory research on personal goal striving, highlighting how motivation for personal goals has important implications for outcomes related to the goal (e.g., performance, persistence) and the person (e.g., vitality, well-being). To do so the chapter examines the *lifecycle* of personal goals, arguing that across each phase in goal striving—from the early stage of goal setting to the possibility of goal disengagement—issues of autonomous versus controlled motivation are pivotal. Also discussed is the role of personality (nature) and other people (nurture) in goal pursuit, suggesting that the fate of our goals is partly determined by who we are and by who we surround ourselves with.

**Key Words:** self-determination theory, personal goals, autonomous motivation, controlled motivation, goal pursuit, goal progress, action crisis, disengagement

The positive role of goal striving for human wellness and thriving has been recognized since ancient times. The Greek philosopher Aristotle argued that in order to live a "good life" a person should strive to cultivate their best talents and live up to their full potential. Whether this involved artistic creation, political engagement, scientific inquiry, or, as in Aristotle's case, philosophical discourse, he maintained that one's strivings should be pursued with an eye to completion and achieving excellence. These strivings should also be freely chosen: Aristotle recognized that "excellence is never an accident" (https://www.goodreads.com/author/quotes/2192.Aristotle) and that being able to cultivate one's highest potentials required "high intention, sincere effort, and intelligent execution; representing the wise choice of many alternatives." Meanwhile, the Stoic philosophers had a somewhat different perspective for attaining happiness and optimal development, focusing less on cultivating excellence and more on adjusting to one's present reality and making the most of uncontrollable circumstances. For example, the Stoic philosopher Seneca advised, "It is in no man's power to have whatever he wants, but he has it in his power not

to wish for what he doesn't have" (https://www.goodreads.com/quotes/3163331-it-is-in-no-man-s-power-to-have-whatever-he#:~:text=Learn%20more)-,%E2%80%9CIt%20 is%20in%20no%20man's%20power%20to%20have%20whatever%20he,that%20 do%20come%20his%20way.%E2%80%9D). Similarly, the Roman emperor Marcus Aurelius cautioned, "Receive without pride, let go without attachment" (Aurelius, 1753, p. 178). Both these quotes highlight the stoical wisdom of choosing to adapt to life's vagaries and fully letting go of pursuits when they are no longer attainable.

So which advice should we heed when embarking on our goals: striving for excellence and cultivating our best talents, or steering clear of lofty ambitions and flexibly adjusting personal goals to contextual restraints? The science of personal goal striving would suggest that within the lifecycle of a personal goal, there may be merit to both philosophical perspectives. The Aristotelian view of choosing pursuits wisely and devoting oneself to them wholeheartedly seems inspiring and helpful in the early phases of the goal's lifecycle, when one is selecting goals and implementing goal-directed behaviors. If all goes to plan, Aristotle's advice can propel individuals to great heights, helping goal pursuers in their quest to become the best version of themselves. However, there are experiences and circumstances that can derail goal pursuit, interfering with even the most well-conceived plans and ideas for the future. Individuals can discover that their goal is not as fitting with their interests as they imagined, leading to questions and further identity exploration (Hope et al., 2014). More exogenously, a painful injury, a tragic accident, a global pandemic—any of these events can throw a goal off course and leave the pursuer without a clear path forward. It is at this stage of the goal's lifecycle that the Stoics' perspective becomes helpful; instead of chasing after unattainable dreams, the stoical wisdom would recommend one choose to disengage from the unfruitful pursuit and save one's motivational resources for a goal that is more realistic and within one's control.

Herein lies the paradox of pursuing personal goals: just as they can bring out the very best in us by providing a regulatory focus around which to plan and execute goal-directed efforts, goals can also become sources of distress and ill-being when they are unattainable or overly demanding (Wrosch, Scheier, Carver et al., 2003; Wrosch, Scheier, & Miller, 2013). The very ingredients that make personal goals so rewarding when we accomplish them—their embodiment of our interests, preferences, and deeply held values (Carver & Scheier, 2000; Sheldon, 2014)—can make these goals sources of pain and disappointment when goal pursuit does not pan out as expected. Thus, personal goals can be robust contributors to individuals' well-being and life satisfaction, imbuing life with meaning and purpose (e.g., Brunstein, 1993; Emmons, 2003; Sheldon, 2014), but they also pose risks for mental and physical health, especially when goal pursuit is not properly adjusted to changing circumstances (Wrosch et al., 2013).

Thus, it seems the successful goal pursuer must strike a careful balance between two diverging but complementary regulatory modes (Brandtstädter & Renner, 1990; Brandtstädter & Rothermund, 2002). To unleash their full potential, the pursuer must

thoughtfully select self-relevant goals and intrinsic goals, resist distractions and persevere through the various obstacles and challenges on the path to goal attainment. However, to preserve mental health and finite motivational resources when hitting unanticipated road-blocks, the successful pursuer must also develop a sensitivity for strategically abandoning or adapting goals that are unrealistic in favor of more attainable pursuits (Heckhausen, Wrosch, & Schultz, 2019).

In this chapter we use a self-determination theory lens (SDT; Ryan & Deci, 2017) to provide a critical synthesis and review of the role of motivation in successfully navigating the different phases of a goal's *lifecycle*. Different perspectives in the goal literature converge to suggest that goals have a predictable lifecycle and that their pursuit is characterized by different phases (e.g., Gollwitzer, 1990). *We propose that issues of autonomy versus control are pivotal at each phase of a goal's lifecycle and will have important implications for outcomes related to the successful regulation of goals (i.e., strategic pursuit and disengagement) as well as the general well-being and mental health of the goal pursuers* (Holding & Koestner, 2022). We will begin exploring the lifecycle of a goal by examining how individuals can select optimal goals, focusing on how the motivation for goal pursuit has implications for goal progress and well-being. Next, we will explore how individuals plan and navigate obstacles to goal pursuit—temptations and distractions—as well as impulses to abandon the goal (action crises). While most people hope to persevere with their goals and attain them, a single-minded focus on a particular goal may not always be adaptive. We will explore what individuals should do toward the end of the goal's lifecycle if they become stuck with a goal that has become too difficult, costly, or unrealistic, discussing research on the benefits of disengagement and reengagement. We end by discussing future directions and outstanding issues in the literature, touching on the roles of personality and interpersonal processes in goal pursuit. We suggest that the fate of our goals is partly determined by who we are and who we surround ourselves with. The theoretical model is summarized in Figure 16.1.

## The Cycle Begins: Effective Goal Selection

Goal selection lays the foundation for successful goal striving and has been subject to intense scrutiny and research attention. Much research has focused on the process of *how* a goal is formulated, suggesting that the secrets to goal success lie in the original framing. For example, the widely used SMART goal acronym recommends that goals should be specific, measurable, attainable, realistic, and time-framed in order to ensure goal success (Locke & Latham, 1990). This recommendation effectively targets a few of the major reasons people typically fail at their goals, such as having unclear standards and difficulty measuring goal progress (Baumeister & Heatherton, 1996). After all, how do you know when you have made progress or reached the goal to "get in shape," "be a kinder person," or "make more planet-friendly meal choices"? Unless the goal is specific, measurable, and
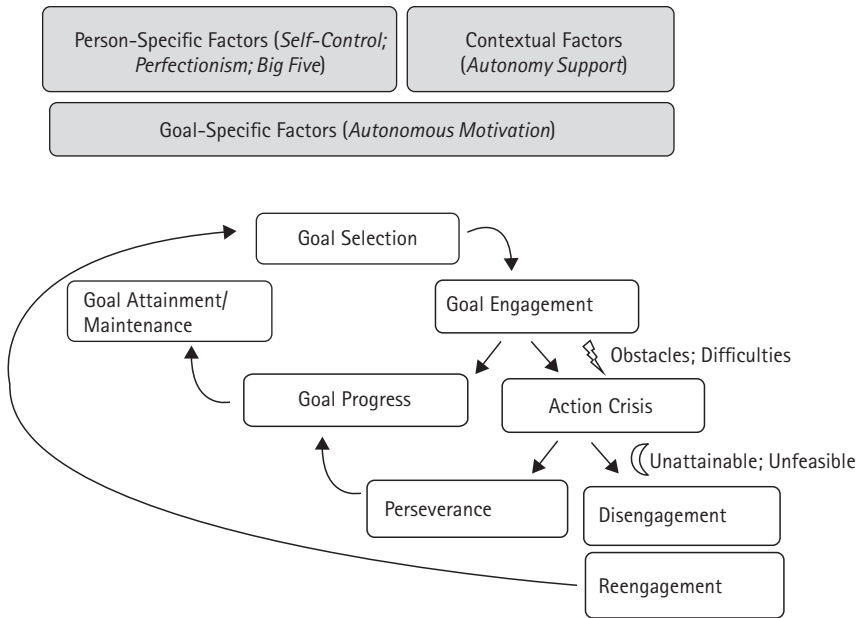
**Figure 16.1** Theoretical model describing the lifecycle of a personal goal, from goal engagement to goal attainment, as well as the goal-specific, personality, and contextual factors that may influence a goal's progression through the stages of the lifecycle

Adapted from Holding & Koestner (2021)

time-framed (i.e., "I want to eat plant-based meals at least three times a week for the next year"), that question becomes hard to answer.

However, even when goals are carefully spelled out and progress is easy to measure, goal achievement can still falter. SDT goal research makes a unique contribution by suggesting that the reasons people have for *why* they are pursuing the goal in the first place will have important implications for goal progress and well-being.

Imagine two young women who have the same goal of "going jogging three times per week for the next year." At first glance, these goals seem relatively well framed—they follow the SMART goal recommendations of being specific, measurable, realistic, and time-framed. However, we discover that the first runner has set herself this goal because she enjoys spending time outside and values living an active lifestyle. The second has selected this goal because she is ashamed of her weight and wants to impress her colleagues at work. SDT researchers would determine that the first runner is motivated by *autonomous* reasons—she genuinely *wants to* go running because it is something she enjoys and it coheres with her value of healthy living. In general, autonomous motivation is doing something because it is interesting or enjoyable (*intrinsic motivation*), because it is well integrated into one's identity or value system (*integrated motivation*), or because the person recognizes the importance or relevance of the task (*identified motivation*; Ryan & Deci, 2017). Meanwhile the second runner is motivated by controlled reasons—she feels as

ANNE C. HOLDING AND RICHARD KOESTNER

though she *has to* go running to cope with negative emotions about herself (*introjected motivation)* and to be regarded well by others (*external regulation*). While it is possible for the same goal to be fueled by both autonomous and controlled motives—going running because it is congruent with values such as health and fitness (autonomous reasons) as well as because one feels pressure to maintain an attractive physique (controlled reason)—the extent to which the goal is relatively more autonomous or more controlled is important for determining success with the goal and consequences for well-being. The SDT goal research described in this chapter would suggest that the runner with autonomous reasons will be more likely to follow through with her goal and experience a boost in her well-being compared to the runner with controlled reasons. Thus, the importance of motivation in goal pursuit begins with *why* people want to embark upon the pursuit of a goal.

Early research investigating the role of motivation in goal setting involved a series of short-term prospective studies examining the extent to which motivation for goal pursuit was related to goal effort and attainment (Sheldon & Elliot, 1998, 1999; Sheldon & Houser-Marko, 2001). The results consistently showed that autonomous motives for personal goals predicted sustained goal effort and greater goal attainment. Other studies have shown how more autonomous motivation predicts enhanced goal progress (Downie et al., 2006; Koestner et al., 2002, 2006, 2008; Sheldon & Houser-Marko, 2001). This pattern of results has been found with university students, working adults, and patients in treatment (Gorin et al., 2014) and emerges across shorter (Downie et al., 2006) and longer intervals of time (Sheldon & Houser-Marko, 2001; Koestner et al., 2008). Importantly, those who attain autonomous goals experience greater well-being (Sheldon & Elliot, 1999). This is because autonomous goals tend to be associated with greater activity-based need satisfaction during goal striving, meaning that goal pursuit results in more frequent experiences of autonomy, competence, and relatedness in daily life (Sheldon & Elliot, 1999). Applied to the running example, this research suggests that the runner with autonomous reasons is likely to feel choiceful about going on her runs (autonomous need satisfaction), feel skillful and effective during her runs (competence need satisfaction), and perhaps will meet up with other runners or get her partner involved with her new running habit (relatedness need satisfaction).

Autonomous motivation also appears to help individuals make better plans for how to monitor and stay on track with their goals. Implementation intentions, also known as "if-then plans," have been established as an effective strategy for attaining goals by helping individuals plan when, where, and how they will take actions toward their goal or overcome anticipated obstacles (Gollwitzer, 1990). Research suggests that bolstering goals with specific implementation intentions can greatly enhance success because it links the desired behaviors with specific situational cues, allowing for automatized responding, and is not as taxing on self-control resources (Gollwitzer & Schaal, 1998). Not surprisingly, the combination of setting autonomous goals and generating implementation intentions is highly effective. In two prospective studies Koestner et al. (2002) examined the combined effects of goal motivation

and implementation intentions for weekend goals (Study 1) and New Year's resolutions (Study 2). Both studies measured participants' goal progress over time as well as their level of efficacy and commitment toward their goals. The difficulty level of goals was also assessed. The researchers hypothesized that goals pursued for reasons of personal interest and meaning (autonomous motivation) and accompanied by implementation intentions specifying the time and place for goal pursuit would result in the greatest goal attainment. Indeed, the results of both studies revealed a significant interaction between goal motivation and implementation intentions to produce greater goal attainment.

Individuals with autonomous motives for their goals also appear to be better at task-oriented coping when difficulties with the goal arise (Gaudreau, Carraro, & Miranda, 2012). For example, two studies found that autonomous goal motivation was positively associated with helpful coping strategies such as improved planning, increased effort, and positive reappraisals, instead of unhelpful strategies like self-blame and denial when goal difficulties cropped up. In turn, task-oriented coping was associated with greater goal progress at the end of the semester in a sample of university students. Conversely, controlled goal motivation was associated with greater procrastination and avoidance and less use of task-oriented coping, behaviors which were associated with reduced goal progress (Gaudreau et al., 2012).

These studies highlight the benefit of autonomous motivation, but what about controlled motivation? Are internal and external pressures during goal pursuit simply less effective than autonomous motivation, or are they potentially harmful? After all, many individuals rely on pressures and external incentives to motivate themselves, and the use of controls such as deadlines, rewards, and punishments is pervasive in workplaces and education systems. Early research found that controlled goal motivation for personal goals was weakly or nonsignificantly associated with goal outcomes such as progress and attainment (Koestner et al., 2008), suggesting that this form of motivation was unhelpful but relatively harmless. However, controlled goal motivation may be disruptive and problematic beyond being ineffective for attaining goals. Controlled motivation has been associated with myriad negative outcomes, including greater self-criticism (Powers, Koestner, & Zuroff, 2007), more conflict between one's goals (Downie et al., 2006), and heightened academic stress (Miquelon & Vallerand, 2006). Two recent longitudinal studies examining career goal pursuit of young adults over the course of nine months found that individuals who felt controlled about their career goal even went so far as to sacrifice their basic needs for autonomy, competence, and relatedness during career goal pursuit (Holding, St-Jacques et al., 2020). In other words, to reach career goals such as becoming a doctor, speech language pathologist, or accountant, those with controlled motivation would use strategies to deprive themselves of the very needs that are essential to human thriving, such as cutting themselves off from social contact (sacrifice of relatedness), disregarding opportunities for learning and mastery (sacrifice of competence), and forgoing fun and meaningful activities (sacrifice of autonomy). While these need sacrifices were made with

ANNE C. HOLDING AND RICHARD KOESTNER

the aim of advancing the career goal, they tended to have the opposite effect by initiating wider disruptions in the participants' affective and self-regulatory functioning. Indeed, participants who reported sacrificing their psychological needs on the journey to achieving their career goal experienced greater need frustration, more severe psychological distress, and poorer career goal progress at the end of the longitudinal study. Together these findings point to the optimizing force of autonomous goal selection as well as the risks that are associated with ignoring or suppressing one's authentic interests and values when it comes to pursuing goals. When embarking on a new goal, individuals benefit from both maximizing autonomous motivation and minimizing controlled motivation.

Do specific goals lend themselves more to autonomous or more to controlled pursuit? For example, is it just as easy to feel autonomous about one's goal to reconnect with old friends compared to one's goal of becoming a famous social media influencer? Research suggests that certain kinds of goals offer greater natural incentives for goal pursuit and pose fewer risks for feeling pressure and controlled compared to others (Kasser & Ryan, 1993, Hope et al., 2019). Specifically, people who pursue predominantly *intrinsic aspirations* such as intimate relationships, personal growth, and community contribution experience greater well-being and life satisfaction and decreased symptoms of depression and anxiety compared to those who pursue predominantly *extrinsic aspirations,* such wealth, popularity, or beauty (Bradshaw, this volume). One explanation for this effect is that people who pursue goals linked to intrinsic as opposed to extrinsic values tend to experience greater psychological need satisfaction and autonomous motivation during goal pursuit, which is, in turn, associated with increases in well-being. This was shown in a large goal study that combined four longitudinal data sets with over 1,400 university students and tracked changes in need satisfaction, motivation, and well-being (Hope et al., 2019). When participants indicated valuing intrinsic aspirations relative to extrinsic aspirations at the beginning of the academic year, they ended up experiencing greater autonomous goal motivation, basic psychological need satisfaction, and well-being by the end of the year.

Goals aimed at attaining intrinsic aspirations also tend to result in greater goal progress, as was found in two three-month longitudinal studies that assessed individuals' general life aspirations, the aspirational content of their goals, as well as goal progress over time (Hope et al., 2016). Goals that were tied to intrinsic values such as personal growth, close relationships, and community contribution were more likely to be achieved than goals tied to fame, wealth, and physical image. Hope et al. also demonstrated the benefits of setting intrinsic goals extended to individuals who were generally oriented toward extrinsic aspirations. In other words, even people who generally valued wealth and fame made more progress on (and experienced greater vitality for) goals that connected with intrinsic aspirations. Thus, selecting goals that connect with intrinsic values is beneficial because these goals tend to be highly need-satisfying and autonomous, leading to well-being and goal progress over time (Hope et al., 2016, 2019).

## The Long and Winding Road: Temptations, Distractions, and Obstacles

Once one has embarked on the road of goal pursuit, it is important not to get derailed by temptations, distractions, and obstacles. Ideally, one can sidestep temptations, ignore distractions, and overcome the obstacles one encounters. Research suggests that autonomous motivation may be helpful precisely because it facilitates all these processes that help the goal pursuer stay on track.

First of all, autonomous goals seem easier to pursue (Werner et al., 2016). In a study with university students, researchers had participants identify three goals they planned to pursue throughout the semester and report their motivation for pursuing each of them. Participants were also asked to rate the difficulty of attaining each goal. At monthly follow-ups participants rated how easy and natural it felt for them to pursue these goals and how much effort they were putting into achieving the goal. When the researchers examined how the participants had progressed by the end of the semester, they found that the goals that felt "effortless" rather than "effortful" resulted in the greatest progress. Importantly, the effortless goals tended to be the most autonomous (Quirin et al., 2021; Werner et al., 2016). This is important because self-control is thought to be a limited resource, and many goals fail because the goal feels too effortful to pursue alongside other demands (Baumeister, Vohs, & Tice, 2018; but see Inzlicht & Friese, 2019).

Second, autonomous goals are less susceptible to temptations and distractions. Milyavskaya and colleagues (2015) found that those with autonomous motives for healthy eating goals experienced reduced temptations that included a less automatic liking for unhealthy foods and fewer in-the-moment desires that conflicted with the goal. In other words, someone with autonomous motives for healthy eating would be less tempted by the aromatic pizza in the staff room and less prone to fantasize about a walk to the vending machine for a midafternoon snack. In contrast, Milyavskaya and colleagues found that greater controlled motivation was related to encountering more conflicting and tempting desires.

Third, autonomous goals are less obstacle-ridden. In a series of experimental studies, Leduc-Cummings, Milyavskaya, and Peetz (2017) manipulated participants' autonomous or controlled motivation for a healthy eating goal by reading either examples of why people *should* eat healthfully (e.g., "because they need to lose weight") or examples of why people *value* eating healthfully (e.g., "because they want to have more energy"). Participants were then asked to write about why they *should* eat healthfully (*controlled* motivation condition) or *value* eating healthfully (*autonomous* motivation condition) and assessed the frequency and disruptiveness of obstacles anticipated in the coming week. Participants in the autonomous motivation condition experienced fewer and less disruptive anticipated obstacles; the autonomous motivation they felt about healthy eating seemed to reduce their perception of obstacles with this goal. Similarly, Milyavskaya and colleagues (2015) found that autonomous goals were associated with fewer obstacles in day-to-day life and that these goals resulted in more progress without the exertion of more effort. Meanwhile,

controlled goals were associated with an increased perception of obstacles and felt more effortful to pursue.

Given the fact that controlled goals are more prone to temptations and distractions, feel more effortful to pursue, and appear to be hampered by greater obstacles, it is no surprise that controlled motivation puts individuals at risk of experiencing action crises.

## Stuck in Limbo: The Action Crisis

The *action crisis* is a phase in goal striving that occurs after the pursuer has encountered setbacks, obstacles, or tempting alternatives. In an action crisis, the pursuer feels deeply conflicted about continued goal engagement versus goal disengagement (Brandstätter, Herrmann, & Schüler, 2013). In other words, the person faces the dilemma of persevering with the goal and doubling down on goal efforts or relinquishing the goal and cutting their losses. The action crisis is problematic insofar as it leaves the pursuer in a state of limbo, preventing the individual from embracing either the Aristotelian devotion to a goal or the Stoic's adaptable mindset of letting go.

While a brief action crisis may be useful to reinvigorate goal commitment or make the sensible decision to relinquish an unattainable goal, being stuck in a prolonged internal battle with the self can erode well-being and physical health over time (Brandstätter et al., 2013; Holding et al., 2017, 2021). Indeed, action crises have been linked with decreased life satisfaction (Brandstätter et al., 2013), increased symptoms of depression (Holding et al., 2017), increased somatic and physical symptoms (e.g., stomach aches; Brandstätter et al., 2013; Holding et al., 2021), poorer physical performance (Brandstätter et al., 2013), and increases in markers of biological stress such as short-term salivary cortisol secretion (Brandstätter et al., 2013) and chronic hair cortisol elevation (Holding et al., 2021).

The action crisis is therefore a phase in goal pursuit with potentially serious and harmful consequences, which may be amplified when pursuing controlled goals. A longitudinal goal study conducted by Holding and colleagues (2017) found that controlled motivation for personal goals was associated with more severe action crises and increases in depression symptoms over the course of an academic semester. In other words, individuals who spent a semester putting effort toward goals they did not wholeheartedly endorse in the first place—chasing after goals because of external incentives or internal pressures—ended up experiencing more severe action crises for these goals, which, in turn, took a toll on their mental health. Being of "two minds" about a goal and constantly wondering whether one should double down or disengage seems to be emotionally exhausting and disheartening.

More recently, researchers conducted a similar study but sampled college students' hair for the stress hormone cortisol at the beginning and end of the academic year to investigate whether the toll of controlled goal pursuit and action crises could be detected in the body (Holding et al., 2021). Results showed that experiencing action crises during goal pursuit was indeed associated with increases in the participants' hair cortisol over the academic year. In addition, action crises were linked to greater self-reported stress,

increased symptoms of depression, and increased symptoms of ill health. Importantly, controlled motivation was indirectly linked to these outcomes through the action crisis.

In stark contrast, autonomous motivation for goals has been associated with less severe action crises, both within the same person and between people (Holding et al., 2017). In other words, individuals are least likely to encounter an action crisis for their most autonomous goal compared to their other goals (the within-person effect), and people who generally set autonomous goals tend to experience less severe action crises overall (the between-person effect). As a consequence, when people evade action crises during goal pursuit, they tend to make more goal progress (Brandstätter et al., 2013; Holding et al., 2017). Instead of being paralyzed by the indecision of whether to persist or disengage, individuals who are not confronted with action crises can focus on implementing their plans for goal attainment. Future research is needed to uncover whether the goal's aspirational content is associated with action crisis severity. Given how intrinsic goals offer many natural incentives and are conducive to psychological need satisfaction, it is reasonable to hypothesize that goals targeting intrinsic values (e.g., to improve one's romantic relationship) would be associated with less severe action crises than goals centered on extrinsic values (e.g., to earn more money). That being said, existing research suggests that controlled motivation for *any* goal, including goals with intrinsic aspirational content (e.g., feeling pressure to improve one's romantic relationship), will make an action crisis more probable, likely because the goal is not fully internalized (Holding et al., 2017).

### Endings and New Beginnings: Goal Disengagement and Reengagement

Counter to the popular wisdom of "never quitting" and "persistence paying off," research supports the Stoic's perspective that it is a good idea to let go of goals that have become too difficult, unrealistic, and costly (Wrosch et al., 2013). This is especially true if the person has struggled with an action crisis for several months and the goal continues to be unfeasible (Herrmann & Brandstätter, 2015). At that point, continuing to persevere against mounting obstacles is likely to backfire and result in worsened mental and physical health (Wrosch et al., 2013). Instead of remaining onboard the sinking ship of goal pursuit, individuals can benefit from *goal disengagement,* which involves giving up behavioral efforts and psychological commitments toward the unattainable goal (Wrosch, Scheier, Carver et al., 2003). This process can be difficult and painful, as one has to confront the loss of all the precious time, energy, and resources poured into the goal. Nevertheless, while goal disengagement may feel unpleasant in the moment, relinquishing unattainable or unrealistic goals is, generally speaking, an adaptive process, and those who manage to disengage from unrealistic goals tend to experience an improved quality of life, better mental health, and decreased physical stress (Wrosch et al., 2013; Mens, Scheier, & Wrosch, 2015). In addition, disengagement frees people up to dedicate themselves to more promising goals down the line (Wrosch, Scheier, Carver et al., 2003).

It is important to note that disengagement is not equally relevant to all goals nor the inevitable outcome of every goal's lifecycle. When a goal is successfully achieved, individuals may choose to maintain that goal. For example, the goal to "eat gluten-free" or "practice yoga three times per week" can be pursued for weeks, months, and even decades; in this case goal engagement is maintained and goal disengagement is not necessary. Other kinds of goals have a definitive point of resolution, for example, "being admitted to law school" or "wanting to get married." Once attained, continued goal engagement for these goals does not optimize the goal outcome, and the original goal typically dissolves. Again, goal disengagement would not be necessary unless the original goal becomes unattainable prior to goal attainment and in situations where the person remains psychologically committed to the goal, possibly due to counterfactual "What if?" thoughts about how the elapsed event could have gone differently. (For a review on counterfactual thinking, see Epstude & Roese, 2008.)

In cases where the unattainable goal lacks personal significance or is unimportant and mundane, goal disengagement can be relatively quick and straightforward. For example, the goal to "wake up by 8 a.m. every morning" can probably be abandoned swiftly if one finds it is not working well. Disengagement presents a challenge only when the unattainable goal is impactful or identity-relevant, such as confronting repeated rejections to medical school, being skipped over for promotions at work, not making the varsity sports team, or being rejected by one's high school sweetheart.

That being said, additional factors can make disengagement in the face of insurmountable obstacles easier and more probable. Researchers have determined that successfully disengaging has something to do with our personality (Wrosch, Scheier, Carver et al., 2003) as well as with our motivation for letting go (Holding, Fortin et al., 2020). Individuals are thought to vary in their goal disengagement capacity, which is an individual difference in people's ability to withdraw effort and commitment in the face of blocked or unattainable goals across contexts (Wrosch, Scheier, Carver et al., 2003). Those with lower goal disengagement capacity tend to have a harder time disengaging from problematic goals, whereas those with a higher goal disengagement capacity can relinquish these kinds of goals with relative ease.

In addition to personality differences in people's ability to disengage, individuals' motivation for disengagement has been shown to play an important role in facilitating the adaptive disengagement process. A recent study investigated goal disengagement in retired professional and Olympic Canadian athletes (Holding, Fortin et al., 2020). Interestingly, Holding, Fortin and colleagues found that athletes who had terminated their career for autonomous reasons, such as reaching their sporting objectives or wanting to pursue an alternate career, were more likely to disengage from their athletic career and thereby experience greater well-being in retirement. Athletes retiring for controlled reasons, such as those who experienced severe injuries or were deselected from the national team, tended to disengage less and experience lower well-being in retirement (Holding, Fortin et al.,

2020). In other words, those who "wanted to" let go and move on did so successfully and adapted well to retirement, whereas those who felt they "had to" let go or were pushed out of their sport remained unhelpfully stuck to their sporting identity.

Thus, in parallel with the strong association between reasons for *pursuing* a goal and goal attainment, recent research suggests an association between reasons for *disengaging* from a goal and successful goal disengagement. The more individuals feel choiceful about letting go of a personal goal, internalize the value of letting go, or recognize that the goal is no longer serving them well, the easier it becomes for them to break up lingering psychological commitment toward the goal and fully relinquish it. This was further demonstrated in a series of three longitudinal studies conducted with college students and community adults who were each trying to disengage from an important but unattainable or unrealistic personal goal, such as "becoming a speech language pathologist," "losing 30 pounds," or "being together with my ex-wife" (Holding et al., 2022). The studies consistently found that having autonomous motivation for disengagement was positively associated with disengagement progress, even when controlling for participants' general goal disengagement capacity, the importance of the goal, and their original motivation for pursuing the goal. Interestingly, autonomous motivation for goal engagement and disengagement within the same goal were uncorrelated, suggesting that pursuing a goal for the "right reasons" (e.g., because it seems fun and value-congruent) does not mean one will eventually let go of the goal for the "right reasons" down the line if the goal becomes unattainable and disengagement is warranted. Future research is needed to examine whether the goal content is associated with ease or difficulty in disengaging when these goals become unattainable.

Could disengagement from a goal be temporary? Research on goal disengagement has been predominantly conducted by researchers examining lifespan and aging who have conceptualized disengagement as the regulation of goals that have passed some sort of "developmental deadline," such as pursuing the goal of having a biological child in later adulthood (Heckhausen, Wrosch, & Fleeson, 2001). Thus, in its original conception, goal disengagement is thought to be an adaptive response when it is permanent, since the circumstances rendering the goal unattainable (e.g., advancing age) are unlikely to become more favorable in time. New and emerging research has uncovered other goal states that might favor temporary goal disengagement. The "frozen goal," which is defined as a goal that one has taken some steps toward achieving but is currently neither actively working to achieve nor abandon (Davydenko et al., 2019), may benefit from disengagement, especially if continued engagement is preventing the pursuer from fully committing to goals they find more energizing or relevant. However, there may also be risks associated with temporary disengagement; half-heartedly letting go of "dormant" goals may trigger unwanted action crises and pose more problems than decisive and long-term disengagement. More research in this area is warranted.

One of the important benefits of relinquishing an unattainable goal is the freed-up motivational capacity to reengage with a more feasible pursuit (Wrosch, Scheier, Miller

et al., 2003). Research suggests that the ideal goal adjustment strategy involves *both* the goal's metaphorical death (goal disengagement) and a new goal's birth (goal reengagement; Wrosch, Scheier, Miller et al., 2003; Wrosch et al., 2013). Simply relinquishing unattainable goals without eventually finding new or alternative means for goal pursuit can sink a person into depression and despair (Klinger, 1975). Likewise, blindly throwing oneself at new goals before fully mourning the loss of the relinquished goal may be foolhardy. Anyone who has lived through or observed a friend's "rebound relationship" can attest to the fact that rushing to find a substitute goal is not a cure for the heartbreak and disappointment of a lost goal (Holding & Koestner, 2022). Wrosch and colleagues' (2013; Wrosch, Scheier, Miller et al., 2003) research confirms that goal disengagement and reengagement are independent processes that *both* have to take place for an individual to experience improved mental health and well-being when dealing with an unattainable goal. Here too, we suggest that it is important for the individual to reflect on the "why" of the new goal: Does it seem interesting, meaningful, and in line with one's values? Or does it seem forced, primarily to obtain some other outcome, reduce anxiety, or appease others? To reap the most benefit from goal reengagement, goals should be selected wisely by connecting with one's authentic interests, values, and preferences and by capturing intrinsic aspirations, which tend to be more need-satisfying (Holding & Koestner, 2022).

## Implications and Future Directions of the Lifecycle Model of Goals

There are several important questions that remain unanswered within the lifecycle model of goals that warrant future research. For example, what happens when individuals have difficulty kickstarting the cycle because they are unsure what to "wish for" or are undecided about what they "truly want"? When is someone giving up on a goal prematurely versus strategically disengaging to conserve motivational resources? Can people have spontaneous, emergent goals that they did not necessarily plan but later feel good about accomplishing? This chapter will conclude with some implications and future directions for the lifecycle model of goals at the level of the goal, the person, and the context of goal pursuit.

**At the level of the goal: Variability in goal motivation**. Researchers have found that there is considerable variability across the many goals that each person sets for themselves. Surely, if autonomous motivation was so beneficial and universally helpful, we would feel autonomous about most of our goals most of the time? As we know from personal experience, our goals are incredibly diverse, with the same person planning to "learn French," "save for a mortgage down payment," and "hike the Machu Picchu Inca Trail" all in the same year. Likewise, our personal lives are driven by other factors—the goals of those around us, random events, momentary whims—that we feel different degrees of autonomous motivation for. Studies that examine motivation for multiple goals have found that the majority of the variance lies at the level of the goal (Holding et al., 2017; Milyavskaya et al., 2015; Werner et al., 2016). Said differently, it is not uncommon for the same

individual to feel wholehearted and volitional about one of their goals but less so about their other goals. This may have something to do with the content of each goal and the degree to which each specific goal can satisfy needs for autonomy, competence, and relatedness (Milyavskaya, Nadolny, & Koestner, 2014). Interestingly, there is less variability in the controlled motivation for goals (Holding et al., 2017), which might have to do with need-frustrating contexts that promote controlled regulation across all one's goals. Future research is needed to examine when and under which conditions goal motivation changes from autonomous to controlled or the other way around.

**At the level of the person: The role of personality in goal motivation**. While there seems to be considerable variability in the degree to which individuals feel autonomous about their goals, does their personality have something to do with their tendency to set more or less autonomous goals? Emerging research suggests that certain traits do appear to be helpful in developing autonomous motivation for goals. For example, a longitudinal study with college students found that individuals higher in trait self-control (i.e., higher in the ability to delay gratification and resist unwanted behaviors) tended to experience increases in their autonomous motivation and decreases in controlled motivation for personal goals across the academic year (Holding, Hope et al., 2019). Similarly, recent studies suggest that mindful people, that is, people who are generally more attuned to the present moment in an open and nonjudgmental manner, set "better" (i.e., more informed, fitting, and autonomous) goals (see Ryan, Donald, & Bradshaw, 2021), resulting in greater goal progress (Smyth et al., 2020) and fewer action crises (Marion-Jetten, Taylor, & Schattke, 2021). It seems that these traits allow individuals better access to their inner compass, helping them to align goals with their authentic interests, beliefs, and values.

Other traits seem to detract from developing autonomous motivation and put individuals at risk of feeling controlled about their goals. For example, a series of longitudinal studies found that self-critical perfectionism was associated with relatively more controlled motivation for personal goals, stagnated goal progress (Moore et al., 2018), and increased symptoms of depression (Moore, Holding, Moore et al., 2020). Thus, a tendency to evaluate oneself harshly is associated with selecting goals that are more external to the self; after all, it is less threatening for one's ego to fail at goals imposed by others compared to goals that reflect one's own defining wishes and values.

While certain traits seem to help in cultivating optimal forms of motivation across different types of goals (e.g., self-control, mindfulness), there may also be certain goals that just fit our personalities better than others. In other words, our level of autonomous motivation for a goal may also have something to do with how well the goal meshes with our core personality traits. Moore and colleagues (2020) tested this proposition and found that extroverted individuals felt more autonomous about and were more successful at pursuing social goals, whereas conscientious people felt more autonomous about and performed better at goals centered around achievement. Even for people who set a goal to change an aspect of their personality, autonomous motivation appears to be key; research

suggests that setting a goal to change one's personality (e.g., "be more outgoing," "worry less," "be more organized") is common, and doing so for autonomous reasons tends to result in meaningful personality change and improved well-being over time (Moore et al., 2021). Future research is needed to determine the degree to which individual differences and contextual factors influence our motivation for personal goals.

**At the level of context: The role of other people in our goal pursuit**. While this chapter has focused on personal goals—goals selected by and for ourselves—research suggests that personal goals are also profoundly impacted by those around us (Fitzsimons, Finkel, & Vandellen, 2015). Thus, the seemingly self-initiated process of goal selection and pursuit is perhaps a more collaborative endeavor than initially assumed, built around autonomous motivation, interpersonal relationships, and shared environments. For example, a dyadic longitudinal study with romantic couples found that the more autonomous each partner felt in the relationship, the more goal progress each partner made on *both* goals related to the couple (e.g., "renovate our basement together") as well as goals related to the self (e.g., "get promoted at work"; Holding, Barlow, et al., 2020). In turn, goal progress for both couple goals and self-oriented goals was associated with increases in each partner's subjective well-being and relationship satisfaction.

In addition to feeling volitional about the interpersonal relationships we are in, SDT researchers have found that a specific kind of interpersonal relating style called "autonomy support" is especially helpful in goal pursuit (Koestner et al., 2012). Autonomy support is a kind of "invisible" support that involves being empathic, warm, and nonjudgmental and acknowledging an individual's unique perspective. Autonomy support is contrasted with *directive support,* which is more visible and "hands-on"; instead of listening and empathizing, directive support involves delivering concrete guidance and problem-solving. Contrary to the supporters' intentions, directive support is not perceived as being as helpful; it does not improve goal progress and does not confer the same benefits for the pursuers' well-being and the relationship satisfaction as compared to autonomy support (Koestner et al., 2012, 2020). Furthermore, recent research suggests that the development of autonomous goals is likely a reciprocal and dynamic process, in which both autonomous motivation and autonomy support contribute to the growth of each other over time (Levine et al., 2020). That is, individuals higher in autonomous motivation for their personal goals will tend to elicit or seek out greater autonomy support from close others, which in turn heightens their level of autonomous motivation for their goals. This has important implications when one considers that many social environments in which goal pursuit takes place are not self-chosen; for example, we often cannot choose our supervisors or bosses. However, in pursuing goals volitionally, we may still be able to pull autonomy support from those around us. After all, there is little need to supervise using pressuring tactics when an employee or student is bursting with passion, interest, and self-initiative with regard to their goals. Not only do one's goals benefit from being autonomous; they also benefit from being pursued in an autonomy-supportive environment.

## Conclusion

Goal striving involves carefully balancing the Aristotelian desire for achieving high standards in the goals we set out for ourselves with the Stoic wisdom of adapting flexibly to life's vicissitudes. This chapter reviewed research supporting the positive role of autonomous motivation and the negative role of controlled motivation regardless of whether we are selecting, actively pursuing, or abandoning our goals. But are goal success and well-being the most important outcomes for the lifecycle of the goal? Ultimately, it may be the *journey* itself of selecting, pursuing, and, at times, relinquishing specific goals that brings meaning and complexity into people's lives and allows for psychological growth and the *becoming* of oneself.

## References

Aurelius, M. (1753). *The meditations of the Emperor Marcus Aurelius Antoninus. Newly translated from the Greek: With notes and an account of his life*. Robert Main.

Baumeister, R. F., & Heatherton, T. F. (1996). Self-regulation failure: An overview. *Psychological Inquiry*, *7*, 1–15.

Baumeister, R. F., Tice, D. M., & Vohs, K. D. (2018). The strength model of self-regulation: Conclusions from the second decade of willpower research. *Perspectives on Psychological Science*, *13*, 141–145.

Brandstädter, V., Herrmann, M., & Schüler, J. (2013). The struggle of giving up personal goals: Affective, physiological, and cognitive consequences of an action crisis. *Personality and Social Psychology Bulletin*, *39*, 1668–1682.

Brandtstädter, J., & Renner, G. (1990). Tenacious goal pursuit and flexible goal adjustment: Explication and age-related analysis of assimilative and accommodative strategies of coping. *Psychology and Aging*, *5,* 58–67.

Brandtstädter, J., & Rothermund, K. (2002). The life-course dynamics of goal pursuit and goal adjustment: A two-process framework. *Developmental Review*, *22*, 117–150.

Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal of Personality and Social Psychology*, *65*, 1061.

Carver, C. S., & Scheier, M. F. (2000). On the structure of behavioral self-regulation. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 41–84). Academic Press.

Davydenko, M., Werner, K. M., Milyavskaya, M., & Donnellan, M. B. (2019). Frozen goals: Identifying and defining a new type of goal. *Collabra: Psychology*, *5*(1), 1–14.

Downie, M., Koestner, R., Horberg, E., & Haga, S. (2006). Exploring the relation of independent and interdependent self-construals to why and how people pursue personal goals. *Journal of Social Psychology*, *146*, 517–531.

Emmons, R. A. (2003). Personal goals, life meaning, and virtue: Wellsprings of a positive life. In C. L. M. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 105–128). American Psychological Association.

Epstude, K., & Roese, N. J. (2008). The functional theory of counterfactual thinking. *Personality and Social Psychology Review*, *12*(2), 168–192.

Fitzsimons, G. M., Finkel, E. J., & Vandellen, M. R. (2015). Transactive goal dynamics. *Psychological Review*, *122*, 648.

Gaudreau, P., Carraro, N., & Miranda, D. (2012). From goal motivation to goal progress: The mediating role of coping in the self-concordance model. *Anxiety, Stress & Coping*, *25*, 507–528.

Gollwitzer, P. M. (1990). Action phases and mind-sets. In T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 53–92). Guilford Press.

Gollwitzer, P. M., & Schaal, B. (1998). Metacognition in action: The importance of implementation intentions. *Personality and Social Psychology Review*, *2*(2), 124–136.

Gorin, A. A., Powers, T. A., Koestner, R., Wing, R. R., & Raynor, H. A. (2014). Autonomy support, self-regulation, and weight loss. *Health Psychology*, *33*, 332.

Inzlicht, M., & Friese, M. (2019). The past, present, and future of ego depletion. *Social Psychology*, *50*, 370–378.

Heckhausen, J., Wrosch, C., & Fleeson, W. (2001). Developmental regulation before and after a developmental deadline: The sample case of "biological clock" for childbearing. *Psychology and Aging*, *16*(3), 400.

Heckhausen, J., Wrosch, C., & Schulz, R. (2019). Agency and motivation in adulthood and old age. *Annual Review of Psychology*, *70*, 191–217.

Herrmann, M., & Brandstätter, V. (2015). Action crises and goal disengagement: Longitudinal evidence on the predictive validity of a motivational phase in goal striving. *Motivation Science*, *1*, 121.

Holding, A. C., Barlow, M., Koestner, R., & Wrosch, C. (2020). Why are we together? A dyadic longitudinal investigation of relationship motivation, goal progress, and adjustment. *Journal of Personality*, *88*, 464–477.

Holding, A. C., Fortin, J. A., Carpentier, J., Hope, N., & Koestner, R. (2020). Letting go of gold: Examining the role of autonomy in elite athletes' disengagement from their athletic careers and well-being in retirement. *Journal of Clinical Sport Psychology*, *1*(1), 88–108.

Holding, A. C., Hope, N. H., Harvey, B., Marion Jetten, A. S., & Koestner, R. (2017). Stuck in limbo: Motivational antecedents and consequences of experiencing action crises in personal goal pursuit. *Journal of Personality*, *85*, 893–905.

Holding, A. C., Hope, N., Verner-Filion, J., & Koestner, R. (2019). In good time: A longitudinal investigation of trait self-control in determining changes in motivation quality. *Personality and Individual Differences*, *139*, 132–137.

Holding, A. C., Kachanoff, F., Moore, A., & Koestner, R. (2022). Choosing to lose it: The role of autonomous motivation in goal disengagement. *Motivation and Emotion*. Advance online publication. https://doi.org/10.1007/s11031-022-09952-3

Holding, A. C., & Koestner, R. (2022). A self-determination theory perspective on how to choose, use and lose personal goals. In J. Reeve (Ed.), *Oxford handbook of education psychology*. Oxford University Press.

Holding, A. C., Moore, E., Moore, A., Verner-Filion, J., Ouellet-Morin, I., & Koestner, R. (2021). When goal pursuit gets hairy: A longitudinal goal study examining the role of controlled motivation and action crises in predicting changes in hair cortisol, perceived stress, health and depression symptoms. *Clinical Psychological Science*, *9*(6), 1214–1221.

Holding, A. C., St-Jacques, A., Verner-Filion, J., Kachanoff, F., & Koestner, R. (2020). Sacrifice—but at what price? A longitudinal study of young adults' sacrifice of basic psychological needs in pursuit of career goals. *Motivation and Emotion*, *44*(1), 99–115.

Hope, N. H., Holding, A. C., Verner-Filion, J., Sheldon, K. M., & Koestner, R. (2019). The path from intrinsic aspirations to subjective well-being is mediated by changes in basic psychological need satisfaction and autonomous motivation: A large prospective test. *Motivation and Emotion*, *43*(2), 232–241.

Hope, N. H., Milyavskaya, M., Holding, A. C., & Koestner, R. (2016). The humble path to progress: Goal-specific aspirational content predicts goal progress and goal vitality. *Personality and Individual Differences*, *90*, 99–107.

Hope, N. H., Milyavskaya, M., Holding, A. C., & Koestner, R. (2014). Self-growth in the college years: Increased importance of intrinsic values predicts resolution of identity and intimacy stages. *Social Psychological and Personality Science, 5*, 705–712.

Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, *65*, 410.

Klinger, E. (1975). Consequences of commitment to and disengagement from incentives. *Psychological Review*, *82*, 1.

Koestner, R., Lekes, N., Powers, T. A., & Chicoine, E. (2002). Attaining personal goals: Self-concordance plus implementation intentions equals success. *Journal of Personality and Social Psychology*, *83*, 231.

Koestner, R., Horberg, E. J., Gaudreau, P., Powers, T., Di Dio, P., Bryan, C., Jochum, R., & Salter, N. (2006). Bolstering implementation plans for the long haul: The benefits of simultaneously boosting self-concordance or self-efficacy. *Personality and Social Psychology Bulletin*, *32*, 1547–1558.

Koestner, R., Otis, N., Powers, T. A., Pelletier, L., & Gagnon, H. (2008). Autonomous motivation, controlled motivation, and goal progress. *Journal of Personality*, *76*, 1201–1230.

Koestner, R., Powers, T. A., Carbonneau, N., Milyavskaya, M., & Chua, S. N. (2012). Distinguishing autonomous and directive forms of goal support: Their effects on goal progress, relationship quality, and subjective well-being. *Personality and Social Psychology Bulletin*, *38*, 1609–1620.

Koestner, R., Powers, T. A., Holding, A., Hope, N., & Milyavskaya, M. (2020). The relation of parental support of emerging adults' goals to well-being over time: The mediating roles of goal progress and autonomy need satisfaction. *Motivation Science*, *6*(4), 374–385.

Leduc-Cummings, I., Milyavskaya, M., & Peetz, J. (2017). Goal motivation and the subjective perception of past and future obstacles. *Personality and Individual Differences*, *109*, 160–165.

Levine, S. L., Holding, A. C., Milyavskaya, M., Powers, T. A., & Koestner, R. (2020). Collaborative autonomy: The dynamic relations between personal goal autonomy and perceived autonomy support in emerging adulthood results in positive affect and goal progress. *Motivation Science*, *7*(2), 145–152.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Prentice-Hall.

Marion-Jetten, A. S., Taylor, G., & Schattke, K. (2021). Mind your goals, mind your emotions: Mechanisms explaining the relation between dispositional mindfulness and action crises. *Personality and Social Psychology Bulletin*, *48*(1), 3–18.

Mens, M. G., Scheier, M. F., & Wrosch, C. (2015). Goal adjustment theory. In *The Encyclopedia of Adulthood and Aging* (pp. 571–576). Wiley-Blackwell.

Milyavskaya, M., Inzlicht, M., Hope, N., & Koestner, R. (2015). Saying "no" to temptation: Want-to motivation improves self-regulation by reducing temptation rather than by increasing self-control. *Journal of Personality and Social Psychology*, *109*, 677.

Milyavskaya, M., Nadolny, D., & Koestner, R. (2014). Where do self-concordant goals come from? The role of domain-specific psychological need satisfaction. *Personality and Social Psychology Bulletin*, *40*, 700–711.

Miquelon, P., & Vallerand, R. J. (2006). Goal motives, well-being, and physical health: Happiness and self-realization as psychological resources under challenge. *Motivation and Emotion*, *30*, 259–272.

Moore, A. M., Holding, A. C., Buchardt, L., & Koestner, R. (2021). On the efficacy of volitional personality change in young adulthood: Convergent evidence using a longitudinal personal goal paradigm. *Motivation and Emotion*, *45*(2), 171–185.

Moore, E., Holding, A. C., Hope, N. H., Harvey, B., Powers, T. A., Zuroff, D., & Koestner, R. (2018). Perfectionism and the pursuit of personal goals: A self-determination theory analysis. *Motivation and Emotion*, *42*, 37–49.

Moore, E., Holding, A. C., Moore, A., Levine, S. L., Powers, T. A., Zuroff, D. C., & Koestner, R. (2020). The role of goal-related autonomy: A self-determination theory analysis of perfectionism, poor goal progress, and depressive symptoms. *Journal of Counseling Psychology*, *68*(1), 88–97.

Moore, A., Holding, A. C., Verner-Filion, J., Harvey, B., & Koestner, R. (2020). A longitudinal investigation of trait-goal concordance on goal progress: The mediating role of autonomous goal motivation. *Journal of Personality*, *88*, 530–543.

Powers, T. A., Koestner, R., & Zuroff, D. C. (2007). Self–criticism, goal motivation, and goal progress. *Journal of Social and Clinical Psychology*, *26*, 826–840.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., Donald, J. N., & Bradshaw, E. L. (2021). Mindfulness and motivation: A process view using self-determination theory. *Current Directions in Psychological Science*, *30*(4), 300–306.

Sheldon, K. M. (2014). Becoming oneself: The central role of self-concordant goal selection. *Personality and Social Psychology Review*, *18*, 349–365.

Sheldon, K. M., & Elliot, A. J. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons for goals as predictors of effort and attainment. *Personality and Social Psychology Bulletin*, *24*, 546–557.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, *76*, 482–497.

Sheldon, K. M., & Houser-Marko, L. (2001). Self-concordance, goal attainment, and the pursuit of happiness: Can there be an upward spiral? *Journal of Personality and Social Psychology*, *80*, 152–165.

Smyth, A. P., Werner, K. M., Milyavskaya, M., Holding, A., & Koestner, R. (2020). Do mindful people set better goals? Investigating the relation between trait mindfulness, self-concordance, and goal progress. *Journal of Research in Personality*, *88*, 104015.

Quirin, M., Jais, M., Di Domenico, S. I., Kuhl, J., & Ryan, R. M. (2021). Effortless willpower? The integrative self and self-determined goal pursuit. *Frontiers in Psychology*, *12*, 658.

Werner, K. M., Milyavskaya, M., Foxen-Craft, E., & Koestner, R. (2016). Some goals just feel easier: Self-concordance leads to goal progress through subjective ease, not effort. *Personality and Individual Differences*, *96*, 237–242.

Wrosch, C., Scheier, M. F., Carver, C. S., & Schulz, R. (2003). The importance of goal disengagement in adaptive self-regulation: When giving up is beneficial. *Self and Identity*, *2*, 1–20.

Wrosch, C., Scheier, M. F., & Miller, G. E. (2013). Goal adjustment capacities, subjective well-being, and physical health. *Social and Personality Psychology Compass*, *7*, 847–860.

Wrosch, C., Scheier, M. F., Miller, G. E., Schulz, R., & Carver, C. S. (2003). Adaptive self-regulation of unattainable goals: Goal disengagement, goal reengagement, and subjective well-being. *Personality and Social Psychology Bulletin*, *29*, 1494–1508.

# Using Free Will Wisely:
# The Self-Concordance Model

Kennon M. Sheldon *and* Ryan Goffredi

## Abstract

Self-concordance research has come a long way since the turn of the millennium. This chapter revisits the original thinking and data regarding the model, selectively reviews more recent research on the model, and outlines some interesting new theoretical developments and research possibilities. Self-concordance research addresses a complex combination of factors: self-as-agent versus self-as-story, system 1 versus system 2 processes, implicit versus explicit processes, "I" versus "me" processes, defensive versus growth processes, deliberative versus implemental processes, and more. This chapter also connects self-concordance to the free will versus determinism debate and shows how the process of becoming more self-concordant can be conceptualized in terms of Wallas's (1926) four stage model of the creative process.

**Key Words:** self-concordance model, personal goals, autonomy, free will, self-determination theory

Self-determination theory (SDT) begins with the assumption of the active individual. We are persons (Ryan, Deci, Vansteenkiste, & Soenens, 2021) who develop and grow largely through our own efforts, as we seek greater autonomy and self-integration in ourselves and as we pursue intrinsic motivations and interests out in the world.

Given this, it is noteworthy that many causal path models in SDT research portray intrinsic motivation, autonomy, and self-determination as *effects* of social processes. Controlling or nonsupportive contexts are often included as exogenous factors, standing at the left of the model, to influence subsequent experiential processes and states, like intrinsic motivation and felt autonomy. In such models, the active individual seems to take a back seat to forces largely outside of their volitional control.

Not all SDT models take this approach, of course. Also, there is no theoretical reason to believe that people's personal decisions and initiatives *cannot* stand at the front of a causal model, alongside situation factors. Still, the bulk of SDT has not focused on people's "specific change intentions," that is, their self-generated goals to make something new happen, in the world or in themselves. Instead, personality-focused SDT research typically employs more trait-like constructs, like causality orientations, intrinsic versus

extrinsic values, or trait autonomy. These constructs give insight into the *kind of person* who is able to enact change intentions, who is able to make new things happen in their own lives, but they do not give as much information about the specifics of how we choose personal intentions, and how such intentions work (or fail to work).

In the epilogue to their 2017 book Ryan and Deci stated that they had taken a strong social psychological focus for two reasons: first, to make recommendations about how to structure supportive environments and, second, to promote greater awareness of social processes that affect everyone. However, Ryan and Deci also acknowledged that it is important to understand people's self-organizational capacities, independent of their context—their ability to overcome need-frustration and thwarting and their ability to guide their own lives in a macro-level way. They further stated that SDT is "perhaps most incomplete . . . concerning these issues of personal change and responsibility that we have emphasized in this epilogue" (p. 650).

## Personal Goals and the Active Individual

The self-concordance model (SCM; Sheldon, 2014; Sheldon & Elliott, 1999) provides one approach to these issues. The SCM is built upon the personal goal approach to personality, located at an important tier of personality science termed "characteristic adaptations" (McAdams, 1996; McCrae & Costa, 1996). The personal goals tradition focuses on the spontaneous desires or initiatives that come into people's minds, which they may pursue as strivings or projects (Emmons, 1989; Little, 1983). Personal goal researchers assume that people are constantly thinking about "current concerns" in their lives (Klinger, 1977), in the proactive attempt to figure out what they want, so they can go after it (Gollwitzer, 1999). Personal goal researchers also assume that our personal goals are the main organizers of our behavior because goals provide the principles or control standards that regulate our action systems (Carver & Scheier, 1981, 1998). They are how we navigate the headwinds of our lives, potentially carving a path to our liking despite the unexpected gusts.

We suggest that proactive goal-setting provides a potentially good way to conceptualize SDT's active individual, because newly conceived and freshly adopted goals represent the person's internally generated quest to run their own lives and to pursue happiness more generally. Personal goals provide potentially powerful "change intentions," which might stand alongside contextual factors, at the front end of a causal model. Personal goals may in fact be the very expression of people's inherent free will. According to philosopher Christian List (2019) in his book *Why Free Will Is Real*, free will merely requires the ability to consider alternatives, to make a selection, and to begin enacting that selection. In this intention-focused view, personal goal pursuit is, in a very real sense, free will in action—self-determination made manifest.

Of course, putting goals at the front of the model, on an equal footing with situations, doesn't mean that past situational factors had no influence on people's current goal selections and change intentions. Paths can be traced from goals backward in time, to

prior influential situations. But we note that paths can also be traced back in time from people's current situations to their past goals. To an underappreciated extent, our prior goal-related behaviors affected and shaped our current circumstances. Consider "Ann," who has been frustrated with her husband, "John," for some time. Earlier in the week, Ann decided to express her frustration to John. Today, after some reflection, John is apologizing to Ann. Clearly, Ann's earlier decision to speak out made a difference. Or consider a college student enmeshed in the circumstances of his graduation ceremony who recalls, with pride, his own portentous decision to leave his dead-end job and return to school. In short, goals can allow us to make self-fulfilling connections between moments of present desire and the later occurrence of desire-satisfying future events. What else would you want free will to do for you?

### Selecting Goals Wisely

Building on this foundation of active goal pursuit, the SCM turns to a very important question: *How can people know which goals are best to select and pursue?* We don't have to look far in the world to see people who hate their jobs but don't know what else to do; people who wish they hadn't picked the spouse or friends they're stuck with; people enmeshed in ways of living that, despite being self-chosen, do not bring them satisfaction and fulfillment. By List's (2019) definition of free will, we humans have great power to direct and affect our lives. But the question that List's account does *not* address is: Are we able to use this power wisely? That is, can we choose in ways that contribute to our quality of life, and the quality of life of others? It seems that, sometimes, we can't. So although we may *always* have free will, at least in the sense of having the power to select and pursue intentions, we may not always *feel* free in what we are doing. And this feeling may be a symptom of problems or deficiencies during the goal selection process.

Sheldon (2014) attempted to explain suboptimal goal selection using the distinction between system 1 and system 2 functioning. According to the modern consensus (Kahneman, 2011), our brains have two minds: a first mind (system 1) that evolved earlier and is found in all vertebrates, and a second mind (system 2) that evolved on top of the first mind, which is found only in humans, with their large cerebral cortex. System 1 is fast, instinctive, and emotional; it is where our automatic reactions and impulses come from. It is also where our implicit motives reside, energizing us toward particular incentives that we habitually seek, without thinking. System 2 is slower, more deliberate, verbal, and logical; it lets us do things like focus our attention, solve multi-step problems, and describe to ourselves what is happening. System 2 is also where our explicit motives reside—the social incentives we think we want ("Oh yes, I'm all about achievement!").

The problem, for all of us, is that goals are largely a system 2 phenomenon (Emmons & McAdams, 1991). They are the explicit statements that we speak or write down in our diaries or program into our Outlook calendars. They are verbal productions,

inevitably based on our current understanding of ourselves and our condition. Thus our goals may represent only semantic *theories* that we have about ourselves, theories which may be incorrect (Epstein, 1973). Stated differently, the choosing self, based in system 2, may be "out of touch with itself"—having little idea of what is actually going on within deeper or nonconscious parts of its own personality. Still, the choosing self, via its evolved executive function (Sedikides & Skowronski, 1997), is in charge—to a very significant extent!

The previous two sentences exemplify perhaps the most profound existential dilemma faced by human beings: that we are radically free (Sartre, 1956) and must continually choose our way forward (Sheldon, in press), despite never having full knowledge of who we are, what we want, or what the results of our choices will be. We human selves are to some extent mere *models* of ourselves, and our models may be inaccurate. From the SCM perspective, humans are healthiest when their self-model allows them to express and develop the deeper or growth-seeking aspects of their personalities by setting relevant conscious goals. In this case the person enjoys a fortuitous state in which they are fulfilling their own values and passions via their goal-driven behavior (Tiberius, 2018), potentially leading to an upward spiral (Sheldon & Houser-Marko, 2001) of health and well-being. We'll return in the final section of the chapter to this question of the accuracy of the self-model in which people live.

## Measuring Self-Concordance

How can researchers or counsellors tell if a person has chosen unwisely in making their goal selections, such that the person should perhaps reconsider, or even start over? Conversely, what are the symptoms of *wise* goal selection, such that the person is likely to thrive and grow as a result of choosing and pursuing those goals?

In the implicit/explicit motive literature, mismatches between system 1 and system 2 are measured as discrepancies between implicit and explicit measures of the same motive (Schultheiss, 2008). In contrast, SCM research uses only a self-report method to assess discrepancies. However, we don't ask participants "Does this goal fit who you really are, in a deeper way?" because we don't think people can answer this question. Instead we ask "Why are you pursuing this goal?" and supply participants with the list of motivational reasons specified by SDT's organismic integration mini-theory. Self-concordance is operationalized as having organismically integrated goals—specifically, experiencing much autonomous (intrinsic and identified) motivation and little controlled (external and introjected) motivation for the goals one has listed. These feelings emerge from system 1, and system 2 is capable of reporting them. So even though people can't know *directly* if a goal is concordant, they can know how they *feel* about a goal, which can provide important information.

Many readers will recognize the self-concordance formula as a *relative autonomy index* (RAI; Ryan & Deci, 2000), often used to compute a single self-determined motivation

score. RAIs have been employed for a wide variety of behavioral phenomena, from motivation in general life domains (e.g., motivation for school, work, relationships) to individual tasks within domains, short- and long-term goals and aspirations, and even to moment-to-moment experiences of one's activities. The self-concordance RAI is novel, however, in that it applies to the person's own self-stated life goals, written down on a blank sheet of paper, without otherwise being externally structured. Thus SCM captures people's salient and spontaneously generated reports of "what they are trying to do" in life, or the personal goals that are highly ideographically represented within people. SCM further assumes that a low self-concordance score is symptomatic of a state in which a person's stated goals are lacking contact with deeper, more implicit, and perhaps healthier inclinations within themselves.

The evidence for this hypothesis is quite good. In our lab we have conducted many experiments in which people are randomly assigned to pursue only goals of one type or another (i.e., either "all achievement" or "all affiliation" goals). When the assigned goal type matches the participant's motive dispositions, the participant feels more autonomous and less controlled in pursuing that assigned set of goals. For example, when achievement-oriented participants are randomly assigned achievement-oriented goals to pursue, they report greater self-concordance for those goals, compared to when they are assigned affiliation goals. In contrast, when there is a mismatch, as when an achievement-oriented participant is assigned affiliation goals to pursue, they feel more controlled and less autonomous in pursuing the assigned goals; they don't really want to. This pattern has been examined with respect to both implicit and explicit motive dispositions (Sheldon & Schüler, 2011) and for several other goal-content dichotomies, including egocentric versus ecocentric goals (Sheldon et al., 2020), agency versus communion goals (Sheldon & Cooper, 2008), and intrinsic versus extrinsic goals (Sheldon et al., 2015).

## Historical Review of Self-Concordance Research
**From goal inception to attainment**.

A logical first question for SCM research was: Does it matter if people pursue more self-concordant goals? Possibly not. For example, it could be that merely stating goals is what matters, and that one's perceived reasons for pursuing those goals, rated after the fact, are irrelevant or unimportant. However, based on past SDT research using RAIs, we expected that people's reasons for striving *would* matter. Specifically, we hypothesized that self-concordant goals would receive more sustained effort than less integrated, nonconcordant goals because self-concordant goals represent deeper and more enduring facets of personality and are not just the result of momentary conscious whims or transient situational pressures. Self-concordant goals should remain more self-relevant in the long term, and therefore people should invest more sustained effort into them. As a result, people should be more likely to actually attain those stated goals.
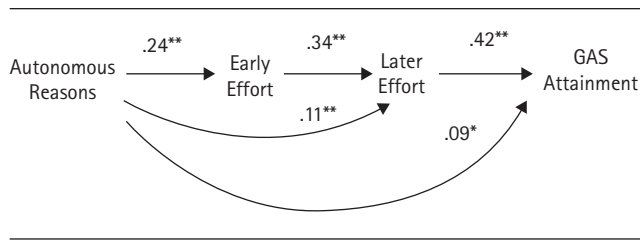
**Figure 17.1** The mediational model for the autonomy to Goal Attainment Scaling attainment effect

*Source*: Sheldon & Elliot (1998)

Sheldon and Elliot (1998) tested these hypotheses in a series of short-term longitudinal studies, using Goal Attainment Scaling (GAS; Kiresuk, Smith, & Cardillo, 1994). GAS is a technique for objectively measuring goal attainment at later points in time, using preestablished and easily quantifiable benchmarks. Sheldon and Elliot (1998) deemed it important to employ GAS because the self-concordance measure might be influenced by positivity biases or halo effects that also inflate subjective goal-attainment ratings. They found a very high correlation between GAS attainment and Likert-rated attainment (*r* = .73), indicating that Likert ratings may suffice in most cases. More important, they found that autonomous goal striving predicted greater goal attainment (measured both ways), and that this effect was partially mediated by the sustained effort over time. In contrast, controlled motivations did not predict goal attainment (Sheldon & Elliot, 1998). Figure 17.1 illustrates the findings.

Links between self-concordance and goal attainment have since consistently been found in the literature (Vasalampi, Salmela-Aro, & Nurmi, 2009; Smith, Ntoumanis, & Duda, 2011; Gaudreau, Carraro, & Miranda, 2012). However, research has also identified several other dynamic factors that can help explain the connection between self-concordance and goal attainment. These include identifying oneself as the "doer" of one's goals (Houser-Marko & Sheldon, 2006), feeling subjective ease or naturalness in striving (Werner et al., 2016), using task-based rather than disengagement-based coping strategies after goal setbacks (Gaudreau et al., 2012), making challenge appraisals rather than threat appraisals of increasingly difficult tasks (Ntoumanis et al., 2014), minimizing action crisis severity (Holding et al., 2017), and creating specific implementation intentions regarding goals (Koestner et al., 2002).

These findings suggest that one key to being an "active individual" is to keep on setting goals for ourselves. But even more important, we must set the "right" goals: goals that we can pursue freely, that fit our implicit personality, that we pursue for autonomous rather than controlled reasons. Only in these cases will we be able to keep going with our self-generated efforts and initiatives—to forge on ahead, in self-chosen paths of "freely willed behavior." Fortunately, as the research in the next section shows, self-concordant striving is emotionally rewarding, which helps it be self-reinforcing and self-sustaining.

## From attainment to well-being

Other early self-concordance research examined the effects of self-concordant goal striving on people's well-being and happiness. Typically, self-concordance is positively correlated with cross-sectional well-being, meaning that people higher in self-concordance at time *t* are also happier at time *t* (Kelly, Mansell, & Wood, 2015; Sheldon & Kasser, 1998; Sheldon & Elliot, 1999; Sheldon et al., 2004; Tadić, Bakker, & Oerlemans, 2013). More important, self-concordance influences *changes* in people's happiness at time *t* + 1. The main vehicle is goal attainment. Although attaining one's goals is gratifying (Brunstein, 1993), goal attainment has even larger effects upon changes in well-being when the goals attained are self-concordant ones (Sheldon & Elliot, 1999; Sheldon & Kasser, 1998). Figure 17.2 illustrates this pattern, showing that goal progress has a greater effect in the case of self-concordant goals. The connection between achieving self-concordant goals and experiencing enhanced well-being has been replicated in a number of other studies (Judge et al., 2005; Koletzko et al., 2015; Smith et al., 2007, 2011; Sheldon, Prentice, & Osin, 2019, a finding which mirrors RAI research across many different domains (Ryan & Deci, 2017).

The bottom left of the four points in Figure 17.2 illustrates an interesting fact: that pursuing self-concordant goals can be risky, in that *failing* to achieve them may negatively impact well-being. Self-concordant goals are aspirations that are, by definition, well integrated into and reflective of one's deeper personality. Therefore, it is not surprising that failing in self-concordant goals would be more painful or upsetting to people. Indeed, previous work investigating the effects of failure to meet personal growth goals showed associations with negative affect, anxiety, and depression (Jones et al., 2013). Still, if the successful attainment of self-concordant goals leads to the actualization of the person's potential and expresses their innermost values, we would argue that the risk is well worth the reward—especially given that failure is less likely in the case of self-concordant goals.
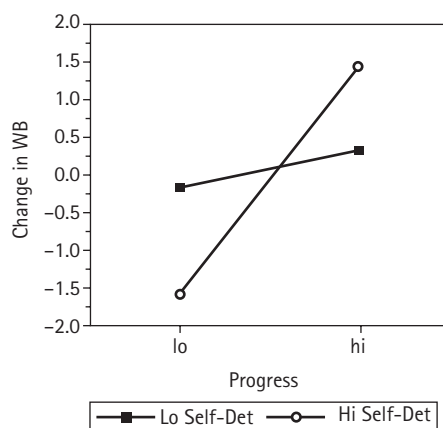


**Figure 17.2** The relationship between goal progress and longitudinal changes in well-being among individuals with higher versus lower self-concordant goal strivings

*Source*: Sheldon & Kasser (1998)
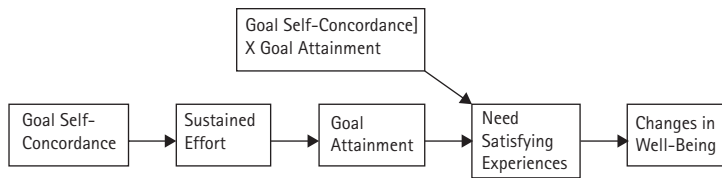
**Figure 17.3** The self-concordance model

*Source*: Sheldon & Elliot (1999)

Attempting to explain *why* self-concordant goal attainment boosts well-being, Sheldon and Elliot (1999) showed that such attainment boosts the level of satisfaction of people's needs for autonomy, competence, and relatedness (Ryan & Deci, 2017). These boosts in satisfaction then boost their levels of well-being. These findings support our proposal that personal goals provide an important way for people to meet their *own* needs rather than merely waiting for their environment to change.

The early research studies culminated in the path model illustrated in Figure 17.3, which combines all of the above relationships into a single longitudinal sequence, which was tested and supported by Sheldon and Elliot (1999). The model shows that when we start out with self-concordant goal motivation, we are more likely to keep on going rather than waning in our efforts. Thus we are more likely to get what we said we wanted. This in turn helps boost our psychological need satisfaction and thus our subjective well-being. Also, our need satisfaction and subjective well-being are *most* boosted when the goals that we achieved were self-concordant ones. Thus, initial self-concordance provides a double longitudinal benefit: if we manage to choose well, we'll *do* better, and we'll *feel* better when we do better. This can help us keep going in our freely willed pursuits, serving as true causes within our own lives.

## Causes of Increased Self-Concordance

What characteristics or factors can help a person select more self-concordant goals? Although information on this question remains somewhat sparse, there are some hints about what factors help people become more self-concordant.

**Personality variables.** One category concerns personality variables. For instance, Greguras and Diefendorff (2010) illustrated that proactive personality, defined as one's tendency to initiate change in a variety of situations, was associated with greater self-concordant goal selection as well as with greater goal attainment and greater need satisfaction. Ionescu (2014) reported that dispositional optimism is positively associated with the ability to list more self-concordant goals, and Judge et al. (2005) found a similar effect for positive self-regard. A recent meta-analysis by Smyth and colleagues (2020) demonstrated that trait mindfulness is positively correlated with people's ability to select self-concordant goals, and that mindfulness also predicts increased goal self-concordance over time. Mindfulness may enhance people's sensitivity to subtle cues emerging from system 1, which can tell them what they really feel or want.

**Situation variables**. While our focus in this chapter is on the active individual as the initiator of their own behavior, nevertheless people do not live in a vacuum, and as previously mentioned, at times paths can be traced from goals back to prior influential situations. In a classic article, Deci and Ryan (1987) explained how situations may either support people's autonomy or exert control over them, influencing their need satisfaction and motivation. Consistent with this, Milyavskaya, Nadolny, and Koestner (2014) found that when particular life domains support people's needs, people are enabled to select more self-concordant goals in those domains. They also showed that fluctuations in domain satisfaction are associated with fluctuations in domain self-concordance, suggesting that self-concordance ratings are not merely indicators of person/goal "fit" but are also indicators of the motivating quality of situations. Other research has also evidenced higher self-concordant goal striving in employees of leaders with empowering and transformational leadership styles, which place emphasis on supporting employees by providing choice and rationale in decision-making (Hon, 2011), espousing workplace values, and supporting affective needs of workers (Bono & Judge, 2003).

**Self-concordance-enhancing practices**. Another category of predictor involves particular practices or procedures that a person might use during the process of selecting goals. One practice is simply to wait, to revisit one's initial inclinations before finally committing to them. For example, Sheldon, Arndt, and Houser-Marko (2003) tested the concept of an "organismic valuing process" (OVP), first proposed by Carl Rogers (1964). They reasoned that if an OVP exists, it should help people improve their choices over time by both conscious and nonconscious means. To test this they used the distinction between intrinsic values, involving self-acceptance, community feeling, and emotional intimacy, and extrinsic goals and values, involving physical appearance, financial success, and popularity/status (Kasser, 2002). Intrinsic values are known to be more need-satisfying and well-being-conducive than extrinsic values (Kasser & Ryan, 1996).

Sheldon et al. (2003) found that when people revisited their earlier choices among values, they changed in nonrandom ways; people showed a "positive bias" to shift toward more intrinsic goals and values. This occurred even on very short time scales of only a few minutes and occurred both when participants were actually rerating the items and when they were merely trying to recall their earlier ratings. These biased recall findings, in particular, suggest that the OVP might operate at a nonconscious level. System 1 can have influence on system 2, given time to operate.

Sheldon et al. (2019) provided further evidence for the benefits of waiting before deciding, while also suggesting an important way to use the wait time: by thinking in advance why you would choose each of the particular alternatives you are considering. As background: in all previous self-concordance research, participants first listed their goals, and then rated why they had chosen them. They had already "crossed the Rubicon" of goal selection, moving from the deliberation phase of action to the implementation phase

(Gollwitzer, 1990; Brandstätter et al., 2003). This is perhaps problematic, since improving one's ability to make "wise" choices presumably involves doing something *before* crossing the Rubicon. Another potential problem is that people's self-concordance ratings may be biased upward, as an effect of post-decisional dissonance reduction (Festinger, 1964). When we make the shift to implementation, our minds shift to convincing ourselves we've chosen the right thing.

Sheldon et al. (2019) reversed the usual order of operations by asking half their participants to rate goal self-concordance *before* making final selections among goals rather than *after*. Specifically, all participants were given the same list of six goals to choose from, four intrinsic and two extrinsic. In the experimental condition, participants rated the reasons they *might* pursue all six goals, using the standard reasons of the RAI, and then picked three goals to pursue during the semester. In the control (usual procedure) condition, participants first picked three of the six goals, then rated the reasons they *will* pursue those three goals. Thus, in the experimental condition, participants had to do more work, rating six goals rather than three.

But it was worth it: in the "rate before selecting" condition, participants selected significantly fewer extrinsic and more intrinsic goals to pursue, which affected their well-being at the end of the study, several weeks later. This finding suggests a simple and reasonable heuristic for making wise goal selections: think about *why* you would do X before committing to do X. If the reasons for doing X would involve controlled motivations rather than autonomous motivations, this is a hint that X may not be a good choice. System 1 is trying to tell you that it doesn't want X!

Interestingly, Sheldon et al. (2019) also found that self-concordance scores were significantly higher in the "rate after selection" condition, consistent with the possibility mentioned above, that participants' self-concordance scores in all prior studies may have been biased upward. This has little practical import but does suggest a caveat to our claim that the self-concordance measure indexes the degree of matching between implicit and explicit personality. The measure may do a better job of this *before* the goal has been selected.

## Avenues for Future Research

Many interesting studies of self-concordance, by researchers working in many different labs, had to be omitted from this necessarily short review. Still, many important questions remain. In this final section we'll suggest some promising future research avenues that might address these questions.

**Better understanding the narrative agent**. According to Ryan and Deci (2017), the self is an integrative *process* and can never itself be an object of direct perception. The self is instead "phenomenally experienced as both a center of experience and as the initiator and regulator of volitional behavior" (p. 52). This definition clearly distinguishes the "I" (or mental agent) from the "me" (or self-concept), to borrow William James's well-known

dichotomy. What matters, according to SDT, is that the "I" feels fully autonomous and unimpeded in its functioning.

Nonetheless, it seems that there is more to phenomenal self than this; the self can be cloaked in various forms and functions, in which "I's" and "me's" combine and interact in various ways. For example, Sedikides and Skowronski (1997) argued that the *symbolic self*, the dynamic and multifaceted self-representation in which we live, is an evolved adaptation within humans that likely went beyond the capacities of prior hominids. According to these authors, the symbolic self has at least three essential functions: (1) projecting a coherent social character to others in order to manage social discourse; (2) protecting and defending itself and its current beliefs; and (3) serving as an executive and controller within the action system.

Another approach to the self emphasizes its narrative characteristics and features (Bauer & McAdams, 2004) and the fact that we are continually expressing ourselves within the context of our long-term stories and identities. McAdams's (1996, 2009, 2019) "three tiers" typology of personality science distinguishes between research on the self-as-actor (the person's behavioral traits), the self-as-agent (the person's "I" or acting executive), and the self-as-story (the person's "me" or narrative self-concept). Presumably these three aspects of personality interact with and influence each other (McGregor & Little, 1998; Sheldon, Cheng, & Hilpert, 2011). If so, then symbolic (narrative) selves might be expected to have an important influence on agentic (intentional) selves. In some cases, our symbolic selves might help us to choose wise goals; in other cases, our self-beliefs might impede or disrupt the goal-selection process.

How might symbolic self processes impede wise goal selection? Sheldon (in press) argued that symbolic selves largely operate in system 2, given that they are the linguistic beliefs, stories, and theories that we ascribe to, tell, and posit about ourselves. Unfortunately, as partly semantic constructions, symbolic selves may fail to accurately describe or represent what is happening down in system 1, thus failing to give voice to potentially important growth impulses that lurk on the fringes of consciousness. Alfred Korzybski famously said in 1933, "The map is not the territory" (p. 221). In the current case, this could be translated as "The symbolic self is not the whole organism." Rather, the symbolic self is only a limited readout of the organism, often lodged within a narrow "ego tunnel" (Metzinger, 2009) that omits far more than it includes.

Kahneman (2011, p. 390) clearly intuited this strange condition that humans share when he said, "[O]dd as it may seem, I am my remembering self, and the self who does my living is like a stranger to me." The remembering self, who arrives last on the scene as the decision-maker, has nearly forgotten about system 1, which it is trying to grasp. This gives it huge degrees of freedom, limited only by imagination—including the freedom to be radically out of touch with its own deeper inclinations (Grund, Fries, & Rheinberg, 2018). Presciently, the organismic theorist Andras Angyal wrote,

way back in 1941, "The relative segregation of the symbolic self within the organism is perhaps the most vulnerable point of the human personality organization" (p. 133). Consistent with Sedikides and Skowronski's (1997) evolutionary arguments, however, we suggest that the symbolic self is also a great *strength* for humans because of its important functions.

**Conceptualizing self-initiated growth as a creative process**. Such reasoning suggests that selecting more self-concordant goals may sometimes require people to modify, or even overthrow, their current symbolic self. In the process what they *really* need and feel, down in their deeper organism, might better emerge into view. But what can initiate such a change, in which a person comes to reject who they thought they were in favor of a healthier, more accurate, or more expansive view? Surely this is a very difficult thing to do, given the defensive functioning of the symbolic self (Sedikides & Skowronski, 1997, 2003).

Sheldon and Goffredi (2021) addressed the self-initiated change question by drawing from Graham Wallas's (1926) classic model of the creative process. This model distinguishes four stages of the creative process, leading from preparation (conscious exploration of the problem) to incubation (consciousness relinquishing the problem) to illumination (nonconscious thought spontaneously providing an insight relevant to the problem) to elaboration (conscious thought confirming and applying the insight). Wallas's model was prescient because it anticipated current thinking about the distinct roles of explicit (controlled) and implicit (automatic) processes within cognitive functioning (Hélie & Sun, 2010; Kahneman, 2011; Weinberger & Stoycheva, 2020).

Sheldon and Goffredi (2021) postulated a developmental sequence based on the fact that people pursuing nonconcordant long-term goals tend to experience negative emotions. In the ideal case, such negative emotions would prompt conscious recognition of the fact that there is a problem. With such recognition the person might begin asking themselves relevant questions, such as "Why am I so unhappy?" or "What should I do?" It is these verbal self-queries which initiate the growth process (preparation) by activating nonconscious thought (incubation). Nonconscious thought responds to such priming, providing relevant insights or impulses that can potentially break into consciousness (illumination). At this point, the person must find the courage to and resolve to embrace and apply the new insights (elaboration).

For example, an unhappy person, stuck in a stressful and seemingly meaningless career, might finally begin to ask themselves whether other possibilities are available (preparation). In time (after incubation), nonconscious thought processes can provide the person with illuminating cues (e.g., a suppressed memory of an earlier and more fulfilling way of living, or a sudden impulse to resume a long-ignored interest). Hopefully the person can recognize such cues as important hints to action and embrace their transformative implications (elaboration).

Clearly this is an ambitious sequence to test, and Sheldon and Goffredi (2021) have provided only very preliminary evidence in support of it. Nevertheless, we look forward to conducting further research in this area and to seeing similar research from others.

## Conclusion

Self-concordance research addresses a complex combination of factors: conscious versus nonconscious processes, implicit versus explicit processes, "I" versus "me" processes, self versus goal processes, defensive versus growth processes, deliberative versus implemental processes, and more. Although the task is daunting, we suggest that understanding how these factors combine and interact will take us a long way toward the "holy grail" of positive psychology: understanding how people can best express and develop their own deeper potentials in order to lead truly fulfilling, creative, and exemplary lives.[1]

## References

Angyal, A. (1941). *Foundations for a science of personality*. Viking Press.

Bauer, J. J., & McAdams, D. P. (2004). Personal growth in adults' stories of life transitions. *Journal of Personality*, *72*(3), 573–602. https://doi.org/10.1111/j.0022-3506.2004.00273.x

Bono, J. E., & Judge, T. A. (2003). Self-concordance at work: Toward understanding the motivational effects of transformational leaders. *Academy of Management Journal*, *46*(5), 554–571.

Brandstätter, V., Heimbeck, D., Malzacher, J., & Frese, M. (2003). Goals need implementation intentions: The model of action phases tested in the applied setting of continuing education. *European Journal of Work and Organizational Psychology*, *12*(1), 37–59. https://doi.org/10.1080/13594320344000011

Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal of Personality and Social Psychology*, *65*(5), 1061–1070. https://doi.org/10.1037/0022-3514.65.5.1061

Carver, C. S., & Scheier, M. (1981). *Attention and self-regulation: A control theory approach to human behavior*. Springer.

Carver, C. S., & Scheier, M. (1998). *On the self-regulation of behavior*. Cambridge University Press.

Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, *53*(6), 1024–1037. https://doi.org/10.1037/0022-3514.53.6.1024

Emmons, R. A. (1989). The personal striving approach to personality. In L. A. Pervin (Ed.), *Goal concepts in personality and social psychology* (pp. 87–126). Lawrence Erlbaum Associates.

Emmons, R. A., & McAdams, D. P. (1991). Personal strivings and motive dispositions: Exploring the links. *Personality and Social Psychology Bulletin*, *17*, 648–654.

Epstein, S. (1973). The self-concept revisited: Or a theory of a theory. *American Psychologist*, *28*(5), 404–416. https://doi.org/10.1037/h0034679

Festinger, L. (1964). *Conflict, decision and dissonance*. Stanford University Press.

Gaudreau, P., Carraro, N., & Miranda, D. (2012). From goal motivation to goal progress: The mediating role of coping in the self-concordance model. *Anxiety, Stress and Coping*, *25*(5), 507–528. https://doi.org/10.1080/10615806.2011.628015

Gollwitzer, P. M. (1990). Action phases and mind-sets. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 53–92). Guilford Press.

Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist*, *54*, 493–503.

Greguras, G. J., & Diefendorff, J. M. (2010). Why does proactive personality predict employee life satisfaction and work behaviors? A field investigation of the mediating role of the self-concordance model. *Personnel Psychology*, *63*(3), 539–560. https://doi.org/10.1111/j.1744-6570.2010.01180.x

---

Grund, A., Fries, S., & Rheinberg, F. (2018). Know your preferences: Self-regulation as need-congruent goal selection. *Review of General Psychology*, *22*(4), 437–451. https://doi.org/10.1037/gpr0000159

Hélie, S., & Sun, R. (2010). Incubation, insight, and creative problem solving: A unified theory and a connectionist model. *Psychological Review*, *117*(3), 994–1024. https://doi.org/10.1037/a0019532

Holding, A. C., Hope, N. H., Harvey, B., Marion Jetten, A. S., & Koestner, R. (2017). Stuck in limbo: Motivational antecedents and consequences of experiencing action crises in personal goal pursuit. *Journal of Personality*, *85*(6), 893–905. https://doi.org/10.1111/jopy.12296

Hon, A. H. Y. (2011). Enhancing employee creativity in the Chinese context: The mediating role of employee self-concordance. *International Journal of Hospitality Management*, *30*(2), 375–384. https://doi.org/10.1016/j.ijhm.2010.06.002

Houser-Marko, L., & Sheldon, K. M. (2006). Motivating behavioral persistence: The self-as-doer construct. *Personality and Social Psychology Bulletin*, *32*(8), 1037–1049. https://doi.org/10.1177/0146167206287974

Ionescu, D. (2014). Motivational persistence, optimism and neuroticism as dispositional determinants for self-concordance of goals and psychological well-being. *Annals of the Al. I. Cuza University, Psychology Series*, *23*(2), 79–88.

Jones, N. P., Papadakis, A. A., Orr, C. A., & Strauman, T. J. (2013). Cognitive processes in response to goal failure: A study of ruminative thought and its affective consequences. *Journal of Social and Clinical Psychology*, *32*(5), 482–503. https://doi.org/10.1521/jscp.2013.32.5.482

Judge, T. A., Erez, A., Bono, J. E., & Locke, E. A. (2005). Core self-evaluations and job and life satisfaction: The role of self-concordance and goal attainment. *Journal of Applied Psychology*, *90*(2), 257–268. https://doi.org/10.1037/0021-9010.90.2.257

Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.

Kasser, T. (2002). *The high price of materialism*. MIT Press.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*(3), 280–287. https://doi.org/10.1177/0146167296223006

Kelly, R. E., Mansell, W., & Wood, A. M. (2015). Goal conflict and well-being: A review and hierarchical model of goal conflict, ambivalence, self-discrepancy and self-concordance. *Personality and Individual Differences*, *85*, 212–229. https://doi.org/10.1016/j.paid.2015.05.011

Kiresuk, T., Smith, A., & Cardillo, J. (1994). *Goal attainment scaling: Applications, theory, and measurement*. Lawrence Erlbaum.

Klinger, E. (1977). *Meaning and void: Inner experience and the incentives in people's lives*. University of Minnesota Press.

Koestner, R., Lekes, N., Powers, T. A., & Chicoine, E. (2002). Attaining personal goals: Self-concordance plus implementation intentions equals success. *Journal of Personality and Social Psychology*, *83*(1), 231–244. https://doi.org/10.1037/0022-3514.83.1.231

Koletzko, S. H., Herrmann, M., & Brandstätter, V. (2015). Unconflicted goal striving: Goal ambivalence as a mediator between goal self-concordance and well-being. *Personality and Social Psychology Bulletin*, *41*(1), 140–156.

Korzybski, A. (1933). *Science and sanity: An introduction to non-Aristotelian systems and general semantics*. International Non-Aristotelian Library.

List, C. (2019). *Why free will is real*. Harvard University Press.

Little, B. R. (1983). Personal projects: A rationale and method for investigation. *Environment and Behavior*, *15*(3), 273–309.

McAdams, D. P. (1996). Personality, modernity, and the storied self: A contemporary framework for studying persons. *Psychological Inquiry*, *7*(4), 295–321. https://doi.org/10.1207/s15327965pli0704_1

McAdams, D. P. (2009). *The person: An introduction to the science of personality psychology* (5th ed.). Wiley.

McAdams, D. P. (2019). The emergence of personality. In D. P. McAdams, R. L. Shiner, & J. L. Tackett (Eds.), *Handbook of personality development* (pp. 3–19). Guilford Press.

McCrae, R. R., & Costa, P. T., Jr. (1996). Toward a new generation of personality theories: Theoretical contexts for the five-factor model. In J. S. Wiggins (Ed.), *The five-factor model of personality: Theoretical perspectives* (pp. 51–87). Guilford Press.

McGregor, I., & Little, B. R. (1998). Personal projects, happiness, and meaning: On doing well and being yourself. *Journal of Personality and Social Psychology*, *74*(2), 494–512. https://doi.org/10.1037/0022-3514.74.2.494

Metzinger, T. (2009). *The ego tunnel: The science of the mind and the myth of the self*. Basic Books.

Milyavskaya, M., Nadolny, D., & Koestner, R. (2014). Where do self-concordant goals come from? The role of domain-specific psychological need satisfaction. *Personality and Social Psychology Bulletin*, *40*(6), 700–711. https://doi.org/10.1177/0146167214524445

Ntoumanis, N., Healy, L. C., Sedikides, C., Duda, J., Stewart, B., Smith, A., & Bond, J. (2014). When the going gets tough: The "why" of goal striving matters. *Journal of Personality*, *82*(3), 225–236. https://doi.org/10.1111/jopy.12047

Rogers, C. R. (1964). Toward a modern approach to values: The valuing process in the mature person. *Journal of Abnormal and Social Psychology*, *68*, 160–167.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., Deci, E. L., Vansteenkiste, M., & Soenens, B. (2021). Building a science of motivated persons: Self-determination theory's empirical approach to human experience and the regulation of behavior. *Motivation Science*, *7*(*2*), 97–110. doi:10.1037/mot0000194

Sartre, J.-P. (1956). *Being and nothingness*. Philosophical Library.

Schultheiss, O. C. (2008). Implicit motives. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality psychology: Theory and research* (3rd ed., pp. 603–633). Guilford Press.

Sedikides, C., & Skowronski, J. J. (1997). The symbolic self in evolutionary context. *Personality and Social Psychology Review*, *1*(1), 80–102. https://doi.org/10.1207/s15327957pspr0101_6

Sedikides, C., & Skowronski, J. J. (2003). Evolution of the symbolic self: Issues and prospects. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (pp. 594–609). Guilford Press.

Sheldon, K. M. (2014). Becoming oneself: The central role of self-concordant goal selection. *Personality and Social Psychology Review*, *18*(4), 349–365. https://doi.org/10.1177/1088868314538549

Sheldon, K. M. (in press). *Freely determined: What the new psychology of the self tells us about how to live*. Basic Books.

Sheldon, K. M., Arndt, J., & Houser-Marko, L. (2003). In search of the organismic valuing process: The human tendency to move towards beneficial goal choices. *Journal of Personality*, *71*, 835–869.

Sheldon, K. M., Cheng, C., & Hilpert, J. (2011). Understanding well-being and optimal functioning: Applying the multilevel personality in context (MPIC) model. *Psychological Inquiry*, *22*, 1–16.

Sheldon, K. M., & Cooper, M. L. (2008). Goal striving within agentic and communal roles: Separate but functionally similar pathways to enhanced well-being. *Journal of Personality*, *76*(3), 415–447. https://doi.org/10.1111/j.1467-6494.2008.00491.x

Sheldon, K. M., & Elliot, A. J. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons as predictors of effort and attainment. *Personality and Social Psychology Bulletin*, *24*, 546–557.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology, 76*(3), 482–497. https://doi.org/10.1037/0022-3514.76.3.482

Sheldon, K. M., & Goffredi, R. (2021). The creative breakthrough model of goal reengagement: Explicit questions drive implicit processes. Manuscript submitted for publication.

Sheldon, K., Houser-Marko, L. (2001). Self-concordance, goal attainment and the pursuit of happiness: Can there be an upward spiral? In *Journal of Personality and Social Psychology*, *80*(1), 152–165.

Sheldon, K. M., & Kasser, T. (1998). Pursuing personal goals: Skills enable progress, but not all progress is beneficial. *Society for Personality and Social Psychology*, *24*(12), 1319–1331.

Sheldon, K. M., Prentice, M., Halusic, M., & Schüler, J. (2015). Matches between assigned goal-types and both implicit and explicit motive dispositions predict goal self-concordance. *Motivation and Emotion*, *39*(3), 335–343. https://doi.org/10.1007/s11031-014-9468-4

Sheldon, K. M., Prentice, M., & Osin, E. (2019). Rightly crossing the Rubicon: Evaluating goal self-concordance prior to selection helps people choose more intrinsic goals. *Journal of Research in Personality*, *79*, 119–129. https://doi.org/10.1016/j.jrp.2019.03.001

Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, *30*, 475–486.

Sheldon, K. M., & Schüler, J. (2011). Wanting, having, and needing: Integrating motive disposition theory and self-determination theory. *Journal of Personality and Social Psychology*, *101*(5), 1106–1123. https://doi.org/10.1037/a0024952

Sheldon, K. M., Sedikides, C., Ntoumanis, N., Corcoran, M., & Titova, L. (2020). Narcissism and social motives: Successful pursuit of egosystem goals boosts narcissism. *Self and Identity*, *19*(7), 841–862. https://doi.org/10.1080/15298868.2019.1690036

Smith, A., Ntoumanis, N., & Duda, J. (2007). Goal striving, goal attainment, and well-being: Adapting and testing the self-concordance model in sport. *Journal of Sport and Exercise Psychology*, *29*(6), 763–782. https://doi.org/10.1123/jsep.29.6.763

Smith, A. L., Ntoumanis, N., Duda, J. L., & Vansteenkiste, M. (2011). Goal striving, coping, and well-being: A prospective investigation of the self-concordance model in sport. *Journal of Sport and Exercise Psychology*, *33*(1), 124–145. https://doi.org/10.1123/jsep.33.1.124

Smyth, A. P. J., Werner, K. M., Milyavskaya, M., Holding, A., & Koestner, R. (2020). Do mindful people set better goals? Investigating the relation between trait mindfulness, self-concordance, and goal progress. *Journal of Research in Personality*, *88*, 1–10. https://doi.org/10.1016/j.jrp.2020.104015

Tadić, M., Bakker, A. B., & Oerlemans, W. G. M. (2013). Work happiness among teachers: A day reconstruction study on the role of self-concordance. *Journal of School Psychology*, *51*(6), 735–750. https://doi.org/10.1016/j.jsp.2013.07.002

Tiberius, V. (2018). *Well-being as value fulfillment: How we can help each other to live well*. Oxford University Press.

Vasalampi, K., Salmela-Aro, K., & Nurmi, J. E. (2009). Adolescents' self-concordance, school engagement, and burnout predict their educational trajectories. *European Psychologist*, *14*(4), 332–341. https://doi.org/10.1027/1016-9040.14.4.332

Wallas, G. (1926). *The art of thought*. Jonathan Cape.

Weinberger, J., & Stoycheva, V. (2020). *Psychoanalysis and psychological science: The unconscious: Theory, research, and clinical implications*. Guilford Press.

Werner, K. M., Milyavskaya, M., Foxen-Craft, E., & Koestner, R. (2016). Some goals just feel easier: Self-concordance leads to goal progress through subjective ease, not effort. *Personality and Individual Differences*, *96*, 237–242. https://doi.org/10.1016/j.paid.2016.03.002

# The Authentic Inner Compass as an Important Motivational Experience and Structure: Antecedents and Benefits

Avi Assor, Moti Benita, *and* Yael Geifman

**Abstract**

This chapter focuses on the sense of having an authentic inner compass (AIC): the perception and feeling of knowing what is really important to one, because one has explicit and articulable self-guiding core preferences that feel voluntary and authentic. These core preferences reflect foundational values and personal inclinations, and long-term goals derived from them. The experience of having an AIC is presented as one of five facets of the meta-need for authentic self-direction (i.e., autonomy), which together promote optimal realization of more specific basic needs and personal inclinations. Research shows that the experience of having a firm AIC promotes true volition to engage in activities and contexts enabling AIC realization, vitality, sense of meaning, resisting negative peer pressures, and other optimal-functioning indicators. Educational and childrearing practices promoting or hindering AIC development are presented. The emphasis on articulable authentic core preferences underlying the sense of AIC reflects a view of autonomy as authentic intentionality and agency.

**Key Words:** authentic inner compass, autonomy need satisfaction, freedom, control, authenticity, inherent value demonstration, fostering inner valuing, motivation

As we look around us, we can see that many people do not really feel motivated to deeply engage in what they are doing; a few don't actually find anything worth engaging in and do not develop any serious commitment. The lack of commitment is often accompanied by loss of meaning, lack of vitality, depressive feelings, and generally low well-being (Meeus, 2011). The failure to develop deep engagement in personally meaningful activities is exacerbated by features characterizing postmodern information-flooded societies, specifically, value confusion, moral relativism, an overwhelming amount of information (often superfluous and marketing-oriented), and a decline of widely accepted, trustworthy authorities (e.g., Aviram, 2010; Barmash, 2004; Dogan, 1998; Orman, 2015; Taylor, 1991, 1992; Tufekci, 2015).

Yet there are some who do show a great deal of persistence and commitment and experience an invigorating sense of meaning and vitality as they engage and cope with difficult challenges in threatening or confusing social contexts. What is the psychological resource that enables these people to show such keen and meaning-making engagement? In an attempt to answer this question, Nietzsche (1889/2019, p. 2) suggested, "He who has a why to live for can bear almost any how." Victor Frankl (1946/2017) offered a similar answer as he tried to understand what allowed some people in the concentration camps to maintain some hope and sense of humanity.

Consistent with these views and based on self-determination theory (SDT; Ryan & Deci, 2017), Assor (2011, 2012, 2018b) postulated that one important motivational resource allowing us to engage in vitalizing and meaning-conferring actions in difficult times is the experience of having an authentic inner compass (AIC), defined as the perception and feeling of knowing what is really important to one because one has explicit and specific self-guiding core preferences that feel authentic. While in childhood a sense of AIC is based mostly on concrete representations of authentic preferences, a more mature AIC includes a fairly congruent set of foundational values and personal preferences, and long-term goals and commitments derived from them.

The contribution of a sense of AIC (and the authentic preferences it is based on) to vitality, as well as to a sense of autonomy and authenticity, is likely to be of special importance in postmodern, information-flooded societies. In these societies, a firm AIC can help people make decisions and act in ways reflecting their true needs and preferences rather than follow trendy fashions and celebrities, conform to social pressures, or avoid making any commitments. As late adolescence and emerging adulthood are periods in which many central life decisions and identity commitments are made, it appears that having an AIC is of special importance in these periods, particularly in postmodern societies.

The notion of AIC is deeply anchored in a larger conception of the need for autonomy as a meta-need for authentic self-direction (Assor, 2018b). According to this view, having a firm AIC is one of five complementary interdependent facets of the need for autonomy. To grasp the way AIC operates, and its antecedents and its effects, it is important to first understand our overall conception of the need for autonomy and its facets. Hence, the first part of this chapter focuses on the need for autonomy and its five facets. After a short description of these facets and the ways they jointly promote positive outcomes characterizing basic need satisfaction, we provide a detailed presentation of the phenomenon of AIC. We start with the structure (psychological contents) on which the experience of AIC is based, and proceed with AIC assessment and the unique contributions of the experience of having an AIC to optimal functioning. Then we present educational and childrearing practices that can promote or hinder the development of AIC, and thereby promote autonomy need satisfaction and subsequent optimal functioning. Next, we discuss the assumption that processes enabling the experience of AIC and autonomy

rely heavily on explicit and articulable preferences. We end with future research directions and conclusions.

## Autonomy as the Need to Organize and Direct Behavior via Voluntary and Explicit Preferences

In their seminal paper on basic psychological needs, Deci and Ryan (2000 pp. 253, 252, emphasis added) described the need for autonomy as an organismic desire "toward *self-regulation* of action and coherence" and as a need "to *self-organize and regulate* one's own behavior (and avoid *heteronomous* control), which includes the tendency to work toward *inner coherence and integration* among regulatory demands and goals." In their chapter in this volume on self-determination theory (SDT), and their 2017 volume (Ryan & Deci, 2917), they describe the need for autonomy as a special need that serves as "a vehicle through which the *organization* of the personality proceeds, and through which *other psychological needs are actualized*" in ways that feel "*volitional*" (emphasis added). SDT also posits that a major way people can realize the organismic desire toward self-regulation is by forming intrinsic, self-concordant goals and aspirations (Ryan & Deci, 2017; Sheldon & Elliot, 1999). The emphasis on formation and realization of self-generated and self-endorsed goals and preferences is shared by other theorists concerned with autonomy (e.g., deCharms, 1992; Mill, 1946; Honneth, 2014; Aviram, 2010).

Consistent with these views, we conceptualize autonomy as a meta-need to self-organize and direct our behavior via voluntary, explicit and articulable, intrinsic preferences, which enables us to do what we truly want to do, thereby promoting optimal realization of our basic needs and inclinations. The preferences can include action intentions, values, aspirations, goals, and personal preferences. For brevity's sake, we use the term "authentic preferences" to denote preferences that are voluntary.

Authentic preferences are assumed to promote an authentic sense of self-direction because they are posited to serve as particularly effective vehicles for a self-directive process promoting deep satisfaction of basic needs rather than superficial or illusory satisfaction (Ryan & Deci, 2017). Examples of authentic values include close relationships, community contribution, benevolence, and personal growth. Consistent with SDT's organismic approach, we view authentic preferences as also including temperament-based inclinations (Assor, Kanat-Maymon et al., 2020), individual interests, reflection-based sexual orientation, and other personal preferences that are deeply self-endorsed.

It is important that these preferences be explicit and articulable because these features contribute to the capacity to regulate and direct our actions using reflective path-correcting processes. The existence of articulable preferences also allows us to communicate them to others, who may help realize them. Further, autonomy is conceptualized as a meta-need because it allows realization of other needs and personal organismic inclinations. More generally, the emphasis on explicit and articulable voluntary preferences and goals reflects a view of autonomy as authentic intentionality or agency. Accordingly, we posit

that individuals are more likely to experience authentic self-direction when they actively form, get in touch with, express, reflect on, and try to realize authentic preferences.

## Manifestations and Outcomes of Autonomy Need Satisfactions

Figure 18.1 shows that specific experiences reflecting the satisfaction of five different facets of the meta-need for autonomy promote three global experiences reflecting the satisfaction of the meta-need for autonomy (authentic self-direction). In addition, these five specific facets of need autonomy satisfaction are expected to also promote positive well-being and growth and coping experiences. We start with the three global experiences resulting from, and reflecting, deep satisfaction of the meta-need for autonomy: *sense of true volition, self-endorsement, and sense of authentic self-direction.*

*Sense of true volition* is perhaps the most basic and psychologically accessible global manifestation of satisfaction of the meta-need for autonomy. When activities and contexts allow us to focus on our authentic preferences, we are likely to feel a true sense of volition. This sense of volition (I really want to do this; this is something I want to do rather than have to do) does not require considerable self-reflective capacity and often can be articulated by young children. The second global manifestation of autonomy satisfaction is the experience of *self-endorsement*: I fully identify with this activity or context, I stand behind it, it reflects who I really am or want to be. This manifestation appears to demand a higher level of self-reflection because one has to have a concept of some type of true me and to connect an activity or context to something that is the real self. Yet many people
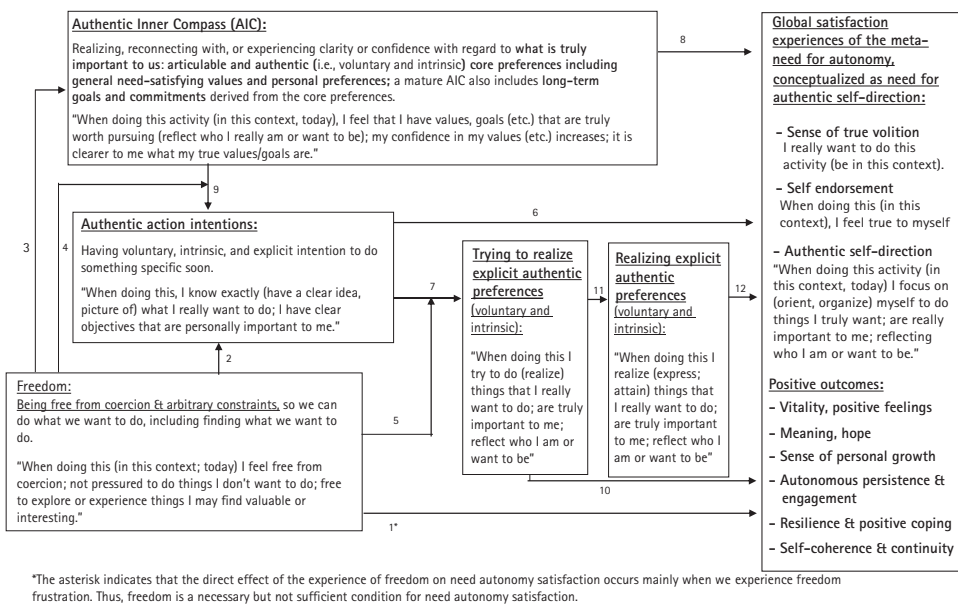


**Figure 18.1** Specific experiences reflecting the satisfaction of five facets of the meta-need for autonomy and their expected effects on global experiences of autonomy satisfaction and subsequent positive outcomes

do have this experience, as indicated by research on self-congruence and authenticity. The most elaborate manifestation of general need autonomy satisfaction may involve the experience of *authentic self-direction* in which we feel that we focus on and direct ourselves toward what is truly important to us. Unlike the sense of true volition, it may require high capacities for self-observation because it involves metacognition about how one operates.

In line with SDT assumptions and research (Ryan & Deci, 2017), we assume that the five specific facets of need autonomy satisfaction also promote optimal-functioning attributes such as vitality and positive feelings, sense of meaning (e.g., Martela, Ryan, & Steger, 2018), hope, sense of personal growth, autonomous persistence, and resilience against harmful peer pressure and basic need frustrations. As we will see, the facet of autonomy involving a sense of AIC is especially important in the case of resilience. AIC may also be the most important contributor to the sense of self-coherence and continuity, low susceptibility to introjection and conditional regard strategies, noncontingent self-esteem, and inner freedom.

### Five Experiences (Facets) Involving Satisfaction of the Meta-Need for Autonomy

As shown in Figure 18.1, we posit that the meta-need for autonomy has five facets. Each of these facets involves satisfaction of the underlying meta-need for authentic self-direction (autonomy) because it encompasses an activity or context in which we focus on and direct ourselves toward things that we really want and are truly important to us. Furthermore, these experiences interact with and complement each other so as to create an optimal experience of need autonomy satisfaction. Accordingly, across time and contexts, the need for authentic self-direction (autonomy) is optimally satisfied when we are involved in activities and contexts enabling all five experiences.

The notion that an underlying need may have different facets that reflect it and promote its satisfaction in different ways may not be limited to the need for autonomy. For example, the need for relatedness may have different facets involving experiences of affectionate responses from close others, competent responsiveness to one's distress, unconditional acceptance and validation of who one is (including failures, negative feelings, unconventional behaviors, etc.), enduring commitment to the relationship, feeling of warmth toward the other person in the relationship, and belonging to a personally meaningful group (see Kachanoff, and Kanat-Maymon et al, this volume). Each of these experiences reflects the need to feel connected and close to others (rather than disconnected or estranged) and promotes its satisfaction.

We will now describe each autonomy need satisfaction experience.

**Freedom from coercion and arbitrary constraint.** This experience refers to the feeling of being free from internal (psychological) or external pressures and arbitrary constraints to do one thing or not do another. Often the type of freedom sought is not actual freedom but *optional* freedom: being able to engage in a wide range of actions and experiences *if* you want to engage in them. Berlin (1961) characterized this type of autonomy

as negative liberty, because it does not specify positive contents to the state of liberty, that is, the voluntary preferences we would like to realize when we are free. Reactance theory (Brehm & Brehm (2013) also emphasizes the importance of freedom of coercion.

As shown in Figure 18.1, the experience of freedom from control is posited to affect the overall experience of authentic self-direction in several ways. First, the feeling of being controlled undermines the need for autonomy because the experience of being controlled and constrained makes us feel that we cannot direct ourselves as we truly want, and at times also results in feeling forced to pursue directions antithetical to our true preferences (Path 1). Second, freedom enables the emergence of authentic preferences, including values, interests, goals, and action intentions because people feel free to explore, develop, and express such preferences without fear of tangible or emotional costs (Paths 2 and 3). Third, freedom affects the extent to which authentic values and goals are translated into action intentions (Path 4) and authentic action intentions are realized (Path 5). Thus, when feeling controlled and constrained by potential costs of attempts to realize authentic preferences, people may avoid forming action intentions, as well as attempts to realize these intentions. Therefore, in Figure 18.1 freedom is depicted as a moderator affecting the likelihood that authentic action intentions will be formed or realized in behavior.

Presently, there is little research on the correlates and effects of freedom relative to the other components. However, a study by Assor, Cohen et al. (2021) suggests that the experience of being free is uniquely associated with true volition and vitality also when controlling for the effects of AIC. In sum, freedom from control can be considered an aspect of the need for autonomy that is most foundational and primary, in that it enables the formation and realization of authentic preferences. Freedom is also more distinct from other needs because, unlike authentic preferences, it does not directly focus on the satisfaction of these other needs and is only a facilitating condition for such satisfaction. Yet freedom is only a necessary, but not a sufficient, condition for the satisfaction of the need for autonomy. Thus, a deep sense of authentic self-direction can be attained only through four experiences involving the emergence and/or realization of authentic explicit preferences. The next sections describe these experiences.

**Having authentic action intentions.** This type of preference involves intentions to do a specific action in a specific situation, and the action is voluntary and intrinsic because it is aimed at promoting optimal realization of basic authentic inclinations. For example, sitting alone in our office after we have done considerable work, we realize that it is a really nice day outside and feel an urge to do something different and refreshing. As a result, we develop an intention to take a walk in a beautiful nearby park, where we may meet some people or simply enjoy the fresh air and vibrant movement of our body. However, authentic action intentions are not limited to fun actions. For example, you learn about a nearby ecological or human disaster, and you immediately develop the intention to help. As shown in these examples, authentic action intentions are often present on an everyday

basis. Moreover, they often arise in response to ongoing emotional experiences and events and do not have to be based on careful planning or reflection on one's values or life.

Voluntary action intentions are essential for the experience of autonomy because they are the *carriers* of authentic self-direction in everyday life, in reaction to various (external and internal) events, or as a result of proactive planning. Therefore, it appears that in order to feel that we live in a way that is truly self-directing, we need to form and experience voluntary action intentions on a daily basis. Days passed without such intentions feel like days lacking authentic self-direction.

**Experiencing increased clarity or confidence with regard to what is truly important to us — our Authentic Inner Compass (AIC).** A compass is a device informing us in which direction we need to go. The experience of having an AIC refers to the feeling and perception that we know what we really want and prefer in our life because we have self-guiding preferences that are voluntary and mostly intrinsic. These preferences include values, aspirations, personal preferences, and, beginning in adolescence, long-term goals and commitments.

As shown in Figure 18.2, activities promoting clarification and strengthening of the basic preferences underlying the experience of AIC, or enabling connection with these preferences, are posited to contribute directly to feelings of true volition and self-endorsement with regard to these activities (path 8). This is because the authentic preferences which these activities highlight and strengthen enable us to feel that we can decide, choose, and act in ways that contribute to the satisfaction of our authentic inclinations, and therefore experience true self direction. When we do not have such action- and
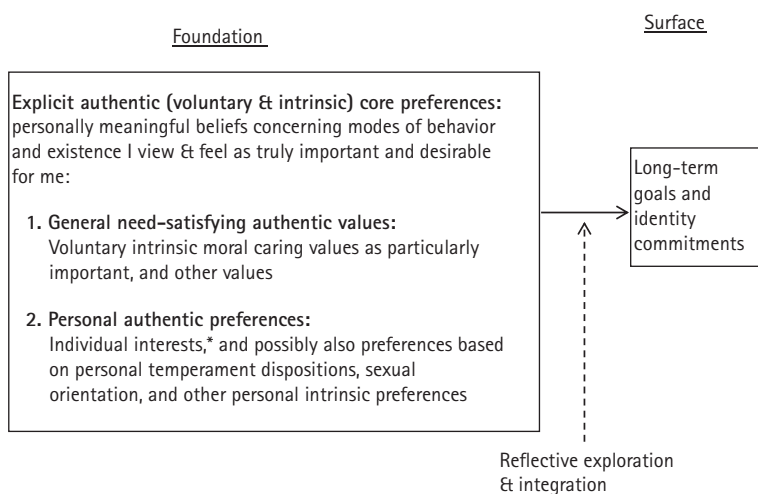


**Figure 18.2** AIC as an optimally developed structure and experience

decision-guiding preferences (or when our confidence in these preferences erodes), we are likely to feel incapable of true self-direction (i.e., autonomy) because we do not know what actions to choose. As a result, we feel confused and may prefer to "escape from freedom" even when we are relatively free to direct our lives (Fromm, 1941). In Berlin's (1961) terms, having AIC represents positive liberty, because in this case there are specific contents to one's liberty; that is, you want liberty in order to realize some important voluntary preferences.

Authentic preferences underlying the sense of AIC contribute to the satisfaction of the need for autonomy also indirectly, by promoting action intentions aimed at realizing our preferences (Path 9). These preferences motivate the formation of authentic action intentions because we feel that intentions based on general authentic preferences are really worth pursuing.

A recent experiment by Geifman and Assor (2021) showed that the experience of having a firm and clear AIC indeed contributes to satisfaction of the need for autonomy (true volition and self-direction), whereas the experience of having a weak and unclear AIC frustrates the need for autonomy. In that study, college students were assigned to three conditions: AIC satisfaction, AIC frustration, and a neutral condition. In the AIC satisfaction condition, they recalled an experience of increased confidence and clarity regarding their AIC (values, aspirations, goals). In the frustration condition they recalled an experience of decreased clarity and confidence regarding their AIC. In the neutral condition they described experiences not related to their AIC. Following these experiences, students completed several self-report measures. Results clearly showed that students in the AIC satisfaction condition reported true volition to engage in the activity of recalling an AIC-strengthening experience, identified with this activity, and endorsed it as enabling them to be true to themselves. The reverse was true for students in the AIC frustration condition. Students in the AIC satisfaction condition also showed higher levels of vitality and focus, positive feelings, and action intentions and less depressive feelings than students in the frustration condition. Students in the neutral condition reported feelings that were less positive than those characterizing the satisfaction condition but more positive than the feelings reported in the frustration condition.

**Trying to realize and realizing explicit authentic preferences.** As shown in Figure 18.1, we assume that the experience of both trying to realize and actually realizing one's authentic explicit preferences contribute to the satisfaction of the need for autonomy (Paths 11 and 12). We distinguish between the attempt to realize preferences and the experience of actually realizing them to highlight the fact that the mere experience of trying to realize something that is truly important to us may suffice to generate some feelings of authentic self-direction. Of course, the sense of authentic self-direction is likely to be further enhanced if we succeed to realize our authentic preferences. A study by Assor, Benita, Goren et al. (2021) validated a measure assessing the construct of AIC realization and showed this measure mediated the relations between AIC and well-being indicators.

## The Authentic Inner Compass (AIC): Structure, Assessment, Correlates, and Effects

### AIC as a Developing Structure

Following Assor (2018b) and Assor, Soenens et al. (2020), we posit that the experience of an AIC is based on developing authentic explicit preferences, informing us of what is truly important to us, and thereby serving as guides for authentic action. Figure 18.2 describes the structure of a set of authentic preferences underlying the experience of having a mature AIC, beginning in late adolescence and beyond. As noted in Figure 18.2 (see also Assor, 2018b; Assor, Soenens et al., 2020), the structure underlying a mature sense of AIC is posited to have two components: a foundation including authentic (voluntary and intrinsic) explicit core preferences and more specific long-term goals and identity commitments. Furthermore, the authentic long-term goals and commitments are assumed to be derived from the AIC foundation via a process of reflective exploration and integration. The next subsections describe these aspects of the AIC structure.

### AIC Foundation

The AIC foundation refers to beliefs concerning modes of behavior and existence that one views as truly important and desirable and that can satisfy our basic needs (i.e., intrinsic preferences). It includes two types of components: general need-satisfying values and aspirations, and personal preferences. General need-satisfying values and aspirations are preferences that reflect and promote basic human needs common to all people. Personal preferences also satisfy basic human needs, but in addition have a unique personal component because they enable realization of individual dispositions and capacities felt as deeply authentic and important.

**General need-satisfying values.** Moral prosocial values referring to care/harm, fairness/cheating, and loyalty/betrayal (e.g., Graham et al., 2013) are posited to have special importance as key components of a firm sense of AIC, which also emerge relatively early in life. There are several reasons these moral values are likely to occupy a central and early developing place in the experience of AIC across cultures.

The first reason for the early developing centrality of moral values in people's AIC has to do with the primary function of the AIC as a guide in situations involving difficult choices and conflicts. In such situations, voluntary (autonomous) moral values can help us choose an option experienced as more desirable and satisfying or create a compromise that feels most appropriate. Taking a developmental perspective, it appears that, across cultures, children have to learn early on to show consideration for others' needs and wants, delay gratification, and regulate impulses and negative emotions when their needs and wants clash with others' needs. In these conflictual situations, children need to develop rudimentary forms of moral values, which guide them to behaviors that are appropriate and worthy. As noted in Assor (2018b), these burgeoning moral values do not have a highly conceptual structure. Most likely, they involve concrete representations of

moral behaviors such as helping, showing care, and avoiding harm. Indeed, there is now considerable research suggesting that even five-year-old children have a distinct category of desirable moral behavior consisting of various concrete moral behaviors instantiating this general category (Döring et al., 2010).

According to Schwartz's (1992) value theory and SDT's goal content theory (Ryan & Deci, 2017), moral prosocial values stand in sharp contrast to power and prestige values. Research has shown that starting at the age of five years children who endorse prosocial values assign little importance to power and prestige values (Döring et al., 2010). Ideally, these value stances will be experienced as voluntary because they are mostly based on autonomous internalization of adults' messages and on intrinsic prosocial inclinations (e.g., Warneken & Tomasello, 2009; Martela & Ryan, 2016). To the extent that this is the case, these voluntary rudimentary moral orientations can serve as an early base for the development of an enduring structure and experience of an AIC. The central role of moral caring values in the structure and experience of AIC is also supported by two other considerations: first, their great importance across widely different cultures and age levels (Assor, 2011; Cieciuch, Davidov, & Algesheimer, 2016: Graham et al., 2013; Schwartz, 1992, Schwartz et al., 2012); Second, considerable evidence show that most people construe their inner (essential) core self as beneficent and moral (Strohminger, 2019).

In addition to moral values, the early AIC foundation is also likely to include other intrinsic, need-satisfying values. The content of these values may differ as a function of the value orientation of the family and the larger social context. Other core preferences constituting the AIC foundation may become more explicit and important as youth move toward late adolescence and emerging adulthood and have to make important life choices. Here we discuss three such late-developing core preferences.

**Voluntary identification with and belonging to a specific community or tradition.** The sentiments underlying this value may be rooted in childhood, but the need to explicitly anchor oneself in a certain community and tradition may become much stronger in adolescence and beyond, for several reasons. First, the developmental task of forming identity-defining beliefs regarding lifestyle and major social issues and the awareness of different orientations toward such issues strengthen the need to support one's lifestyle and belief by basing them on the norms, orientation, and cultural tradition of a social group one feels close to.

Second, as many youths get older and become more aware of existential issues such as death, human frailty, meaning in life, the limits of individual capacities, and the difficulty of basing our stance regarding major life issues on purely rational considerations, the importance of community and tradition as a fulcrum for addressing these issues becomes more salient. The specific community and tradition people relate to of course can have widely different orientations and ideologies. The emphasis on belonging to a community and tradition as part of the AIC foundation is consistent with perspectives on identity emphasizing the importance of identification with and belonging to a specific community

as a fundamental aspect of one's identity and the answer to the question "Who am I?" (Burkitt, 2011). This emphasis is also shared by influential views outside psychology, for example, Honneth's (2014) notion of social freedom, positing that personal autonomy is deeply enhanced by volitional belonging to a community sharing similar values, and Etzioni's (1996) conceptions of liberal communitarianism.

**Personal preferences involving individual interests**. The early AIC foundation may also include early individual interests. However, these interests may change as children develop. Thus, the important aspect of early individual interests may not be their specific content but the experience of learning to value the benefits of having an individual interest. As children turn into adolescents, they often develop more stable individual interests (Renninger & Su, 2019), which constitute an important part of one's AIC foundation. While interests satisfy basic needs, they also reflect individual dispositions and capacities that are unique to each person. These interests enable adolescents and emerging adults to make important academic and vocational choices and plans (see Soenens & Vansteenkiste, this volume; Vermote, Soenens, & Vansteenkiste, 2018). In addition, interests may guide choice of leisure activities to enable satisfaction of basic needs not met in work or other contexts.

**Personal preferences involving temperament, sexual orientation, or other preferences**. Another, albeit less pervasive, personal preference that may become an important part of the AIC foundation for some people involves preferences for modes of action, activities, and contexts allowing realization of strong temperament dispositions (e.g., Assor, Kanat-Maymon et al., 2020) or sexual orientation. These AIC components may not be present in people who have temperament dispositions and sexual orientations falling within the norm. However, when individuals possess strong temperament dispositions or sexual orientations that cannot be realized in prevailing contexts and activities, these personal preferences may become important guiding core preferences. For example, highly introverted persons may look for work, leisure, and social contexts that allow them to avoid high levels of social and physical stimulation.

To conclude, while in most young children (across cultures) the AIC foundation may include mostly intrinsic moral values, later in development the AIC foundation may also include other values, life aspirations, and personal preferences. Furthermore, as children turn into adolescents, rudimentary action-guiding concrete representations of authentic core preferences become more organized conceptual categories (Assor, 2018b).

### Long-Term Goals and Identity Commitments

As shown in Figure 18.1, we posit that in growth-promoting contexts, late adolescents and emerging adults go through an exploration and reflection process enabling them to form long-term goals and identity commitments. These goals and commitments are based on the core preferences constituting the AIC foundation and enable optimal realization of those core preferences. For example, a college student with strong authentic prosocial

and sustainability values, aspiration to develop close relationships, an interest in science and zoology, and an introverted temperament disposition may develop a long-term goal of becoming a biologist working in small teams, away from noisy, busy places, studying the contribution of various animals to sustainability. The commitment to this goal then becomes an important part of their identity. Thus, the authentic values, aspirations, and personal preferences constituting the AIC foundation provide an essential base for the formation of identity commitments and plans with which people deeply identify (Assor, Soenens et al, 2020; Soenens & Vansteenkiste, 2011; Vansteenkiste & Soenens, 2015). Such autonomous commitments then enable autonomous, meaning-conferring, engagement and persistence in attempts to realize one's goals and commitments (Assor, Soenens et al., 2020).

## A Note on the Dynamic Nature of the AIC

Figure 18.2 and the description of the AIC foundation so far may create an impression that a sense of AIC is based on preferences that do not change because they are so deeply rooted and important. However, while endorsement of basic moral values and other intrinsic values may persist across time and contexts, it is possible that the goals and commitments derived from them, and at times also their relative importance, will change as a function of changes in one's experiences, contextual affordances and constraints, and life stage. In fact, having important core values may allow people to change goals and commitments because they can see that, under new circumstances, changed goals and commitments can better serve their foundational values.

## Extant Assessment of a Sense of Having an AIC

The experience of having an AIC was first assessed by a 11-item scale (Assor, Ezra, & Yu, 2015; Assor, Soenens et al., 2020; Russo-Netzer & Shoshani, 2020; Sabag-Cohen, Assor, & Almashla, 2021; Soenens et al., 2016). Other studies used a shorter version (Assor, Benita et al., 2020; Assor, Benita, Goren et al., 2021; Yu et al., 2018; Benita et al., 2021). Common to all or almost all the scales are items assessing a general feeling of having an AIC ("I know what is truly important for me in life"), items assessing having voluntary values and aspirations ("I have principles that help me decide what is the right thing to do in difficult situations"; "I have values that truly reflect the kind of person I want to be"; "I have aspirations that feel like they originate from my true self"), and items assessing having voluntary goals and commitments ("I have commitments that are truly important for me and I fully endorse"; "I have commitments that are truly important for me and I fully endorse"). Some items reflect a general sense of having a weak or confused AIC ("I feel confused about what is important in my life"; "When I think about my future, I do not know what things are important to me"), lack of clear values ("I do not know what kind of a person I want to be"; "Presently, I feel that there are no values or principles that

I can deeply identify with"), and lack of goals or commitments ("I can't say that I have a purpose in life that is indeed truly important to me").

The studies reported above indicate that the AIC scale has satisfactory internal consistency. Studies with Israeli high school students and Chinese college students indicated that the AIC measure has moderate stability across six to nine months (r = .49–45; Assor et al., 2018; Assor, Benita, Shi, et al., 2021). These coefficients suggest that although the sense of having an AIC is partly stable, it also fluctuates in response to changing circumstances. This pattern is consistent with the view that the extent to which we experience clarity and confidence regarding our AIC varies as a function of the context we are in, and is not a fixed personality trait.

To examine the incremental and discriminant validity of the AIC scale, Assor (2019) assessed relations with widely used measures of identity formation and purpose. To test incremental validity, the AIC scale was compared to two other scales assessing having commitments or a purpose with which one deeply identifies: identification with commitment (Luyckx et al., 2008) and identified purpose (Bronk et al., 2009). These constructs, like AIC, involve some attributes assumed to provide direction and contribute to well-being and resilience. Therefore, it is important to show that the AIC scale contributes to the prediction of relevant outcomes above and beyond these extant constructs and measures. The AIC construct includes a more comprehensive set of direction-driving constructs (specifically values, aspirations, a general sense of knowing what is important to one) than the commitment and purpose constructs. Hence, it was expected that it will have a stronger contribution to well-being and resilience indicators than the commitment and purpose measures. Regression analyses showed that the AIC measure had unique effects on well-being indicators such as vitality, low depression, and satisfaction with life, and on self-congruence, authenticity, and resistance to peer pressure, when controlling for the effects of identified commitment and purpose. Moreover, in all these cases, it was the strongest predictor.

Discriminant validity was assessed by examining the relations between AIC and three indicators of exploration: commitment exploration in breadth, commitment exploration in depth (Luyckx et al., 2008), and searching for purpose (Bronk et al., 2009). As the AIC measure emphasizes having values and goals with which one deeply identifies, it was hypothesized that AIC would have weaker correlations with indicators of exploration and purpose searching than with identification with commitment or identified purpose. Results supported the hypotheses, and Fisher Z tests indicated the differences between the correlations were significant.

Importantly, a study by Assor, Benita, Goren et al. (2021) showed that adolescents distinguished between the experiences of having AIC and the autonomy experiences assessed by the widely used Chen et al. (2015) measure of the need for autonomy. Furthermore, the AIC measure was associated positively with vitality and negatively with depressive feelings, also when controlling for the effects of the Chen et al. measure. These findings

are consistent with the view that the AIC construct and measure capture an aspect of autonomy not tapped by the Chen et al. measure. Studies reported in the next section on the correlates and effects of AIC provide further support for the construct validity of the AIC measure.

As a firm AIC entails a strong sense of clarity concerning one's values and goals, it is important to ascertain that high levels of a sense of AIC are not a product of rigid adherence to normative standards and/or crude and simplistic beliefs characteristic of the dogmatic "true believers" described by Hoffer (1951). Studies by Assor et al. (2015) in China and Israel indicated that, as expected, a sense of AIC was positively associated with tolerance for ambiguity (Budner, 1962) and negatively associated with a normative-foreclosed style of processing identity-relevant information (Berzonsky et al., 2013), capturing nonreflective acceptance of beliefs one was raised on. Assor (2019) found that the AIC scale was positively associated with an open-minded information-oriented style of the processing identity information (Berzonsky et al., 2013). These findings suggest that high levels of AIC do not reflect strong dogmatic, closed-minded convictions. But to eliminate any overlap between AIC and tolerance for ambiguity and open-mindedness, it is advisable to control for the effects of the latter variables when assessing the effects of AIC.

## New Challenges in the Measurement of AIC

### Adding Items Capturing a Wide Range of Core Preferences Underlying a Sense of AIC

Although the current AIC scale captures important parts of this construct, there are several ways to improve it. First, include in the scale at least some items pertaining to individual interest (e.g., "I have things that really interest me and I want to vest time in"). Second, it might be important to increase the number of items assessing a general sense of AIC (e.g., "Today, I have a direction and a way in issues that are important to me"). Third, it may be important to increase the number of items assessing values as evaluative criteria rather than goals (e.g., "I have values that enable me to examine and evaluate my actions"). Fifth, for early adolescents and children, it appears important to make adaptations to more specific life domains. Future measures may also include items that assess not only voluntary goals and commitments but the extent to which these are derived from basic values and personal preferences. In addition, it is important to include open-response items enabling respondents to indicate if they have core authentic preferences that are more personal.

### Assessing AIC Content in Addition to a General Content-Free AIC

Another important issue in AIC assessment pertains to the content of the authentic preferences on which the AIC is based. As shown in Figure 18.2, we posit that the experience of having an AIC is likely to be deeper if it is based mostly on intrinsic preferences. However, almost all studies so far have used a measure that does not ask respondents to

indicate what are the specific values, aspirations, and goals underlying their sense of AIC. Research has shown that this measure of a sense of AIC is associated with aspirations and goals that are more intrinsic than extrinsic (Assor et al., 2015; Vermote et al., 2018). Yet, as the association is not very strong, we cannot assume that the past measure of AIC refers only to intrinsically oriented self-guides. Therefore, it appears that we can obtain a more accurate assessment of the experience of AIC if we take into consideration both the extent to which people have values, goals, and aspirations that are truly important to them (as in the measure described above) and the extent to which these self-guides are intrinsically rather than extrinsically oriented. Accordingly, people will score high on a measure of AIC if they show high levels on two types of indicators: content-free AIC (reporting a firm sense of AIC without specifying its content) and intrinsic AIC content (the AIC is based mostly on intrinsic values and goals).

A recent study by Assor, Cohen et al. (2021) used such a measure and showed that reports of feeling a great deal of clarity and confidence regarding one's AIC (content-free AIC) when interacting with one's mother were more strongly associated with volitional contacts with her and subsequent vitality, when the AIC was based on intrinsic aspirations and goals. The Assor, Cohen et al.(2021) study used a nonstandard content-free AIC measure and an open-ended measure of intrinsic versus extrinsic AIC content. Future research may use the standard content-free AIC measure and a less time-consuming indicator of intrinsic AIC content, for example, a list of intrinsic and extrinsic values and goals (e.g., based on the recent Martela, Bradshaw, & Ryan, 2019 list). After participants indicate the extent to which they have values, aspirations, and goals that are truly important to them, they freely describe what these values and goals are. Then they go over a standard list of intrinsic and extrinsic values and indicate how much each item reflects the things that were on their mind when responding to the questions about having values and goals that are truly important to them and how important each is for them.

### Depth: Rich Personal Anchoring of Authentic Core Preferences

A major limitation of self-report measures of values is that the value labels reported as important may not have sufficient representational and personal depth and meaning. Thus, people may say that the value of caring and not harming others is important for them, but the general value label is not accompanied by personally and emotionally meaningful and rich representations of specific caring behaviors. To address this issue, we are now developing measures in which, after people indicate values that are truly important to them, they are asked if they have people they deeply appreciate that exemplify those values (Colby & Damon, 1992) and why these people exemplify those values. We also ask for memories of personal experiences which make the value personally important. Then the richness and emotionality of the descriptions are assessed. This attempt to assess authentic values is similar to the attempts to assess attachment using qualitative methods going beyond self-reports (e.g., Hesse, 1999). We expect that high scores on the self-report

measure of AIC will be more predictive of behavior and subsequent positive outcomes (including sense of true volition and authentic self-direction)—when these scores are accompanied by personally rich representations of the values comprising the AIC (i.e., personal anchoring of the AIC).

## Research on AIC

### AIC as a Correlate and Predictor of Well-Being and Optimal Functioning

The importance of AIC as a predictor or correlate of positive indicators has been demonstrated in a number of studies. Assor, Benita, Goren et al. (2021) found that a sense of AIC predicted, over time, increased well-being in Chinese youth, as indicated by vitality and self-esteem. In addition, it was found that, in Israeli youth, AIC was associated with well-being as indicated by vitality and low levels of depression. The same pattern was observed in Israeli Bedouin adolescents (Sabag-Cohen et al., 2021). Russo-Netzer and Shoshani (2020) found that a sense of AIC was associated with engagement in positive and meaningful life experiences, subjective well-being, and lower levels of emotional and behavioral problems. Assor et al. (2015) found that the experience of having an AIC was associated with a sense of self-congruence in Chinese and Israeli college students. Yu et al. (2018) found that the experience of AIC in Chinese youth was negatively associated with avoidant attachment, an orientation predicting unsatisfying close relationships. Vermote et al. (2018) found, in a Belgian sample, that having an AIC was positively associated with having autonomous reasons for future plans and commitment to study choice, and negatively associated with controlling reasons to pursue specific future plans. Assor, Cohen et al. (2021), showed that experiences of having a valid AIC during contacts with mothers were associated with volitional contacts with mother and subsequent vitality during these contacts. These relations were found also after controlling for the effects of feeling free during contacts with mother.

One important correlate and potential outcome of a firm sense of AIC involves resistance to negative peer pressure. The moral values constituting an important part of the AIC are likely to help youth resist antisocial peer pressure. Furthermore, these values, together with other AIC preferences, are likely to make youth less dependent on external approval and more willing to risk disapproval in order to adhere to their AIC. Consistent with this view, Assor, Benita et al. (2020) found that the experience of having an AIC was associated with resistance to antisocial peer pressure in both Bedouin and Jewish adolescents. Geifman and Assor (2019) found that among Israeli adolescents in seventh grade having an AIC predicted increased resistance to negative peer influence one year later. Benita et al. (2021) found that a firm AIC was associated with resistance to peer pressure in two Chinese samples, one from the mainland and one from Hong Kong. Soenens et al. (2016) found that having an AIC was negatively associated with rumination and affiliation with deviant peers in Belgian high school students. In addition, having an AIC served

as a moderator which reduced the association between deviant peer affiliation and deviant antisocial behavior. Together, these findings suggest that a firm AIC is an important resource against social pressures that may cause youth to be involved in harmful behavior, and in ways that do not really serve their basic needs.

### Educational and Socializing Practices Promoting the Development and Realization of the AIC

In the previous sections we showed that the experience of having and realizing an AIC is an important motivational resource that contributes to persistence and commitment, a sense of meaning, well-being, and resilience. Therefore, it is important to specify educational and socializing practices that are likely to promote the core authentic preferences underlying the experiences of having an AIC and AIC realization. Here, we provide a brief account of the practices supporting AIC formation and realization and recent research demonstrating their usefulness. For a more complete account, see Assor (2012, 2018b). Figure 18.3 presents six parenting practices posited to promote the development of authentic preferences underlying the experience of AIC and AIC realization. The two practices presented at the bottom of the figure—perspective taking and allowing freedom—are assumed to nurture the development of the AIC from early years. In addition, they are considered essential supports for freedom and AIC formation throughout life. In other publications, these two were termed "basic autonomy supports" (Assor, 2012; Assor, Soenens et al. 2020; Assor, Benita, Goren et al., 2021; Benita et al., 2021; Cohen et al., 2021).
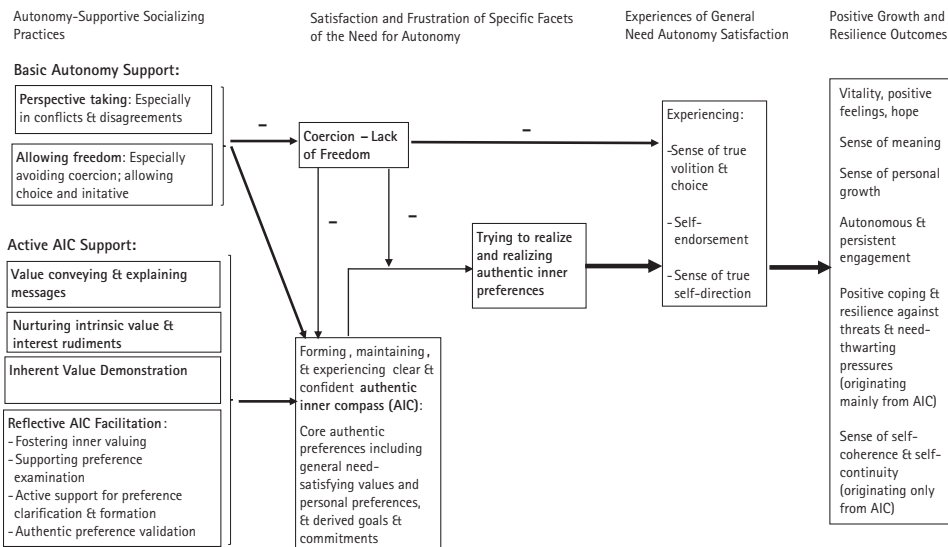


**Figure 18.3** Practices promoting the experience of AIC and other facets of the need for autonomy and subsequent positive outcomes

In this chapter we focus only on the newly conceptualized and recently studied practices of inherent values demonstration and reflective AIC facilitation, which are of special significance for the development of the AIC in youth and emerging adulthood.

**Inherent value demonstration (IVD).** This is a practice in which socializing agents demonstrate in their behavior that they have values that are very important to them, which they enact in their behavior, and with which they deeply and autonomously identify (Assor, 2012, 2018b). IVD allows children and adolescents to autonomously internalize their parents' values and use them as a foundation for the development of their AIC. During adolescence and emerging adulthood, children may revise the values and commitments they have internalized from their parents as children (e.g., Erikson, 1968; Kroger & Marcia, 2011), so their more mature AIC is not identical to, and perhaps is quite different from, their parents' AIC. However, the presence and memory of IVD is assumed to provide a general direction and, perhaps even more important, an inspiring proof that value-based commitments and actions are important sources of a fulfilling life.

IVD was found to be associated with having an AIC and other positive attributes in several studies (Assor et al., 2005; Assor, Soenens et al., 2020; Benita et al., 2021; Brambilla et al., 2015; Sabag-Cohen et al., 2021; Yu, Assor, & Liu, 2015; Yu et al., 2021). For example, Assor, Benita et al. (2020) found that IVD by parents predicted a sense of AIC in both Bedouin and Jewish Israeli youth, which then predicted resistance to negative peer pressure. Importantly, IVD showed these relations when controlling for the effects of basic parental autonomy support (taking perspective and providing choice). Similar findings were obtained by Benita et al. (2021) with Chinese youth.

**Reflective AIC facilitation**. This set of practices includes those that promote off-springs' inclination and capacity to seriously and freely consider what are the authentic core preferences with which they truly identify and, once they have formed such preferences - the practice of validating these preferences (Assor, 2012, 2018b). Within this general category, we have distinguished four specific practices.

*Fostering inner valuing (FIV)*. This strategy is likely to be the most basic and developmentally early way to enhance the emergence of authentic preferences serving as a rudimentary AIC. In this practice, parents nurture children's tendency and capacity to identify their authentic preferences (what is truly important to them) in situations where the children have some choice, and then help the children form goals and plans based on these preferences.

One way to nurture children's capacity to identify what they truly prefer is to help them recognize their feelings and learn that feelings can be good clues to finding out what is important to them and to the formulation of preferences and goals. This can be done by unintrusively helping children to describe, understand, and articulate their emotional experiences (e.g., Fonagy & Target, 1997; Thompson & Lagattuta, 2006) and the needs and wants they signal. An important capacity that FIV cultivates is to pay attention to what one truly prefers in situations involving considerable social pressure and difficult

decisions. Another important aspect of this practice is fostering the ability to accept and tolerate the ambiguity and stress experienced in such situations, so that one can take time to reflect on the issues at hand rather than respond quickly to escape emotional and social pressures or to gain approval. As children become adolescents, the FIV practice may help them to tolerate the often stressful task of selecting long-term goals and commitments in adolescence and beyond.

A recent study by Cohen et al. (2021), conducted with Bedouin adolescents and their mothers, showed that adolescents' perceptions of their mothers as using FIV predicted adolescents' AIC, which in turn predicted their well-being, as indicated by vitality and lack of depressive symptoms. These FIV effects were observed also when controlling for the effects of three other perceived maternal practices: IVD, basic autonomy support, and conditional regard. The effect of IVD on adolescents' vitality and low depression was also mediated by adolescents' AIC. Of special interest was the link between mothers' self-reported sense of having an AIC and adolescents' sense of having AIC. Thus, it was found that mothers' and adolescents' AICs were positively related, and this link was mediated by adolescents' perceptions of their mother's use of the practices of FIV and IVD, which then predicted adolescents' well-being. It appears that a sense of AIC in mothers served as a resource enabling them to act in autonomy-supportive ways that support their children's growing AIC and subsequent well-being.

*Supporting preference examination.* In this practice, parents encourage a thorough and open-minded reflection on authentic core preferences (e.g., goals, values, interests, and other preferences) through discussions, activities, and experiences in different contexts.

*Supporting Authentic Inner Compass clarification and formation*. This variable refers to active help in the goal- and interest-formation process. It includes suggestions on how to examine the issues at hand and, when appropriate, challenge observations and questions. The latter type of responses, in the context of noncontrolling empathic relationships, may help youth to face needs, feelings, or realities they avoid or distort. Avoidance or distortion of their reality may cause youth to form nonoptimal or harmful goals. In this context, challenging yet sensitive interventions by close others may help youth to realize their avoidant or distortive behavior and create a more accurate picture of their reality. The more accurate perception could then help youth to form more optimal goals and commitments.

Recent research, including two studies by Assor, Soenens et al. (2020), demonstrated the importance of the three practices promoting reflective AIC facilitation. The first study, focusing on Israeli youth, showed that educators use' of FIV, together with the practice of supporting preference examination (SPE), predicted an increased sense of having an AIC over time and a subsequent increase in autonomous engagement in activities reflecting one's AIC. These effects were detected also when controlling for the effects of perceived basic autonomy support (parental perspective taking and choice provision). The second

study, with Belgian high school students, also included a measure of parents' support for AIC clarification and formation. It was found that perceived parents' support for AIC clarification and formation, combined with SPE and FIV, predicted adolescents' sense of having an AIC, which then predicted their commitment to identity goals and subsequent well-being. These effects were detected also when controlling for the effects of perceived basic autonomy support.

*AIC validation.* This practice may be particularly relevant after youth have engaged in reflective exploration and selected long-term goals. In this practice, parents validate the youths' perception and feelings that the goal/commitment/interest they follow is worthy and desirable. Even more important, parents try to avoid invalidation. Another aspect of validation is conveying the view that the youth has the capacities to attain the relevant goal. The challenge of validation is especially difficult when the youth is adopting goals and interests which parents do not particularly respect or that appear too demanding. Indirect support for the importance of AIC validation was obtained in a recent study by Assor, Cohen et al. (2021). The study did not employ a direct measure of parental AIC validation, but the measure assessing youth experience of having a valid AIC when with mothers is likely to reflect exposure to mothers who validate their children's AIC. However, more direct measure and evidence is needed.

## The Benefits of AIC and AIC Support as Universal Phenomena

According to SDT, autonomy is a universal need, important even in cultures eschewing autonomy and authenticity and endorsing hierarchical and collectivist value orientations (Ryan & Deci, 2017). This view of autonomy was criticized by scholars emphasizing cultural differences (e.g., Markus & Kitayama, 2003). Given these challenges, the results obtained in the studies including Bedouin and Chinese participants are of special interest. Both the Bedouin and the Chinese cultures are characterized by an orientation eschewing the value of autonomy (Schwartz, 2009). In addition, in both cultures there is a strong emphasis on paying attention to and complying with external expectations based on tradition, hierarchy, and the social group (e.g., see Assor, Kanat-Maymon et al., 2020; Assor, Benita et al., 2020; Assor, Benita, Goren, 2021; Assor, Cohen et al., 2021; Dwairy & Achoui, 2010; Slote & DeVos, 1998). As part of this emphasis, in both cultures people are not encouraged to examine how authentic they feel as they pursue societal values and expectations.

Given the likely disregard for the development of AIC in both cultures, it is interesting to note that AIC and practices promoting it nonetheless predict positive outcomes also in these cultures (Assor et al., 2015; Assor, Benita et al., 2020; Assor, Benita, Goren et al., 2021; Assor, Cohen et al., 2021; Benita et al, 2021; Sabag et al., 2021; Yu et al., 2018). Of course, claims regarding the universal benefits of AIC should be replicated in rigorous longitudinal studies conducted in many different cultures.

## Future Directions

### Self-Coherence and Continuity

Theoretically, a firm sense of AIC is likely to contribute to a sense of self-coherence and self-continuity (Assor, 2018b). The core values and preferences constituting one's AIC serve as *organizing, choice- and action-directing concepts* prompting us to enact preference-reflecting behaviors across time and context. As a result, we understand that different choices and actions (in different life domains and periods) all reflect the same central authentic values and preferences. This understanding allows us to experience self-coherence, self-continuity, and meaning because they enable us to understand the theme unifying apparently different actions. Rather than viewing our specific actions as fragmented acts, we can see how they complement each other, thereby making each act more meaningful as an expression of who we really are or want to be: our true self-identity.

### Noncontingent Self-Ssteem and Lower Susceptibility to Conditional Regard and Introjection

Theoretically, a firm AIC should make people's self-esteem less dependent on external approval because they have firm values and preferences that can serve as criteria for positive self-evaluation. These inner criteria are also likely to make people less susceptible to introjected internalization of goals and behavior in order to maintain the conditional regard of important others (Assor, Kanat-Maymon, & Roth, 2014; Kanat-Maymon, Assor, & Roth, this volume). In fact, the experience of having an AIC and the socializing processes supporting its development were first introduced in an attempt to delineate intra- and interpersonal factors that help children to resist the harmful effects of conditional regard from parents (Assor et al., 2004; Assor, 2018a, 2018b). More generally, a firm AIC is likely to increase the capacity to feel free and not pressured by external dictates and threats.

### Inauthentic Compass

So far, research has focused only on the authentic inner compass. Yet theoretically, we posit that people can develop an inauthentic inner compass, that is, core preferences that guide decisions and actions but are not deeply authentic. Such an inauthentic compass is likely to be based on introjected values and interests and derived goals and commitments characterizing foreclosed identities (e.g., Soenens & Vansteenkiste, 2011). Assor (2018b) elaborated on this construct and the socializing processes leading to its formation. Future research may try to develop a measure of this construct and assess its antecedents and outcomes.

## Conclusion

This chapter focused on the construct of AIC and its anchoring in a view of autonomy as a meta-need for authentic self-direction, that is, a need to self-organize and direct

our behavior via voluntary, authentic, explicit, and articulable preferences. These preferences enable us to do what we truly want to do, thereby promoting optimal realization of more specific basic needs and personal inclinations. Research shows that the experience of having a firm AIC promotes volition to engage in activities and contexts enabling AIC realization, vitality, sense of meaning, resisting negative peer pressures, and other optimal-functioning indicators. The emphasis on articulable authentic core preferences underlying a sense of AIC reflects a view of autonomy as authentic intentionality or agency. Thus, individuals are more likely to experience autonomy and growth and show resilience, when they actively and reflectively form an AIC consisting of core authentic preferences, and then express and try to realize it in action.

## References

Assor, A. (2011). Autonomous moral motivation: Consequences, socializing antecedents and the unique role of integrated moral principles. In M. Mikulincer, & P. R. Shaver (Eds.), *The social psychology of morality: Exploring the causes of good and evil* (pp. 239–255). American Psychological Association.

Assor, A. (2012). Allowing choice and nurturing an inner compass: Educational practices supporting students' need for autonomy. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 421–439). Springer.

Assor, A. (2018a). Parental conditional regard. In M. H. Bornstein (Ed.), *The Sage encyclopedia of lifespan human development* (pp. 1579–1581). Sage. https://dx.doi.org/10.4135/9781506307633.n591

Assor, A. (2018b). The striving to develop an authentic inner compass as a key component of adolescents' need for autonomy: Parental antecedents and effects on identity, well-being, and resilience. In B. Soenens, M. Vansteenkiste, & S. Van Petegem (Eds.), *Autonomy in adolescent development* (pp. 135–160). Psychology Press.

Assor, A. (2019). Having an authentic inner compass as an essential component of the experience of autonomy: Why is it important and how can we nurture it? Paper presented at the International Conference on Self-determination Theory, the Netherlands.

Assor, A., Benita, M., Goren, R., Yu, S., Yitshaki, N., & Wang, Q. (2021). The authentic self-esteem, depression and behavioral self-realization. *Journal of Happiness Studies. 22*(8), 3435–3455.

Assor, A., Benita, M., Shi, Y., Goren, R., Yitshaki, N., & Wang, Q. (2021). The authentic inner compass as a well-being resource: Predictive effects on vitality, and relations with self-esteem, depression and behavioral self-realization. *Journal of Happiness Studies, 22*(8), 3435–3455.

Assor, A., Benita, M., Yitshaki, N., Geifman, Y., & Maree, W. (2020). Sense of authentic inner compass as a moral resource across cultures: Possible implications for resisting negative peer-pressure and for parenting. *Journal of Moral Education*, *49*, 1–19. doi: 10.1080/03057240.2020.1727423

Assor, A., Cohen-Melayev, M.., Kaplan, A., & Friedman, D. (2005). Choosing to stay religious in a modern world: Socialization and exploration processes leading to an integrated internalization of religion among Israeli Jewish youth. *Advances in Motivation and Achievement, 14*, 105–150.

Assor, A., Cohen, R., Ezra, O., & Yu, S. (2021). Feeling free and having an authentic inner compass as important aspects of the need for autonomy in emerging adults' interactions with their mothers. *Frontiers in Psychology, 12*, 1–14.

Assor, A., Ezra, O., & Yu, S. (2015). *The striving to have an inner compass as a fundamental aspect of emerging adults' need for autonomy*. Invited symposium presented at the 14th European Congress of Psychology, Milan.

Assor, A., Geifman, Y., Yithaki, N., Maree, W., Dabach, M., Yu, S., Qian, S., Vermote, B., & Soenens, B. (2018). *The inner compass as a resource for resilience and growth*. Paper presented at the European Association for Research on Adolescence (EARA), Ghent.

Assor, A., Kanat-Maymon, Y., Keren-Pariente, S., & Katz, I. (2020). You should know me better: Parents' temperament-insensitivity has negative motivational effects on Bedouin and Jewish adolescents. *Journal of Personality*, *88*(5), 874–891.

Assor, A., Kanat-Maymon, Y., & Roth, G. (2014). Parental conditional regard: Psychological costs and antecedents. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships* (pp. 215–238). Springer.

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of perceived parental conditional regard: A self-determination theory analysis. *Journal of Personality*, *72*, 47–89.

Assor, A., Soenens, B., Yitshaki, N., Ezra, O., Geifman, Y., & Olshtein, G. (2020). Towards a wider conception of autonomy support in adolescence: The contribution of reflective inner-compass facilitation to the formation of an authentic inner compass and well-being. *Motivation and Emotion*, *44*, 159–174. doi:10.1007/s11031-019-09809-2

Aviram, A. (2010). *Navigating through the storm: Reinventing education for postmodern democracies*. Sense Publishers.

Barmash, I. (2004). *The manipulated society: How advertising, public relations, and mass media influence public opinion, taste, and purchases*. Beard Books.

Benita, M., Xuanxuan, W., Assor, A., & Yu, S. (2021). Inherent value demonstration, intrinsic values and authentic inner compass as predictors of resistance to peer pressure among chinese youth. Manuscript submitted for publication, Ben Gurion University.

Berlin, I. (1961). *Two concepts of liberty*. Oxford University Press.

Berzonsky, M. D., Soenens, B., Luyckx, K., Smits, I., Papini, D. R., & Goossens, L. (2013). Development and validation of the revised Identity Style Inventory (ISI-5): Factor structure, reliability, and validity. *Psychological Assessment*, *25*(3), 893.

Brambilla, M., Assor, A., Manzi, C., & Regalia, C. (2015). Autonomous versus controlled religiosity: Family and group antecedents. *International Journal for the Psychology of Religion*, *25*(3), 193–210.

Brehm, S. S., & Brehm, J. W. (2013). *Psychological reactance: A theory of freedom and control*. Academic Press.

Bronk, K. C., Hill, P. L., Lapsley, D. K., Talib, N., & Finch, H. (2009). Purpose, hope, and life satisfaction in three age groups. *Journal of Positive Psychology*, *4*, 500–510.

Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality*, *30*(1), 29–50.

Burkitt, I. (2011). Identity construction in sociohistorical context. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 267–283). Springer.

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R., Sheldon, K., Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, *39*, 216–236.

Cieciuch, J., Davidov, E., & Algesheimer, R. (2016). The stability and change of value structure and priorities in childhood: A longitudinal study. *Social Development*, *25*(3), 503–527.

Colby, A., & Damon, W. (1992). *Some do care: Contemporary lives of moral commitment*. Free Press.

deCharms, R. (1992). *Personal causation and the origin concept*. In C. P. Smith, J. W. Atkinson, D. C. McClelland, & J. Veroff (Eds.), *Motivation and personality: Handbook of thematic content analysis* (pp. 325–333). Cambridge University Press.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268.

Dogan, M. (1998). The decline of traditional values in Western Europe. *International Journal of Comparative Sociology*, *39*(3), 77–90.

Döring, A. K., Blauensteiner, A., Aryus K., Drögekamp L., & Bilsky, W. (2010). Assessing values at an early age: The Picture-Based Value Survey for Children (PBVS-C). *Journal of Personality*, **92**, 439–448.

Dwairy, M., & Achoui, M. (2010). Parental control: A second cross-cultural research on parenting and psychological adjustment of children. *Journal of Child and Family Studies*, *19*, 16–22.

Erikson, E. (1968). *Identity, youth and crisis*. Norton.

Etzioni, A. (1996). The responsive community: A communitarian perspective. *American Sociological Review*, *61*, 1–11.

Fonagy, P., & Target, M. (1997). Attachment and reflective function: Their role in self-organization. *Development and psychopathology*, *9*(4), 679–700.

Fromm, E. (1941). *Escape from freedom*. Holt, Rinehart & Winston.

Frankl, V. E. (2017). *Man's search for meaning*. Beacon Press. (Original work published 1946).

Geifman, Y., & Assor, A. (2019). *The authentic inner compass stability and effects across time*. Ben Gurion University of the Negev. Unpublished manuscript.

Geifman, Y., & Assor, A. (2021). *Experiences of having an authentic inner compass contribute to satisfaction of the need for autonomy, as indicated by feelings of true volition and vitality*. Ben Gurion University of the Negev. Unpublished manuscript.

Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. P., & Ditto, P. H. (2013). Moral foundations theory: The pragmatic validity of moral pluralism. In P. Devine & A. Plan (Eds.), *Advances in experimental social psychology* (Vol. 47, pp. 55–130). Academic Press.

Hesse, E. (1999). The Adult Attachment Interview. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (p. 236). The Guilford Press.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, *41*(2), 111–127.

Hoffer, E. (1951). *The true believer*. Perennial.

Honneth, A. (2014). *Freedom's right: The social foundations of democratic life*. Columbia University Press.

Kanat-Maymon, Y., Assor, A., & Roth, G. (this volume). Conditional regard. In R. Ryan (Ed.), Handbook of Self Determination theory. Oxford University Press.

Kroger, J., & Marcia, J. E. (2011). The identity statuses: Origins, meanings and interpretations. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 31–54). Springer.

Luyckx, K., Schwartz, S. J., Berzonsky, M. D., Soenens, B., Vansteenkiste, M., Smits, I., & Goossens, L. (2008). Capturing ruminative exploration: Extending the four-dimensional model of identity formation in late adolescence. *Journal of Research in Personality*, *42*(1), 58–82.

Markus, H. R., & Kitayama, S. (2003). Culture, self, and the reality of the social. *Psychological Inquiry*, *14*(3–4), 277–283.

Martela, F., Bradshaw, E. L., & Ryan, R. M. (2019). Expanding the map of intrinsic and extrinsic aspirations using network analysis and multidimensional scaling: Examining four new aspirations. *Frontiers in Psychology*, *10*, 2174.

Martela, F., & Ryan, R. M. (2016). Prosocial behavior increases well-being and vitality even without contact with the beneficiary: Causal and behavioral evidence. *Motivation and Emotion*, *40*(3), 351–357.

Martela, F., Ryan, R. M., & Steger, M. F. (2018). Meaningfulness as satisfaction of autonomy, competence, relatedness, and beneficence: Comparing the four satisfactions and positive affect as predictors of meaning in life. *Journal of Happiness Studies*, *19*(5), 1261–1282.

Meeus, W. (2011). The study of adolescent identity formation 2000–2010: A review of longitudinal research. *Journal of Research on Adolescence*, *21*(1), 75–94.

Mill, J. S. (1946). *On Liberty*. Basil Blackwell.

Nietzsche, F. (2019). Twilight of the idols. Dover thrift publications. (Original work published 1889)

Orman, L. V. (2015). *Information paradox: Drowning in information, starving for knowledge*. IEEE Technology and Society 2015. Retrieved from https://ssrn.com/abstract=2620237

Renninger, K. A., & Su, S. (2019). Interest and its development, revisited. In R. M. Ryan (Ed.), *The Oxford handbook of human motivation* (pp. 205–225). Oxford University Press.

Russo-Netzer, P., & Shoshani, A. (2020). Authentic inner compass, well-being, and prioritization of positivity and meaning among adolescents. *Personality and Individual Differences*, *167*(110248), 1–6.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Cohen, R., Assor, A., & Almashla, H. (2021). *Bedouin mothers' sense of authentic inner compass as a parenting resource: Relations with need-supporting parenting and adolescent's well-being*. Manuscript submitted for publication, Ben Gurion University.

Schwartz, S. H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beierlein, C., Ramos, A., Verkasalo, M., Lönnqvist, J., Demirutku, K., Dirilen-Gumus, O., & Konty, M. (2012). Refining the theory of basic individual values. *Journal of Personality and Social Psychology*, *103*, 663–688.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology, 25*, 1–65.

Schwartz, S. H. (2009). Culture matters: National value cultures, sources and consequences. In C. Y. Chiu, Y. Y. Hong, S. Shavitt, & R. S. Wyer, Jr. (Eds.), *Understanding culture: Theory, research and application* (pp. 127–150). Psychology Press.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, *76*(3), 482.

Slote, W. H., & DeVos, G. A. (1998). *Confucianism and the family*. State University of New York Press.

Soenens, B., & Vansteenkiste, M. (2011). When is identity congruent with the self? A self-determination theory perspective. In *Handbook of identity theory and research* (pp. 381–402). Springer.

Soenens, B., Vansteenkiste, M., Beyers, W., Verstuyf, J., & Assor, A. (2016). *How to resist the sirens' call? The role of an inner compass in protecting adolescents against problematic peer influences*. Paper presented at the 2016 Self-Determination Theory Conference, Ghent, Belgium

Strohminger, N. (2019). Identity is essentially moral. In K. Gray & J. Graham (Eds.), *Atlas of moral psychology* (pp. 141–148). Guilford Press.

Taylor, C. (1991). *The malaise of modernity*. House of Anansi Press.

Taylor, C. (1992). *The ethics of authenticity*. Harvard, University Press.

Thompson, R. A., & Lagattuta, K. H. (2006). Feeling and understanding: Early emotional development. In *Blackwell handbook of early childhood development* (pp. 317–337). Blackwell.

Taylor, C. (1992). *The Ethics of Authenticity*. Cambridge, MA: Harvard, University Press.

Tufekci, Z. (2015). Algorithms in our midst: Information, power and choice when software is everywhere. In D. Cosley, A. Forte, L. Ciolfi, & D. McDonald (Eds.), *18th ACM Conference on Computer Supported Cooperative Work & Social Computing* (pp. 1918–1918). ACM.

Vansteenkiste, M., & Soenens, B. (2015). *Vitamines voor groei: Ontwikkeling voeden vanuit de Zelf-Determinatie Theorie* [Vitamins for psychological growth: A self-determination theory perspective on child development]. Acco.

Vermote, B., Soenens, B., & Vansteenkiste, M. (2018). *Now what? The unique and interactive role of an authentic inner compass and parental involvement in high school students' decision-making about future plans*. Paper presented at the convention of the European Association for Research on Adolescence, Ghent.

Warneken, F., & Tomasello, M. (2009). The roots of human altruism. *British Journal of Psychology*, *100*(3), 455–471.

Yu, S., Assor, A., & Liu, X. (2015). Perception of parents as demonstrating the inherent merit of their values: Relations with self-congruence and subjective well-being. *International Journal of Psychology*, *50*, 70–74.

Yu, S., Assor, A., Yu, H., & Wang, Q. (2021). *Autonomy as a moral resource: Parenting practices supporting youth need for autonomy as determinants of youth acceptance of academic dishonesty*. Manuscript submitted for publication, Chinese University of Hong Kong.

Yu, S., Deng, Y., Yu, H., & Liu, X. (2018). Attachment avoidance moderates the effects of parenting on Chinese adolescents' having an inner compass. *Current Psychology*, *26*, 1–8.

# The Role of Passion in Optimal Functioning in Society and Resilience

Robert J. Vallerand *and* Virginie Paquette

**Abstract**

This chapter focuses on the construct of passion and shows that it can lead to adaptive or maladaptive outcomes. A brief introduction to the concept of passion is followed by a presentation of the dominant theory on passion, namely the dualistic model of passion. In line with self-determination theory's internalization process, the dualistic model of passion posits, and research reveals, that when the activity that one loves has been internalized in an autonomous fashion, harmonious passion results, and it typically leads to adaptive outcomes. Conversely, when the beloved activity has been internalized in a more controlled way, obsessive passion results, leading to less adaptive and, at times, maladaptive outcomes. Research supporting these assumptions is presented especially as it pertains to optimal functioning in society and resilience. Finally, directions for future research are proposed.

**Key Words:** passion, harmonious passion, obsessive passion, resilience, optimal functioning, dualistic model of passion, self-determination theory

Heather and Mary love basketball. They basically play each day for several hours all year long. When they don't play, they talk or read about it. They love the game for sure, but there is more: they also devote a very large amount of time and energy to it, they highly value it, and it is part of them: Heather and Mary see themselves as basketball players. This love for the game of basketball has led them to commit to their sport, to achieve excellence in it, and to play at the university on the varsity team. Of major importance, this intense love for basketball that they both experience seems to differ in terms of their basketball involvement and outcomes. For instance, when playing Heather is always smiling and giving teammates "high fives." Although she gets upset when she does not play as well as she can, she finds a way to smile, regroup, and eventually thrive. When basketball is over at the end of the day, she can turn the page and devote herself fully to other activities, such as her studies, playing the guitar, or spending time with friends. As a result, she is happy while playing basketball and just as happy when doing other life activities. On the other hand, for Mary basketball is too serious for her to smile while playing. Winning is almost a matter of life and death for her, and she often feels really down, even depressed, when things don't go her way. Furthermore, she has a tough time letting go of basketball when

the day is done. As a result, she has trouble enjoying other activities in her life. Overall, Mary is not as happy as Heather both while playing basketball and in the rest of her life.

As one can see, Heather and Mary dearly love basketball. As a consequence, they have both reached excellence in it. And yet their love for the game has led to more adaptive consequences for Heather than for Mary. It appears that sometimes loving an activity can be adaptive, and sometimes less so and, perhaps, even maladaptive at times. Therefore, we need to better understand how even a strong "love of the activity" can go awry. The aim of this chapter is to do exactly that by presenting the construct of *passion* and showing how it may contribute to important outcomes in people's life. We start with a brief introduction to the concept of passion and follow with a presentation of the dominant theory on passion, namely the dualistic model of passion (Vallerand, 2010, 2015). It will be seen that two types of passion exist, harmonious passion (HP) and obsessive passion (OP), roughly corresponding to that of Heather and Mary. Subsequently, we briefly present illustrative research supporting the role of passion in optimal functioning and then in resilience. A section on recommendations for future research closes the chapter.

## The Psychology of Passion

### The Concept of Passion

The concept of passion has given rise to many reflections, all of which have led to the emergence of at least two clear perspectives (Vallerand, 2015). The first, in relation to the perspective of the Greek philosophers, postulates that passion involves a loss of reason and control (e.g., Plato, 429–347 BCE; Spinoza, 1632–1677). The second perspective emphasizes the positive properties of passion, seen in the writings of Romantic philosophers for whom passions are necessary for attaining high levels of fulfillment (Hegel, 1770–1831) and for living a satisfying life (Kiekegaard, 1813–1855). These two perspectives highlight the duality inherent in the concept of passion, where the attainment of adaptive and maladaptive consequences can result. It is only in the 1970s that some empirical articles started to appear on the psychology of passion. These focused on passion for love (e.g., Hatfield & Walster, 1978) and did not deal with passion for an activity as such. Further, such research did not address the duality of passion. It was only 25 years later that Vallerand and colleagues (2003) reported the first empirical studies conducted on passion for activities. These studies introduced the dualistic model of passion and focused on explaining the duality of passion and predicting its adaptive and maladaptive effects.

### The Dualistic Model of Passion

The dualistic model of passion (DMP) rests on the firm assumption that people have a natural tendency toward self-growth that is experienced throughout life (Vallerand, 2015; Vallerand & Rapaport, 2017). In line with the organismic approach and especially self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2017), we believe that

people seek to master their outside and internal worlds. In doing so, they challenge the world and conquer the tasks they face and then grow psychologically. Although people may be motivated for several activities in life, they are passionate for only a few, sometimes only one. People are likely to reengage regularly in those activities in which their psychological needs are nurtured, that they love, and that come to define them. Such an activity then represents central features of their identity. This will be the case to the extent that the activity is highly valued by the person (Aron, Aron, & Smollan, 1992), thereby leading to a passion toward that activity. In so doing, self and identity expand and the individual grows in the process.

The DMP (Vallerand, 2008, 2010, 2015; Vallerand et al., 2003; Vallerand & Houlfort, 2003, 2019) defines passion as a strong inclination toward an activity (or an object, an ideology, a person) that we love, find important and meaningful, in which we invest large amounts of time and energy, and through which we define ourselves. Research on SDT (Deci & Ryan, 1985; Ryan & Deci, 2017) has shown that the internalization of uninteresting activities takes place to the extent that these are highly valued and meaningful for the person. However, the DMP posits that activities that people *love* will also be internalized in the self and in identity to the extent that they are highly valued (Aron et al., 1992; Csikszentmihalyi et al., 1993). In line with SDT, such internalization can be autonomous or controlled (Deci et al., 1994; Vallerand, Fortier, & Guay, 1997), thereby giving rise respectively to a HP or an OP for the activity.

HP results from an autonomous internalization of the activity in the identity and the self. Such internalization occurs when individuals have freely accepted the importance of the activity in and for itself. In other words, with HP, the authentic and integrative self (Deci & Ryan, 2000; Ryan & Deci, 2003) is at play, leading the person to engage freely in the activity with a sense of volition and personal endorsement. Individuals can then fully partake in the passionate activity in a flexible (Chichekian & Vallerand, 2022) and mindful way (St-Louis et al., 2018). With HP, people remain in control of their passion. They are then able to decide when to engage in the activity, to fully focus on it, to experience positive consequences during (e.g., flow) and after (e.g., satisfaction) engaging in it, and to limit the sources of conflict with other life activities (e.g., work, family). People can then turn their attention to other life activities and enjoy them as well. Furthermore, with HP, people should be able to adapt well to demanding situations and to mobilize their attention and energies in the task to be performed. Thus, they should be in a position to face adversity with all of their resources.

In contrast, OP results from a controlled internalization of the activity that one loves in the identity and the self. Such internalization arises from intra and/or interpersonal pressures generally due to contingencies linked to the beloved activity (e.g., Lafrenière et al., 2011; Mageau, Carpentier, & Vallerand, 2011) or to an uncontrollable urge to engage in the passionate activity. This type of internalization leads, at best, to a partial and

fragmented internalization of the activity. Therefore, OP leads to an uncontrollable urge to engage in the activity that people love, leading to experiencing some negative consequences (emotional, cognitive, and behavioral) before, during, and after their engagement in their passionate activity as well as conflict with other life dimensions. OP somehow makes people "slave to the passion that controls them" and leads to rigid persistence (Chichekian & Vallerand, 2022) and some form of dependence on the activity. As such, OP leads to a less than optimal functioning both within the purview of the passionate activity and to the rest of people's life.

Let us return to Mary, one of the two basketball players from the introductory example. Let us say that she is in the gym working on her basketball shooting. She realizes that time has passed quickly and she needs to get to her boyfriend's apartment for dinner. Because her passion for basketball is more obsessive, she may be unable to resist the temptation to continue shooting, even though she knows that it could cause some conflict with her boyfriend. If she continues shooting, this may cause her to feel guilty and anxious, making it difficult to concentrate on her shooting. Even if she eventually goes to dinner at her boyfriend's, she would likely fall victim to her own ruminations and torments of missing out on an opportunity to improve her shooting. The situation should be different with Heather. Because her passion for basketball is more harmonious, in all likelihood she would choose to stop her shooting after taking a few crucial mental notes of the few spots where she needs to work on her three-point shot tomorrow. This way, she can stop shooting without feeling guilty, go to the pizza parlor, and have a good time with her friends without ruminating about basketball.

*Research Methods: The Passion Scale and the Induction of Passion*
The initial work of Vallerand and colleagues (2003, Study 1) allowed us to validate the Passion Scale and to relate it to other constructs. The Passion Scale has two six-item subscales, each measuring one of two types of passion: harmonious (e.g., "This activity is in harmony with the other activities in my life") or obsessive (e.g., "I have almost an obsessive feeling for this activity"). These two subscales are accompanied by a five-item subscale measuring the criteria of passion to distinguish passionate from nonpassionate people. These criteria are (1) love for the activity, (2) the importance of the activity, (3) the investment of time and energy in the activity, (4) the inclusion of the activity in one's identity, and (5) the perception of the activity as being a "passion." Those who are passionate about an activity score an average of at least 4 on a seven-point scale on these criteria.

The psychometric qualities of the Passion Scale are excellent (see Marsh et al., 2013; Vallerand, 2015; Vallerand & Rahimi, in press). Well over 20 studies conducted in a multitude of different contexts, including work, sports, education, and music and the arts, have supported the two-factor structure of the scale through either exploratory or confirmatory factor analyses, as well as appropriate internal consistency (Cronbach's

alphas of .75 and above). The Passion Scale also demonstrates invariance (or scale equivalence) over gender, language (English and French), and five types of activities (Marsh et al., 2013).

Of great importance, research supports the convergent and divergent validity of the Passion Scale. In passion research, participants complete the Passion Scale, including the subscale on the passion criteria (e.g., loving the activity, spending time on the activity), and other scales assessing a variety of outcomes (e.g., psychological well-being, emotions). Findings from a number of studies (see Curran et al., 2015 for a meta-analysis) reveal that HP and OP are both positively related to the criteria of passion, thereby providing convergent validity to the scale. Of major interest, the two types of passion show *different* relationships with outcomes variables. Specifically, HP is typically positively correlated with adaptive consequences such as positive emotions, flow, and life satisfaction, whereas OP is typically positively associated with less adaptive outcomes such as conflict, negative emotions, and anxiety (see Curran et al., 2015; Marsh et al., 2013). Overall, these results support the convergent and divergent validity of the Passion Scale.

Because the two types of passion can be internalized to different degrees in the individual (Vallerand, 2015), it is possible to experimentally induce either HP or OP at a specific point in time. Such induction is typically done by asking people to recollect a recent situation when they displayed thoughts and behavior associated with either HP or OP and to write for a few minutes on their experience. Research reveals that the HP manipulation does induce higher situational levels of HP than OP, whereas the reverse is true in the OP induction condition (e.g., Bélanger et al. 2013b, Study 4). Furthermore, these induction procedures lead to the same effects as the HP and OP subscales of the Passion Scale (see Vallerand, 2010, 2015; Vallerand & Houlfort, 2019).

## Passion and Optimal Functioning in Society

The organismic approach espoused by SDT posits that one's happiness is to be found in trying to reach one's personal fulfillment in accordance with one's true self. In line with this perspective, Vallerand (2013, 2015) proposed that humans seek to experience self-growth and personal fulfillment in a variety of areas in their life. Vallerand (2013) posited that the highest level of well-being is multidimensional in nature and is obtained through high levels of psychological, physical, and relational well-being, as well as high performance in one's main area of endeavor while contributing to society. This is called "optimal functioning in society" (OFIS; Vallerand, 2013).

Of major importance is that Vallerand (2013, 2015) proposes that engaging in activities that one is passionate about represents an important way to reach OFIS. This is because with passion one is likely to experience self-growth and to attain OFIS. Indeed, with passion one has a powerful motivational force that is conducive to fully engaging in the activity with high levels of energy and enthusiasm while trying to further develop and

grow. Passion, predominantly HP, entails using mastery goals and reaching positive activity experiences that foster full benefits of activity engagement (Vallerand, 2015; Vallerand & Rapaport, 2017). As one can see, passion for an activity represents an important type of high involvement that may lead to important positive effects on all five elements of OFIS. However, as we mentioned, passions are not equal. Although HP leads one to be in a position to be optimally functioning on a recurrent basis, such positive effects are not automatic and do not necessarily take place with OP. Therefore, it is proposed that to the extent that one's passion for an activity is harmonious, this will set in motion processes that will promote optimal functioning and protect against poor functioning. However, if one's passion is obsessive, then the positive effects may not be forthcoming on some dimensions, and some poor functioning may even take place.

Hundreds of studies have now been conducted on the DMP and provide support for the above hypotheses. One will find detailed summaries of such research in Vallerand (2015), Vallerand and Houlfort (2019), and Curran et al. (2015). With respect to the five elements of OFIS, research (including some longitudinal studies and others where passion was experimentally induced) reveals the following. First, having a HP for at least one activity in one's life leads to psychological well-being increases over time, whereas OP (and not being passionate) typically undermines it (e.g., Lafrenière, Vallerand, & Sedikides, 2013; Philippe, Vallerand, & Lavigne, 2009; Vallerand, 2012). This is because HP allows one to experience flow and positive emotions while engaging in the activity. Such recurrent positive task experiences foster well-being (Rousseau & Vallerand, 2008). OP, on the other hand, does not lead to such positive task experiences but rather fosters conflict with other life activities and rumination about the passionate activity. As a consequence, OP does not facilitate psychological well-being but rather promotes burnout (Vallerand et al., 2010) and other negative states, such as anxiety and even depression.

Second, research shows that HP facilitates physical health, whereas OP is either unrelated or negatively related to health (e.g., Carbonneau, Vallerand, & Massicotte, 2010; St-Louis, Carbonneau, & Vallerand, 2016). In addition, with OP people engage more in risky behavior that can lead to injuries (Rip, Fortin, & Vallerand, 2006; Vallerand et al., 2003). Of note, even engaging in positive activities such as yoga is conducive to health benefits only when fueled by HP, as OP fosters increases in negative health symptoms over time (Carbonneau et al., 2010).

Third, HP facilitates the development of new friendships and the maintenance of such friendships, whereas OP does not (e.g., Utz, Jonas, & Tonkens, 2012). Passion can affect friendships both within the sphere of the passionate activity (Philippe et al., 2010) and outside of it, in the rest of life (Vallerand & Carbonneau, 2016). In addition, when the romantic passion is harmonious in nature, it leads to a more fulfilling relationship than when it is obsessive in nature. In fact, OP for one's romantic relationship leads to more interpersonal conflict and breakups over time (e.g., Carbonneau & Vallerand, 2013; Ratelle et al., 2013; Vallerand & Carbonneau, 2016).

Fourth, both HP and OP facilitate the development of long-term performance (see Vallerand et al., 2007, 2008) through repeated engagement in demanding activities deemed to accentuate learning called "deliberate practice" (Ericsson & Charness, 1994). While both types of passion lead to performance in the long run, only HP facilitates psychological well-being during that process (e.g., Bonneville-Roussy, Lavigne, & Vallerand, 2011). Research has even shown that passion can predict 15 years ahead of time who will play professional hockey (e.g., Verner-Filion et al., 2017). Regarding short-term performance, research has shown that HP typically facilitates short-term performance over OP by triggering positive task experiences like flow, concentration, and deep task involvement (e.g., Ho, Wong, & Lee, 2011). But at times OP can also facilitate short-term performance, especially in ego-involving situations (Bélanger et al., 2013a).

Finally, both HP and OP predict contributing to society through involvement in causes such as humanitarian help (St-Louis et al., 2016), protecting the environment (Gousse-Lessard et al., 2013), and political involvement (e.g., Rip, Vallerand, & Lafrenière, 2012). However, whereas HP leads to the use of more democratic means (e.g., discussions, meetings) to promote the cause, OP often fosters the use of more extreme means and even violence (Gousse-Lessard et al., 2013; Rip et al., 2012).

The above research provides support for the DMP and the role of passion in each of the five OFIS elements. However, typically such research used the Passion Scale and only one of the five OFIS elements per study. More recently, we have developed a scale assessing all five OFIS elements and have related these to the Passion Scale in a series of cross-sectional and longitudinal studies (Chénard-Poirier, Verner-Filion, & Vallerand, 2022). Overall, such research reveals that HP positively predicts all five OFIS elements, whereas typically OP is unrelated or even negatively related to some dimensions, such as physical health and relationships. Future research is necessary to identify the processes mediating the effects of the two types of passion on OFIS.

A caveat is in order pertaining to causality. It should be underscored that research has been largely correlational in nature. However, research using cross-lagged panel (e.g., Lavigne, Forest, & Crevier-Braud, 2012) and experimental (e.g., Bélanger et al., 2013b; Lafrenière et al., 2013) designs has replicated the findings of the correlational studies using the Passion Scale. Consequently, one can feel confident that passion does cause many important outcomes reflecting the OFIS construct.

## Passion and Resilience

Resilience is generally defined as a relatively successful adaptation despite a difficult context or situation (Bonanno, Rennicke, & Dekel, 2005). Two types of research have been conducted with adults. First, researchers have tried to identify the individual variables that allow people to cope with significant stressors. This is the case, among others, for the resilience trait (Block & Kremen, 1996). The second type of research seeks to chart the resilience process by identifying the psychological mechanisms used by individuals

demonstrating resilience (Fisher et al., 2018). For example, Fredrickson and colleagues (2003) have shown that individuals who experience positive emotions following a stressful situation such as the 9/11 attacks display high levels of psychological adjustment and display resilience.

We have recently conducted research on the role of passion in resilience following these two lines of research. We briefly present the results of some of these studies.

*Passion as a Determinant of the Trait of Resilience*

Several studies have shown that HP allows the person to have access to a number of adaptive self-processes, such as mindfulness (St-Louis et al., 2018), task-oriented coping (Verner-Filion et al., 2014), the pursuit of mastery goals (Vallerand et al., 2007, 2008), and perceiving a situation as a challenge rather than a threat (Lavoie, Vallerand, & Verner-Filion, 2021). On the other hand, OP is generally negatively related to these adaptive processes (with the exception of a small positive relationship with mastery goals) while being positively related to less adaptive processes such as threat perception (Lavoie et al., 2021), avoidance goals, and avoidant coping (Vallerand et al., 2007, 2008; Verner-Filion et al., 2014). One might therefore expect that HP would foster trait resilience while OP would not, or at least less so.

Two studies have been conducted to examine this hypothesis. In a first study with workers, we looked at the role of passion in the trait of resilience at work and the role of the interplay between passion and trait resilience in psychological well-being (Paquette et al., 2022, Study 1). The results of a path analysis demonstrated that HP for work was positively, and OP negatively, related to trait resilience at work, which, in turn, positively predicted psychological well-being. These results support the more adaptive role of HP than OP in workers' resilience and the role of the interplay between passion and trait resilience in psychological well-being.

These results are interesting and support our hypothesis. However, this first study was not conducted in a stressful situation. Would the results obtained in the first study be replicated under adversity, in a stressful situation? This is what a second study sought to ascertain (Paquette et al., 2022, Study 2). In Study 2, we asked workers to recall and describe a stressful event experienced at work. They also completed scales measuring passion at work, the trait of resilience at work, and posttraumatic growth following the stressful event at work. Of particular interest is the construct of posttraumatic growth because it measures feeling better *after* than before the stressful event. The results of a path analysis demonstrated that HP positively (and OP negatively) predicted trait resilience, which positively predicted posttraumatic growth. The results of Study 1 were thus replicated in Study 2 in the context of a stressful situation at work. As such, these findings underline the role of HP as an important determinant of the resilience trait and its adaptive consequences. At the same time, the results of both studies also reveal that OP does not provide access to resilience and may even undermine it.

*Passion and the Process of Resilience in the Face of a Stressful Event*

In a now classic study, Fredrickson and colleagues (2003) demonstrated that it is the positive emotions experienced following the tragic events of 9/11 that promoted psychological well-being in those difficult situations; negative emotions, on the other hand, have the opposite effects. These basic findings have been replicated in several studies (e.g., Cohn et al., 2009; Tugade & Fredrickson, 2004), suggesting that emotions are at the heart of the psychological process of resilience.

We believe that passion can play a major role as a determinant of emotions. As we have seen, our work has repeatedly shown that HP allows us to experience more positive emotions and sometimes even prevents the experience of negative emotions, while the inverse relationships are obtained with OP (see Curran et al., 2015; Vallerand, 2010, 2015; Vallerand & Houlfort, 2019). Therefore, we should expect that HP will initiate the process of resilience through the enactment of positive emotions and the prevention of negative emotions. Conversely, OP would derail the resilience process because of the opposite pattern of relationships with emotions. In addition, by measuring outcomes within the passionate activity as well as in the rest of one's life, it allows us to examine resilience on two dimensions: (a) the degree of resilience (from low to high levels of positive adjustment following adversity) and (b) the locus of resilience (from specific, if resilience takes place in one life domain, to global, if resilience takes place across life domains). For instance, following adversity, people who display high levels of adjustment both in their passionate activity *and* in their life overall would show high global resilience, whereas people who display some small levels of positive adjustment both in their passionate activity and in their life overall would show low global resilience. Similarly, people who display high adjustment in their passionate activity but no adjustment in other areas of their life would show high specific resilience, whereas people who display some small levels of positive adjustment in their passionate activity but no adjustment in the rest of their life would show low specific resilience. Finally, lack of adaptation across life domains, including in the passionate activity, would indicate that there is no resilience at all. In line with previous passion research (Vallerand, 2010, 2015; Vallerand & Rapaport, 2017), one should expect that HP will lead to high global resilience and OP will lead to low global or low to moderate specific resilience at best.

In a series of studies conducted in an academic context (Paquette et al., in press), we looked at the resilience of students in the face of stressful end-of-term exams. In a first study, we measured students' passion for their studies, their positive and negative emotions experienced just before the end-of-term exams, and various consequences experienced at that time, such as satisfaction in their studies, their evaluation of their performance in their studies, and their perception of having achieved their life goals *outside* of their studies, in the rest of their life. The results of a path analysis revealed that both HP and OP positively predicted positive emotions (HP more strongly than OP), while HP negatively, and OP positively, predicted negative emotions. In turn, positive emotions

positively predicted all three adaptive consequences, whereas negative emotions negatively predicted satisfaction with one's studies and the perception of having a successful life. A longitudinal study that followed university students before and after end-of-term exams (Paquette et al., 2022b, Study 3) replicated these results while using pre-to-post changes in outcomes. Similar results were also found with students passionate for their studies following a failure in the education area (Rahimi, Paquette, & Vallerand, 2022, Studies 1 and 2).

The results of these studies reveal that when facing a stressful situation, HP leads to high levels of global resilience as high adaptive outcomes take place in the face of adversity both in students' passionate activity (their studies) and in their life in general. Such resilience takes place through the experience of positive emotions and the prevention of negative emotions. On the other hand, OP was found to lead to low levels of global resilience because of its limited relationship with positive emotions and its strong positive relationship with negative emotions, leading to mixed effects on functioning both in the passionate activity and in life in general.

Interestingly, another online study (Paquette et al., in press, Study 2), in which students passionate for their studies completed a stressful education task, showed that once again HP led to high levels of global resilience through its positive link with positive emotions and its protective effect against negative emotions. However, OP led to no resilience at all through its positive relationship with negative emotions leading to negative outcomes. A study with students experiencing failure in their passionate activity (their studies) also found similar results (Rahimi, Paquette, & Vallerand, 2022, Study 3). Thus, it appears that HP is more adaptive than OP since HP consistently leads to high global resilience, while OP leads to low global resilience or no resilience at all.

**Conclusion and Future Directions**

In closing, we would like to offer a few suggestions for future research. The research briefly reviewed in this chapter reveals that HP leads to adaptive outcomes and OP to less adaptive outcomes and, at times, to maladaptive outcomes (e.g., burnout, addiction). A first suggestion is to probe further the effects of HP and OP in order to determine whether OP can at times also lead to adaptive effects. Research has already shown that OP leads to better situational performance than HP under ego-threat conditions (Bélanger et al., 2013a). What are some of the other conditions where OP may do so? Conversely, is HP always adaptive? What about situations where one needs to impinge on one's harmonious life in order to complete an important assignment? Would people with a predominant HP be able to stay at work late, knowing that this creates relational conflict? Or would they find a way to handle the situation in a nonconflicted way? Future research on this issue is important as it deals with situations that happen regularly in real life.

A second area of research deals with having a passion for more than one activity and the potential contribution of such different passions to the five OFIS elements. Research

shows that people can have a HP for at least two activities and that both positively affect psychological well-being (e.g., Schellenberg & Bailis, 2021). Future research is necessary to see if the contribution of two HPs limits itself to psychological well-being or if it can also apply to the other elements of OFIS (health, performance, relationships, and contribution to society).

Passion research has focused almost exclusively on the unique effects of HP and OP on outcomes. Recently, we have shown the existence of a quadripartite approach in which outcomes are distinctly related to subtypes of passion with varying *within-person* passion combinations by integrating the high/low dimensions of both HP and OP: pure HP, pure OP, mixed passion (high/high), and nonpassion (see Schellenberg et al., 2019, 2021). Thus, a third research direction deals with the further exploration of the 2 x 2 quadrants. For instance, in line with the findings that the combination of high HP and high OP (mixed passion) leads to comparable effects to pure HP on some outcomes, future research should try to identify the adaptive processes at work in such adaptive synergetic effects. Is it HP that provides some preventative functions against OP or, conversely, OP that adds some timely resolve allowing one to reach one's key objectives? Similarly, research on cluster analyses is recommended to see if the same quadrants and associated processes can be obtained at the *between-person* level.

A fourth line of research that appears promising deals with the resilience processes of passionate individuals. We have briefly presented recent research (Paquette et al., 2022, in press; Rahimi, Paquette, & Vallerand, 2022) showing that HP facilitates both the trait of resilience and its process when facing stressful events and following failure in the passionate activity. But surely one could envision situations where being rigidly persistent, as with OP, can also yield some adaptive resiliency. Future research on the role of other processes such as persistence in resilience would seem in order. In addition, objective indicators such as physiological and cardiovascular measures (see Vallerand, Paquette, & Richard, 2022 on this issue) during the resilience process could prove valuable in terms of charting a multidimensional perspective of objective resilience.

Finally, research is badly needed on the development of passion. Because of lack of space we could not present research on the determinants of passion and have focused on passion outcomes. We refer readers to Vallerand (2015, Chapter 5) for such a presentation. In line with SDT principles as well as the DMP, such research reveals that social and personal variables that support the person's autonomy foster the development and maintenance of HP (see Vallerand, 2015). Conversely, social and personal variables that thwart the individual's need for autonomy contribute to the development and maintenance of OP toward the activity that one loves. Future research is needed to chart the development of passion from the first time someone engages in an activity (for an example, see Mageau et al., 2009, Study 3). In this vein, one could even study the vicissitudes of passion from its onset until old age as a function of life challenges. Furthermore, the processes involved in the transmission of passion from teachers to students, for instance, deserve attention.

In addition, the role of need satisfaction and frustration in passion also deserves attention. A series of studies by Lalande et al. (2017) has shown that whereas HP results only from need satisfaction derived from activity engagement, OP results from the joint effects of need satisfaction derived from activity engagement and need *frustration* in the rest of one's life. Therefore, with OP people seem to compensate for what's missing in their life. This finding could lead to a new perspective on addiction, where *adding* a satisfying new activity in people's life could lead to a reduction in need frustration and help produce a decrease in OP for a problematic activity such as gambling or alcohol consumption.

Over the past 20 years or so, we have documented the role of passion in human experience. Overall, in line with SDT's internalization process and the tenets of the DMP, research reveals that when the activity that one loves has been internalized in an autonomous fashion, HP results and leads to optimal functioning in society, resilience, and adaptive outcomes. Conversely, when the activity that one loves has been internalized in a more controlled way, OP results, leading to lower levels of functioning and resilience and, at times, to maladaptive outcomes. We believe that future research on passion should lead to a better understanding of the intricate role of motivational processes in human experience.[1]

## References

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the Self Scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, *63*, 596–612.

Bélanger, J. J., Lafreniere, M. A. K., Vallerand, R. J., & Kruglanski, A. W. (2013a). Driven by fear: The effect of success and failure information on passionate individuals' performance. *Journal of Personality and Social Psychology*, *104*(1), 180–195. doi:10.1037/a0029585

Bélanger, J. J., Lafrenie, M. A. K., Vallerand, R. J., & Kruglanski, A. W. (2013b). When passion makes the heart grow colder: The role of passion in alternative goal suppression. *Journal of Personality and Social Psychology*, *104*(1), 126–147. doi:10.1037/a0029679

Block, J., & Kremen, A. M. (1996). IQ and ego-resiliency: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology*, *70*(2), 349–361. doi:10.1037//0022-3514.70.2.349

Bonanno, G. A., Rennicke, C., & Dekel, S. (2005). Self-enhancement among high-exposure survivors of the September 11th terrorist attack: Resilience or social maladjustment? *Journal of Personality and Social Psychology*, *88*(6), 984–998. doi:10.1037/0022-3514.88.6.984

Bonneville-Roussy, A., Lavigne, G. L., & Vallerand, R. J. (2011). When passion leads to excellence: The case of musicians. *Psychology of Music*, *39*, 123–138.

Carbonneau, N., & Vallerand, R. J. (2013). On the role of harmonious and obsessive romantic passion in conflict behavior. *Motivation and Emotion*, *37*(4), 743–757. doi:10.1007/s11031-013-9354-5

Carbonneau, N., Vallerand, R. J., & Massicotte, S. (2010). Is the practice of yoga associated with positive outcomes? The role of passion. *Journal of Positive Psychology*, *5*, 452–465. doi:10.1080/17439760.2010.534107

Chénard-Poirier, Verner-Filion, J., & Vallerand, R. J. (2022). *Optimal functioning in society: A conceptualization, a measure, and a look at determinants*. Manuscript submitted for publication.

Chichekian, T., & Vallerand, R. J. (2022). Passion for science and the pursuit of scientific studies: The mediating role of rigid and flexible persistence and activity involvement. *Learning and Individual Differences*, *93*, 102104. doi:10.1016/j.lindif.2021.102104

Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: Positive emotions increase life satisfaction by building resilience. *Emotion*, *9*, 361–368. doi:10.1037/a0015952

Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented teenagers: The roots of success & failure*. New York: Cambridge University Press.

Curran, T., Hill, A. P., Appleton, P. R., Vallerand, R. J., & Standage, M. (2015). The psychology of passion: A meta-analytical review of a decade of research on intrapersonal outcomes. *Motivation and Emotion*, *39*(5), 631–655. doi:10.1007/s11031-015-9503-0

Deci, E. L., Egharri, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination perspective. *Journal of Personality*, *62*, 119–142.

Deci, E. L., & Ryan, R. M. (1985). The General Causality Orientations Scale: Self-determination in personality. *Journal of Research in Personality*, *19*(2), 109–134. doi:10.1016/0092–6566(85)90023–6

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227–268.

Ericsson, K. A., & Charness, N. (1994). Expert performance. *American Psychologist*, *49*, 725–747. doi:10.1037/0003-066x.49.8.725

Fisher, D. M., Ragsdale, J. M., & Fisher, E. C. (2018). The importance of definitional and temporal issues in the study of resilience. *Applied Psychology, 68*(4), 583–620. doi:10.1111/apps.12162

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, *84*, 365–376. doi:10.1037/0022-3514.84.2.365

Gousse-Lessard, A. S., Vallerand, R. J., Carbonneau, N., & Lafrenière, M. A. K. (2013). The role of passion in mainstream and radical behaviors: A look at environmental activism. *Journal of Environmental Psychology*, *35*, 18–29. doi:10.1016/j.jenvp.2013.03.003

Hatfield, E., & Walster, G. W. (1978). *A new look at love*. Addison-Wesley.

Ho, V. T., Wong, S. S., & Lee, C. H. (2011). A tale of passion: Linking job passion and cognitive engagement to employee work performance. *Journal of Management Studies*, *48*(1), 26–47. doi:10.1111/j.1467-6486.2009.00878.x

Lafrenière, M. A. K., Bélanger, J. J., Sedikides, C., & Vallerand, R. J. (2011). Self-esteem and passion for activities. *Personality and Individual Differences*, *51*, 541–544.

Lafrenière, M. A. K., Vallerand, R. J., & Sedikides, C. (2013). On the relation between self-enhancement and life satisfaction: The moderating role of passion. *Self and Identity*, *12*(6), 597–609. doi:10.1080/15298868.2012.713558

Lalande, D., Vallerand, R. J., Lafrenière, M. A. K., Verner-Filion, J., Laurent, F. A., Forest, J., & Paquet, Y. (2017). Obsessive passion: A compensatory response to unsatisfied needs. *Journal of Personality*, *85*(2), 163–178. doi:10.1016/j.paid.2018.10.021

Lavigne, G. L., Forest, J., & Crevier-Braud, L. (2012). Passion at work and burnout: A two-study test of the mediating role of flow experiences. *European Journal of Work and Organizational Psychology*, *21*(4), 518–546. doi:10.1080/1359432x.2011.578390

Lavoie, C. E., Vallerand, R. J., & Verner-Filion, J. (2021). Passion and emotions: The mediating role of cognitive appraisals. *Psychology of Sport and Exercise*, *54*, 101907. doi:10.1016/j.psychsport.2021.101907

Mageau, G., Carpentier, J., & Vallerand, R. J. (2011). The role of self-esteem contingencies in the distinction between obsessive and HP. *European Journal of Social Psychology*, *6*, 720–729. doi:10.1002/ejsp.798

Mageau, G. A., Vallerand, R. J., Charest, J., Salvy, S. J., Lacaille, N., Bouffard, T., & Koestner, R. (2009). On the development of harmonious and obsessive passion: The role of autonomy support, activity specialization, and identification with the activity. *Journal of Personality*, *77*(3), 601–646. doi:10.1111/j.1467-6494.2009.00559.x

Marsh, H. W., Vallerand, R. J., Lafreniere, M. A. K., Parker, P., Morin, A. J. S., Carbonneau, N., Jowett, S., Bureau, J. S., Fernet, C., Guay, F., Abduljabbar, A. S., & Paquet, Y. (2013). Passion: Does one scale fit all? Construct validity of two-factor Passion Scale and psychometric invariance over different activities and languages. *Psychological Assessment*, *25*, 796–809. doi:10.1037/a0032573

Paquette, V., Chénard-Poirier, L., Rahimi, S., Vallerand, R. J., & Houlfort, N. (2022). *The role of passion in resilience at work*. Manuscript in preparation.

Paquette, V.,Vallerand, R. J., Houlfort, N., & Fredrickson, B. F. (in press). Thriving through adversity: The role of passion and emotions in the resilience process. *Journal of Personality*.

Philippe, F. L., Vallerand, R. J., Houlfort, N., Lavigne, G. L., & Donahue, E. G. (2010). Passion for an activity and quality of interpersonal relationships: The mediating role of emotions. *Journal of Personality and Social Psychology*, *98*, 917–932. doi:10.1037/a0018017

Philippe, F., Vallerand, R. J., & Lavigne, G. (2009). Passion does make a difference in people's lives: A look at well-being in passionate and non-passionate individuals. *Applied Psychology: Health and Well-Being*, *1*, 3–22. doi:10.1111/j.1758-0854.2008.01003.x

Rahimi, S., Paquette, V., & Vallerand, R. J. (2022). The role of students' passion and emotions in resilience following failure. Manuscript under review.

Ratelle, C. F., Carbonneau, N., Vallerand, R. J., & Mageau, G. (2013). Passion in the romantic sphere: A look at relational outcomes. *Motivation and Emotion*, *37*(1), 106–120. doi:10.1007/s11031-012-9286-5

Rip, B., Fortin, S., & Vallerand, R. J. (2006). The relationship between passion and injury in dance students. *Journal of Dance Medicine & Science*, *10*, 14–20.

Rip, B., Vallerand, R. J., & Lafrenière, M. A. K. (2012). Passion for a cause, passion for a creed: On ideological passion, identity threat, and extremism. *Journal of Personality*, *80*(3), 573–602. doi:10.1111/j.1467-6494.2011.00743.x

Rousseau, F. L., & Vallerand, R. J. (2008). An examination of the relationship between passion and subjective well-being in older adults. *International Journal of Aging & Human Development*, *66*, 195–211. doi:10.2190/AG.66.3.b

Ryan, R. M., & Deci, E. L. (2003). On assimilating identities of the self: A self-determination theory perspective on internalization and integrity within cultures. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (pp. 253–272). Guilford Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press. doi:10.7202/1041847ar

Schellenberg, B., & Bailis, D. (2021). More questions about multiple passions: Who has them, how many do people have, and the relationship between polyamorous passion and well-being. *Journal of Happiness Studies, 22*(8), 3299–3320. doi:10.1007/s10902-021-00369-2

Schellenberg, B. J. I., Verner-Filion, J., Gaudreau, P., Bailis, D. S., Lafrenière, M.-A. K., & Vallerand, R. J. (2019). Testing the dualistic model of passion using a novel quadripartite approach: A look at physical and psychological well-being. *Journal of Personality*, *87*(2), 163–180. doi:10.1111/jopy.12378

Schellenberg, B. J., Verner-Filion, J., Gaudreau, P., & Mbabaali, S. (2021). The two dimensions of passion for sport: A new look using a quadripartite approach. *Journal of Sport and Exercise Psychology, 43*(6), 459–476. doi:10.1123/jsep.2021-0048

St-Louis, A. C., Carbonneau, N., & Vallerand, R. J. (2016). Passion for a cause: How it affects health and subjective well-being. *Journal of Personality*, *84*(3), 263–276. doi:10.1111/jopy.12157

St-Louis, A., Verner-Filion, J., Bergeron, C., & Vallerand, R. J. (2018). Passion and mindfulness: Accessing adaptive self-processes. *Journal of Positive Psychology*, *13*, 155–164. doi:10.1080/17439760.2016.1245771

Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, *86*, 320–333. doi:10.1037/0022–3514.86.2.320

Utz, S., Jonas, K. J., & Tonkens, E. (2012). Effects of passion for massively multiplayer online role-playing games on interpersonal relationships. *Journal of Media Psychology*, *24*, 77–86. doi:10.1027/1864–1105/a000066

Vallerand, R. J. (2008). On the psychology of passion: In search of what makes people's lives most worth living. *Canadian Psychology/Psychologie Canadienne*, *49*, 1–13. doi:10.1037/0708–5591.49.1.1

Vallerand, R. J. (2010). On passion for life activities: The dualistic model of passion. *Advances in Experimental Social Psychology*, *42,* 97–193.

Vallerand, R. J. (2012). The role of passion in sustainable psychological well-being. *Psychological Well-Being: Theory, Research, and Practice*, *2*, 1–21. doi:10.1186/2211-1522-2-1

Vallerand, R. J. (2013). Passion and optimal functioning in society: A eudaimonic perspective. In A. S. Waterman (Ed.), *The best within us: Positive psychology perspectives on eudaimonic functioning* (pp. 183–206). APA Books.

Vallerand, R. J. (2015). *The psychology of passion*. Oxford University Press.

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Leonard, M., Gagné, M., & Marsolais, J. (2003). Les passions de l'âme: On obsessive and HP. *Journal of Personality and Social Psychology*, *85*, 756–767. doi:10.1037/0022-3514-85.4.756

Vallerand, R. J., & Carbonneau, N. (2016). Passion and optimal relationships. In R. C. Knee & H. Reiss (Eds.), *Positive approaches to optimal relationship development* (pp. 171–196). Cambridge University Press.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology*, *72*, 1161–1176.

Vallerand, R. J., & Houlfort, N. (2003). Passion at work: Toward a new conceptualisation. In S. W. Gililand, D. D. Steiner, & D. P. Skarlicki (Eds.), *Emerging perspective on values in organizations* (pp. 175–204). Information Age Publishing.

Vallerand, R. J., & Houlfort, N. (Eds.) (2019). *Passion for work: Theory, research and applications*. Oxford University Press.

Vallerand, R. J., & Miquelon, P. (2007). Passion for sport in athletes. In D. Lavallée & S. Jowett (Eds.), *Social psychology in sport* (pp. 249–263). Human Kinetics.

Vallerand, R. J., Ntoumanis, N., Philippe, F. L., Lavigne, G. L., Carbonneau, N., Bonneville, A., Lagacé-Labonté, C., & Maliha, G. (2008). On passion and sports fans: A look at football. *Journal of Sports Sciences*, *26*, 1279–1293. doi:10.1080/02640410802123185

Vallerand, R. J., Paquet, Y., Philippe, F. L., & Charest, J. (2010). On the role of passion for work in burnout: A process model. *Journal of Personality*, *78*, 289–312. doi:10.1111/j.1467-6494.2009.00616.x

Vallerand, R. J., Paquette, V., & Richard, C. (2022). The role of passion in psychological and cardiovascular responses: Extending the field of passion and positive psychology in new directions. *Frontiers in Psychology*. 6510. doi:10.3389/fpsyg.2021.744629

Vallerand, R. J., & Rahimi, S. (in press). On the psychometric properties of the Passion Scale. In A. Efklides, I. Alonso-Arbiol, T. Ortner, W. Ruch, & F. J. R. van de Vijver (Eds.), *Psychological assessment in positive psychology*. Hogrefe.

Vallerand, R. J, & Rapaport, M. (2017). The role of passion in adult self-growth and development. In M. Wehmeyer, K. Shogren, T. Little, & S. Lopez (Eds.), *Handbook on the development of self-determination* (pp. 125–143). Oxford University Press.

Vallerand, R. J., Salvy, S. J., Mageau, G. A., Elliot, A. J., Denis, P., Grouzet, F. M. E., & Blanchard, C. B. (2007). On the role of passion in performance. *Journal of Personality, 75*, 505–534. doi:10.1111/j.1467-6494.2007.00447.x

Verner-Filion, J., Vallerand, R. J., Amiot, C. E., & Mocanu, I. (2017). The two roads from passion to sport performance and psychological well-being: The mediating role of need satisfaction, deliberate practice, and achievement goals. *Psychology of Sport & Exercise*, *30*, 19–29. doi:10.1016/j.psychsport.2017.01.009

Verner-Filion, J., Vallerand, R. J., Donahue, E. G., Moreau, E., Martin, A., Mageau, G. A., & Martin, A. (2014). Passion, coping, and anxiety in sport: The interplay between key motivational and self-regulatory processes. *International Journal of Sport Psychology*, *45*(6), 516–537. doi:10.7352/IJSP2014.45.516

# With My Self: Self-Determination Theory as a Framework for Understanding the Role of Solitude in Personal Growth

Netta Weinstein, Thuy-vy Nguyen, *and* Heather Hansen

**Abstract**

Solitude—spending time alone and not interacting with others—may be conducive to well-being and personal growth because individuals take the opportunity to self-connect. This chapter argues that self-determination theory provides a useful framework for understanding the dispositional and situational conditions for positive solitude, and why benefits arise. The chapter reviews the roles of preference, self-determined motivation, and choice as reasons individuals may find themselves alone, and it explores personal capacity for solitude as driven by an autonomous orientation. It offers a conceptual model describing positive characteristics of solitude, including quietude, fewer social demands, and less imposed structure, and links those with a number of affordances of solitude, namely, choice, freedom from pressure, and self-connection. In solitude, we can feel empowered to think, feel, and do what we want, and exercising those choices can foster a feeling of self-connection that promotes awareness, understanding, and personal growth.

**Key Words:** solitude, autonomy, self-connection, authenticity, well-being

> For me solitude is learning yourself, learning who you are and learning what you're capable of. (Participant (P)15)

Self-determination theory (SDT) is concerned with how individuals relate to and are guided by their self. When the connection with the self is strong, actions are informed by self-congruent values, interests, and emotions. Self-driven regulation is psychologically need-satisfying (i.e., satisfies autonomy, relatedness, and competence needs), in no small part because people select activities that are intrinsically rewarding to them. The psychological need for autonomy is also satisfied through the process of pursuing behaviors volitionally rather than for reasons external to the self or imposed by external influences. With this form of motivation, individuals feel aligned with and energized by their chosen and valued engagement with the world.

In this chapter we suggest that these SDT concepts—and the focus on autonomy, in particular—can broaden the scope and richness of research on solitude and its potential benefits. The data we present address questions concerning solitude through the lens of SDT, and they underline a key role that autonomy plays in positive and productive time spent alone. We apply SDT to understanding solitude in two ways. First, solitude is ubiquitous and impactful in daily life, and we review research on how autonomous motivation shapes the ways in which time alone is experienced. We argue further that preference for solitude—analogous to the amount, rather than type, of motivation for time spent alone—is conceptually and operationally different from choiceful, autonomous motivation for solitude, which is better suited to determine when people will flourish in solitude.

Second, we posit that solitude is an opportunity to experience autonomy need satisfaction. We highlight which qualities of solitude may give rise to autonomy, or the experience that one is choiceful, self-driven, self-congruent, and free from external or partially internalized pressures or demands (Ryan & Deci, 2008). Our description is based on the premise that solitude offers the opportunity, or the challenge, to be fully "with" one's self and to gain greater awareness and integration. We explore why, in the best of circumstances, solitude can be a valuable opportunity for individuals who are autonomously motivated to be alone to fully engage with their self-relevant emotions, thoughts, and values. As a result of this time, individuals can find better self-understanding, integrate goals and values, and therefore benefit through growth and well-being through their time spent alone.

Until recently, the psychological literature rarely has focused on solitude as a unique and positive phenomenon for development and wellness. Words like "solitude" and "aloneness" have often been used interchangeably with words like "isolated" or "lonely," implying that time spent alone is a precursor to pathological or negative states. Loneliness is also closely aligned with frustrated, rather than satisfied, needs for autonomy and relatedness (Van den Broeck et al., 2010; Wei et al., 2005). Our approach assumes instead that solitude represents a positive state that is distinct from loneliness, or the emotional feeling that others are absent (Galanaki, 2004; Perlman & Peplau, 1981). This "psycholinguistic shift" frames solitude as a positive and welcome part of daily life (Buchholz, 1997), and, building from that conceptualization of solitude as a valued state, we argue the "desire to be alone" can stem from its potential benefits, which can be understood in terms of need satisfaction, and autonomy satisfaction, in particular. We argue that, unlike loneliness, solitude can satisfy the need for autonomy. We present data from both quantitative and qualitative research to address the question of why solitude remains an essential and positive aspect of everyday life. Specifically, we review findings from previous quantitative work and interpret them alongside a new thematic analysis of semi-structured interviews (Miles & Huberman, 1984) we conducted to build a deeper understanding of how SDT can inform the experience of solitude.

## What Is Solitude?

The *Oxford English Dictionary* defines "solitude" as "the state of being or living alone" and "alone" as "being on one's own, by oneself; having no other present; unaccompanied." These definitions focus on the objective, observable aspect of being alone, namely, the absence of other people. The psychology of solitude, however, tries to understand the subjective state of being alone (Long & Averill, 2003), which is determined by the absence of social interaction rather than by social presence (see also extensive discussion of this topic in (Nguyen et al., 2021). Understanding solitude as a *subjective* experience recognizes that internal processes, rather than simply external context, drive the often pleasant state of being alone, which makes solitude a subtype of alone experiences that is distinct from both isolation and loneliness (Galanaki, 2004).

Aligned with an SDT view (e.g., Deci & Ryan, 2012) and with the psychoanalytic view of Donald Winnicott (1958), we argue that the subjective experience of solitude is intimately tied to the relationship one has with oneself. This relationship may represent an ongoing intimate connection with the self (and the values, interests, and emotions core to it), or it may be influenced by feeling alienated from and avoidant of the self. For example, studies asking participants to reflect on a time alone when they felt authentic report that those solitude moments in which people are able to be their true selves are the most valued and enjoyed (Nguyen et al., 2021). Equally, to the extent individuals feel alienated and avoidant, time alone may be aversive. In these circumstances, people may pursue solitude only following external and internalized pressures and demands, further crowding out connections with authentic self-experience. Motivation, which stems from individuals' capacity for self-connection, closely drives experiences.

## Preference and Motivation for Solitude

Solitude research is often concerned with the reasons people are alone. Researchers agree that the issue is important for understanding the extent to which solitude is a positive or negative experience, but there are three schools of thought on what those reasons may be. First, *preference for solitude* speaks to whether or not a person prefers to be alone or with others. Second, *self-determined solitude* involves whether or not an individual values and enjoys time alone. And third, *choice for solitude* relates to whether alone time is elective or compulsory.

**Preference for solitude.** The literature testing motivation for solitude can be classified either in terms of studies that examine preference (whether someone is inclined toward being alone or interacting with others) or those that look at motivation (why someone *is* alone). The two approaches have yielded different findings concerning how the reasons for being in solitude correspond to its benefits.

The term "preference for solitude" was first coined by Burger (1995), who measured it with 12 pairs of forced-choice items. Participants chose between two items, one that indicated their preference to pursue opportunities alone and one showing they preferred

NETTA WEINSTEIN, THUY-VY NGUYEN, AND HEATHER HANSEN

doing things with other people. In this sense, preference for solitude, now measured at both dispositional and state levels (Ren, Wesselmann, & Williams, 2016), has been conceptualized as a decision to either be alone or not, and is not concerned with the reasons driving that decision. In other words, preference for solitude is reduced to the amount of motivation individuals have for solitude.

At a dispositional level, Burger's (1995) preference for solitude has been linked to lower extraversion and negative well-being outcomes including loneliness (Burger, 1995; Cramer & Lake, 1998; Thomas & Azmitia, 2019). People also prefer to be alone after being ostracized by others (Ren et al., 2016; Ren, Wesselmann, & van Beest, 2020). In experimental studies, Ren et al. (2016) showed that after being ostracized in a social game, participants preferred to be alone rather than to interact with others, including but not limited to those who had ostracized them. Similar operationalizations have been used in experience-sampling studies where participants selected, at a given moment, whether they wanted "others nearby but no interaction" or wanted to be alone instead of "wanting social interactions" (Lay et al., 2020). If participants selected either of the first two options, they were understood to have preferred to be alone. Interestingly, in contrast to Burger's (1995) findings, in Lay et al.'s (2020) study, there was no clear evidence that a momentary decision to be alone *instead of* being with others was associated with negative emotional states in older adults. Yet there has been no evidence suggesting that a preference for solitude is actually beneficial for well-being in or out of the time spent alone.

**Self-determined solitude.** One's preference for a certain activity or experience does not necessarily correspond with one's willingness or volition to be alone (Arvanitis, Kalliris, & Kaminiotis, 2019), and thus it is important to make a distinction between preference and autonomous motivation for solitude. According to SDT, autonomous motivation is conceptualized as being energized into action for self-endorsed reasons. *Self-determined solitude* involves the motivation to spend time alone because one values or desires its benefits (e.g., for relaxation, creativity, or self-reflection). On the other hand, non-self-determined solitude is operationalized with scale items that reflect the motivation to spend time alone because of shyness or social anxiety (Thomas & Azmitia, 2019). Stepping further back, these views are grounded in stories of spiritual and hermitic figures who endorse the value of self-selected solitude (Byrd, 1987; France, 1996; Thoreau, 1966), as well as more commonplace accounts of people like solo hikers or sailors, who choose to be alone over extended periods for personal gain (Hall, 2001; Hammitt, 1982). Though much of the work highlighting the importance of choice in solitude has been conducted in the West, choosing solitude is not just a Western construction: Chinese hermits have emphasized the importance of choosing solitude to find one's true self as an ideal (Mote, 1960), and both Chinese and American students describe chosen solitude as a beneficial experience (Wang, 2006).

Stories from those who have chosen to live a hermitic or solitary lifestyle reflect personal endorsement of the many benefits that such a lifestyle offers. From an SDT

perspective, this endorsement is qualitatively different from the experience of seeking solitude reactively after being ostracized by others. In the latter case, the ostracized individual weighs the options of being alone or facing ostracism again, hardly making it a self-endorsed decision. As such, while one might assume a negative relation exists between self-determined motivation and preference, the relationship between the two constructs is not clear-cut or linear. For example, as an individual difference, those who report a preference for solitude also report both self-determined *and* non-self-determined solitude (Thomas & Azmitia, 2019).

In our own research (Nguyen, Ryan, & Deci, 2018), autonomous (i.e., self-determined) motivation for solitude is measured at the state level with an adapted version of the Self-Regulation Questionnaires (Ryan & Connell, 1989). Autonomous motivation for wanting to be alone includes "because I find the time I spend by myself to be important and beneficial for me" and "because I simply enjoy the time to be by myself." Controlled (i.e., non-self-determined) reasons that are driven by external or internally imposed pressures and demands include "because I was told to be by myself" and "because I would feel bad about myself if I didn't do it." In daily diary data where participants reported their solitude and well-being repeatedly over multiple days, on those days when they had more autonomous motivation for being alone, they also reported higher well-being ( Nguyen et al., 2018, Study 4).

In other work, a similar link has been observed between autonomous motivation for solitude and global well-being indicators (Larson, Csikszentmihalyi, & Graef, 1982; Lay et al., 2020), including life satisfaction (Chua & Koestner, 2008), self-esteem, and relatedness with others (Nguyen, Werner, & Soenens, 2019). Together, these findings suggest that those who are autonomously motivated to be alone function better personally and interpersonally. They stand in contrast to the theory that preference for solitude is dysfunctional on both personal and interpersonal metrics (Burger, 1995). In summary, preference for being alone is not isomorphic with self-determined motivation, and pursuing solitude because of ascribed values and interests provides a useful framework for understanding time spent alone.

**Choice for solitude.** A second SDT approach to defining motivation for solitude involves a sense of choice. Just as in studies of self-determined motivation that operationalize the construct in terms of pursuing solitude because of the value of and interest in it, there are clear effects when comparing chosen (autonomous) with enforced (controlled) solitude. Like self-determined motivation, this approach can be contrasted with preference for solitude. Preference reflects an either/or decision to seek solitude rather than engaging social interactions, while the literature on "choosing solitude" contrasts voluntary entry into solitude with being forced to be alone.

This distinction initially emerged from studies with extreme examples of enforced solitude (also termed "isolation") such as solitary confinement (Grassian, 1983; Haney, 2018). In our own interviews of adults across ages, we asked them to consider their

experiences of solitude, positive or negative, and what contributed to those experiences. Without prompting, themes involving choosing solitude as fundamentally important to the experience of being alone emerged in 23 of the 36 interviews (64%; see examples of these responses in Table 20.1). Those respondents described actively choosing solitude because it offered pathways to self-connection and recuperation, and said that their emotions and behaviors would have been different were their solitude forced.

The issue of forced versus volitional aloneness has been thematic within solitude research, as freedom of choice is seen as fundamental to understanding quality time alone (Larson, 1997). Recent experimental studies showed that providing autonomy support using an SDT-informed manipulation could increase autonomous motivation for solitude (Nguyen, Weinstein, & Deci, 2020). In two experiments, participants were given

| **Table 20.1**  Interview Data: Example Responses Informing Key Themes Extracted | |
|---|---|
| Motivation for solitude | |
| Volitionally chosen solitude | "Assuming that I've had a really cool day, like really positive relationship building and working, I think then choosing to be by myself, just for myself and not because the context I'm living in is bad, then sometimes it feels like remembering, like a baseline feeling of how I feel as a person to myself." (P12) |
| | "I've thought about this a lot, because I have actually always purposefully sought solitude for many years. I think alone is neutral, lonely is bad, and solitude is good. I think solitude involves a choice, even if it's only a choice to embrace it. The aloneness may be thrust upon you, but the attitude you take to it, I think, makes it either loneliness or solitude." (P27) |
| | "Yeah, because you don't have a choice. Everything, you know, everything is better if you choose to do it. And once you are, you know, denied the choice, it becomes a whole other issue." (P6) |
| | "And so when it's like forced upon me in that sort of situation it can get very hard amazingly because I feel like well then I have no way out. Whether I do or not it's how I feel so that's always a hard transition when I move someplace else when I don't speak the language. I think there has to be a feeling of like okay I'm the one who's choosing." (P18) |
| Valued solitude | "just sort of reiterating its deep value to me and persistence in my life, and being a necessary thing that I need. I think other people don't spend enough time alone but I know that's a personal choice. I think it's the best way to have the conversations with yourself—free of other distractions and other judgments." (P15) |
| | "So there's a lot of peace that comes from that. I think I've always also chosen it when I kind of want to reconnect with myself." (P15) |
| | "But solitude, again, is a more deliberate choice, it's when I decide to do introspection, reflection, self-awareness, self-love, self-care, all of those things come into that space where I am trying to realise the truth about something." (P10) |

| Table 20.1 *Continued* | |
|---|---|
| **Characteristics of solitude** | |
| Quietude | "It's away from a lot of stimulation which is something I like." (P13) |
| | "Peace, quiet, on your own, like you're fishing, nobody else around, lovely, lovely river, lovely location, fishing away. Peace, quiet, babble of a brook maybe. Just being with nature, lovely, being on your own. I'm quite happy being on my own by the way." (P22) |
| | "So, I was enjoying being rained upon, and humming to myself actually, as I walked by one pond to reach another, then I went—yes, and I was just paying attention to the sensations of the rain, the sensations, the lovely sound of silence that there was." (P19) |
| | "And also just having the silence to sort of—if there are other things maybe that have been bubbling in my subconscious that haven't popped into my head yet that may give them the opportunity then to make themselves known." (P09) |
| | "I often enjoy the silence. Yeah, just enjoy the peace, peace and tranquility. Yeah, just enjoy that. And being able to get on with something without interruption." (P26) |
| | "But I think that we're constantly overwhelmed by outside opinions and stimulus and stuff like that, and even more now that everybody's attached to their phones in some form, or their computer or something. I think it's a really healthy and helpful thing for people to get away on their own for some extended period, meaning hours or maybe 15 minutes, because otherwise we're just constantly on." (P04) |
| | "I think you miss out on an opportunity to just get to know yourself if you're constantly distracted by everything else." (P18) |
| Absence of social noise | "Oh, calm, and it's decluttering and it's quiet, and I don't just somehow mean the physical noise, although I think that is one of the things about solitude for me, is quiet, it's the noise of everybody else's lives and how that fills your head with things." (P02) |
| | "You know, you don't have to adjust your pace to anybody else. So there's a kind of self, I don't want to say necessarily self-determination but it's a kind of self-adjustment. You only have yourself to adjust to the criteria that you use, that I use, or the person who is in solitude has to come from inside." (P21) |
| | "Also in my mind the path is also chosen by oneself. If I'm walking next to someone else the path could be shared or it could be I'm accompanying somebody else along their path but if I'm walking along the path by myself, it is most likely a path that is chosen by me." (P21) |
| Benefiting from lack of structure | "Yeah. I always tried to do something . . . the only rule was that there wouldn't be a to-do list. It had to be . . . luxury time, if you like. I would do things that were creative. I could sit and stare at the ceiling and listen to music, if I wanted to." |
| | "When I'm on my own I don't have a particular pattern. I mean that's one of the advantages of being on your own, you're going to go 'OK, I'll stop doing that now and I'll do something else.'" (P20) |

| Table 20.1 *Continued* | |
|---|---|
| **Autonomy Affordances** | |
| *Autonomy affordances as self-engagement* | "I'm doing something there, I'm thinking, I'm writing in my head, I'm dreaming, I'm planning. Solitude seems, well, OK, there you are." (P06) |
| | "In some ways it is quite enjoyable to think—again, to be a bit selfish and think only about yourself, that sort of 'well I could do this and I could do that,' and 'I am doing this, and I am going that,' and 'I feel this and I feel that' without having to take anyone else into consideration." (P32) |
| | "But for somebody who has a solitary life being reflective I think is indispensable and being able to relate to oneself. My ability to relate to myself, talk with myself, to organise myself, regulate myself, my feelings, my routines, my attention. It's critical." (P21) |
| Choice in living moment-to-moment | "There is a certain amount of taking care of the to-do list, but it's also self-determination. I can determine what I want to do, when I want to do it, how I want to do it, you know, how fast, how diligently." (P09). |
| | "I'm solely responsible for my own actions. And maybe that's part of it for me . . . where I get to just be like 'There's only me, that's good.'" (P18) |
| | "I mean it comes down, I suppose, to a basic reason why solitude is important to me anyway. That is, that I don't have to interact or concentrate on what other people want. Things like I can do the shopping in the order that I want. I can stop whenever I fancy it and have a cup of coffee. The whole—behind this whole thing is the freedom to control one's own timetable, and that applies whether I'm doing something like shopping or whether I'm simply messing about doing positive or less positive things in my bungalow." (P20) |
| | "I'm spending more time writing without feeling guilty that I'm not doing something else for somebody else. You know, but that has to do with, I think, women, and I mean my inner bitch was I think eroded by becoming a mother and becoming a wife. And being a child of the '50s, you know, when you did those things well and honourably. And I was going to change it. So I think that I'm beginning to enjoy the fact that if I want to go back to what I'm doing at the computer after dinner, I can do it. If I want to maybe not have dinner tonight, maybe just have a drink and have a sandwich or, you know, something like that, I can do that. So I'm finding a certain amount of freedom." (P06) |
| Freedom from external pressure | "I really liked to be alone where no one is judging me. I don't have to worry about it. So there's a lot of peace that comes from that." (P15) |
| | "Because it's almost like I've re-centred, you know, I'm no longer like been skewed off by so many days of trying to do stuff for other people and worrying about what their needs are, what they're thinking now, I re-centred back onto myself. . . . And it's not that I would ever need permission, but I didn't even have to notify anyone, and I was like this is amazing, nobody cares what I'm doing right now, I was like this feels great." (P11) |
| | "Like uninhibited, I guess, yeah, and like, yeah, like I don't have to pay attention to what anyone else is thinking, which I guess like my ideal version of myself wouldn't care either way." (P12) |

(*continued*)

| Table 20.1 | *Continued* |
|---|---|
| Freedom from introjected pressure | "I definitely spend a large part of my day thinking about how other people respond or react, or think about other situations and even just thinking about how they would feel if I did something or something happened, or if something did happen how they feel, and a lot of time thinking about that. I spend a lot of energy focusing on how other people would feel. . . . But it gets very tiring so just having a moment to yourself just to think about yourself for once is nice." (P16) |
| | "Yeah. And not having—I think also just letting go of the responsibility. I think as a mum—that probably changed from before as a mum and now, but as a mum there's always this feeling of responsibility. I mean that doesn't go away but, in that moment, you can just let it go and not be responsible for anyone but yourself." (P18) |
| Self-connection | "It's a pleasure for me to be by myself. I think being by yourself has to do with feeling centred, with feeling yourself, that you have a self, that you're not afraid to be alone with your own thoughts." (P06) |
| | "I just really feel like I'm connecting with something within myself, you know, and that's usually on like a rainy day when nobody's around and it's cold and it's miserable, and I really feel like I have to draw from within, you know, to kind of shape that empty space. And I think that can be pretty exceptional." (P11) |
| | "And that, for me, is interesting, that like I think I've learned to kind of get in touch with myself sometimes when I'm kind of feeling out of synch with the outside world, rather than stay in it and feel like the friction. I actually feel like I will feel more, I don't know, more balanced and, in some ways, less alone in my own good company." (P11) |
| | "But also, part of it is like the experience of connecting with myself, not just like by virtue of meditating or by virtue of relaxing or whatever. It's also feels like a personal, like a very intimate personal experience to use your lungs really on purpose and sing and sing wrong, and like move while you do it. And I don't know, kind of like not think about what it looks like or what it sounds like, just like being in it." (P12) |
| | "It's just a notion of just you being with yourself in your own thoughts in some kind of space that you enjoy." (P14) |
| | "And I feel that only through like knowing yourself and becoming okay with yourself can you be the you that is a little bit better. I think about Brené Brown saying that the most empathetic people are the ones who have boundaries, have strong boundaries, and I think those boundaries need to come from knowing yourself because then you know what is and is not okay for you." (P18) |
| Authenticity | "I spend a lot of time in my own head that it's just sort of nice just to get back to me and the core of who I am, how, you know, my values, how I would like to interact with the world, how I would like to help in some cases where it may or may not be possible. Just to be able to digest that." (P09) |
| | "It gives me that little space that I need to be me." (P30) |
| | "It really feels like you're kind of like, you know, unsheathing the type of energy that's normally just kind of, you know, contained and wrapped up in all this other stuff, you know, and you're kind of just peeling away the layers. And, you know, you're just getting at something that's really true." (P11) |

| Table 20.1 *Continued* | |
|---|---|
| **Outcomes** | |
| Self-reflection and realization | "So I may go in with a noisy mind, typically I come out with a clearer mind unless of course I'm really fixated on something. But then I'll also—sometimes it helps me start thinking. On many occasions I have regretted not having a notebook with me so that I can take notes about things that I need to work on or ways to approach stuff." (P13) |
| | "I'm beginning to discover aspects of myself that I remember, that I might have almost forgotten, now that I'm alone." (P06) |
| | "I like the time to reflect. I like the time to do as I want to. And I quite like my own space being just my space, at the moment." (P27) |
| | "[Solitude] gives me time for a lot of reflection that I've never had and also to fix things, some things in my head that need fixing." (P30) |
| | "I mean it's also a time to think about, and reflect about things that have happened, and being able to sort of understand things and trying to unpack issues, so that they don't, in a way, get into the house." (P03) |
| Perspective and priorities | "I would definitely say that it meant that gradually I came to a kind of self-awareness of what really my priorities are in life, and so I do have a strong sense of what I want in life and what matters to me, and I do think that is only achievable from having thought about things and experienced things differently and written about things and allowed yourself the time to think about it, rather than getting overly influenced by other people's views." (P02) |
| | "I would say that it feels kind of like kind of removing away some of the outside layers of like, you know, like kind of daily life and schedule and constrictions that are kind of placed on us. It's kind of like you're peeling that away, you know, and you're getting really to like your core and like who you are right now in that moment; what you're capable of, what you're doing, what you want." (P11) |
| | "I think that space can be very productive because I think that you learn to rely on yourself, and you have to trust yourself that you're making the best decisions." (P14) |
| | "I think I'm moving towards in general, it would be fair to say that we move towards better versions of ourselves so when I'm moving along the path alone and moving towards—with a hope of having a better version of myself." (P21) |
| | "I mean there's a definitely where I'm just with myself, with my thoughts, you know, however good or bad they may be, where I can actually sit there and have the peace and quiet to sort of digest what's been going on, what's been bothering me, how I would like to proceed, how I would possibly proceed. Just the opportunity for planning." (P09) |

*Note.* P: participant.

either autonomy-supportive or controlling instructions to spend time alone in the lab. Autonomy-supportive instructions acknowledged that experiences with solitude could vary and encouraged participants to explore how spending time alone feels to them. The instruction was designed to induce a feeling of being choiceful, and supported other psychological needs, including relatedness to the experimenter and feeling competent in being alone with oneself. By comparison, the controlling instruction used words like "must" and "should" to pressure the participants to spend time alone. Across these studies, participants who were pressured saw solitude as a requirement imposed by the experimenter, while those who received the autonomy-supportive instruction were more motivated to engage with solitude for intrinsically motivated and personally meaningful reasons (i.e., self-determined reasons). Nonetheless, the researchers caution that small effects on motivation found in both studies suggested that other, more robust manipulations are needed, particularly ones that address the salient norms that solitude is generally a negative and lonely experience. A experiment by Rodriguez, Bellet, and McNally (2020) using reappraisal manipulations to reframe solitude as beneficial also found a significant but small effect. Participants instructed to focus on the benefits of solitude maintained positive emotions in solitude, which had not been maintained by those in the comparison condition. Both sets of experiments suggested that motivation for solitude can be temporarily modified by encouraging people to be open to its benefits, but future research is needed to explore alternative interventions, including combining these motivational and positive reframing manipulations, to detect more robust and reliable effects.

## Solitude Benefits from an Autonomous Orientation

Though understudied, it may be that solitude—and especially autonomously motivated solitude—offers an opportunity to engage the self in adaptive ways: volitionally, moving toward oneself. As one interviewee stated simply, "Sometimes I also need to be by myself and do the things that I usually do by myself and remember my perspectives on some things and remember my needs. And then it feels . . . refreshing." (P12). Such "positive" solitude frees individuals from the pressures and demands of live social interaction and sets the stage for meaningful choice in the moment and connection to the self. Whereas these qualities are not unique to solitude—certainly, we can move toward self-congruence when in the company of others—solitude may provide unstructured, unprompted space where we are challenged to be with our self.

Similar to being with another person we may like or who inspires and teaches us, or with someone who frustrates and makes demands on us, our experience of being in our own company can vary widely. As a result, we may willingly engage ourselves or, alternatively, actively try to avoid time alone. Individuals unprepared to be alone may be especially need-frustrated during their time spent in solitude. Without a healthy relationship with themselves, individuals left on their own may feel both other- and self-alienated, and as a result experience solitude as a space of loneliness or boredom. Yet success at

self-connection during solitude may facilitate self-awareness and understanding and satisfy the basic need for autonomy.

The idea that solitude is a challenge and an opportunity for one to connect with the self, which can be rewarding or aversive, is not new. Within psychodynamic traditions, Donald Winnicott (1958) in *The Capacity to Be Alone*, Ester Schaler Buchholz (1997) in *The Call for Solitude*, and Anthony Storr (1988), in *Solitude: A Return to the Self*, all embraced a view of successfully navigating solitude as intimately tied to the capacity for self-regulation. In this view, solitude allows the individual to test their independence, in contrast to experiencing existence as conflated with or codependent on others. This approach highlights the interplay between relationships with others and with oneself. For example, an overbearing parent will not allow a child the space to develop a mature sense of self, capable of self-regulation, and as a result solitude for that child is more aversive and difficult later in life (Winnicott, 1958).

This psychodynamic perspective of the capacity for solitude suggests, as does SDT, that those who have been nurtured with an autonomy-supportive and nonintrusive parenting style are better able to self-regulate experiences relevant to the self (Deci & Ryan, 2008; Weinstein, Przybylski, & Ryan, 2012). That is because across time, those individuals can connect to the self through higher self-awareness, self-acceptance, and self-congruence. Their behaviors are more consistently characterized by integrated functioning and autonomous motivation (Weinstein, Przybylski, & Ryan, 2013), and they process self-relevant emotions more effectively (Roth et al., 2019). As a result, those who regulate more autonomously are better equipped to interact with their self and to enjoy time alone more; they thrive when given the opportunity for self-connection.

In summary, both psychodynamic and SDT perspectives tell us something important about why some people do better on their own: those who tend toward successful self-regulation, presumably due to impactful developmental experiences, derive more benefit from it. This view has received initial support in data collected across three daily diary studies lasting one to two weeks each (Nguyen et al., 2021). At the outset of each study, we evaluated participants' dispositional autonomy through the Index of Autonomous Functioning (Weinstein et al., 2012), a scale that operationalizes dispositional autonomy in terms of higher self-congruence, less susceptibility to pressure, and more interest in one's emotions. We statistically controlled for trait-level characteristics thought to be important to solitude, including introversion, and both anxious and avoidant attachment styles. Notably, these personality variables, often assumed to be important, did not consistently correlate to enjoyment of solitude. On the other hand, findings showed that those who were dispositionally autonomously oriented reported more autonomous motivation for solitude on any given day, and they derived greater enjoyment from their daily solitude. This finding did not indicate that autonomously oriented individuals preferred time alone, only that they showed more volition and benefit in relation to their daily solitude. In short, these daily diary studies supported the view that what's driving autonomous

motivation for and well-being in solitude is autonomous regulation characterized by self-congruence, interest in oneself, and freedom from pressure. More than attachment styles or personality traits, the hallmarks of autonomous regulation are all indicators that one is deeply connected with and informed by the self.

## Characteristics of Solitude That Provide Opportunity for Autonomy Need Satisfaction

We propose that, when alone, people can be more connected and attentive to their self for three primary and nonorthogonal reasons: solitude offers fewer distractions and more psychological space, fewer external social demands, and less externally imposed structure (see Figure 20.1). These characteristics of solitude allow individuals the space to access emotions, values, interests, and desires, and leave people with their own thoughts and preferences, conducing to a sense of autonomy in the best of circumstances.

**Solitude offers quietude.** The most robust evidence for the benefit of solitude is that it allows people time and space to rest or to engage in activities that bring relaxation and serenity, such as being in nature, reading a book, or listening to music. This evidence was found in a survey of 18,000 adults around the world nominating solitude, and many activities that are often done in solitude, as the best opportunities for rest (Hammond, 2016). This effect of solitude has also been demonstrated experimentally, showing that brief periods of time spent alone can dampen arousal feelings and leave room for low-activation emotions like contentment and calmness to arise (Nguyen et al., 2018; Pfeifer et al., 2019). This "deactivation effect"—drops in high-arousal emotions—after a brief period of sitting quietly in solitude has been observed consistently across experiments involving solitude, suggesting a unique regulatory function of solitude that allows us to
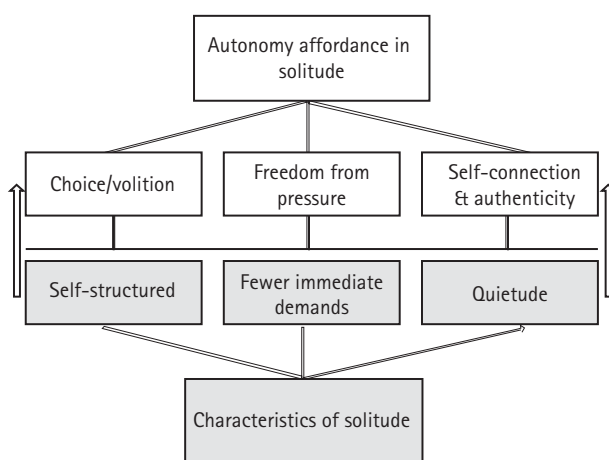


**Figure 20.1** Conceptual model of the primary autonomy affordances in solitude observed and characteristics of solitude that support them

NETTA WEINSTEIN, THUY-VY NGUYEN, AND HEATHER HANSEN

rid ourselves of rousing emotions, turn our attention inward, and stay in touch with our thoughts and feelings (Long et al., 2003; Pfeifer et al., 2019).

Also, as noted by Storr (1988), the best solitude may be found in quiet and peaceful surroundings. For rewarding time alone, "[w]e need to assess the value of [these] quiet moments, to consider what gifts they offer" (Koch, 1994, p. 5). While alone, we can find quietude, a peaceful psychological space for reflection and self-connection. A Finnish construct, *quietude* is recognized as a "natural" way of being, where individuals are free from disruption to explore their thoughts. Although it is not specific to solitude, quietude is most likely to be felt when our external environment is free from distractions and disruptions, such as noises and activity that could distract from internal reflection (Carbaugh, Berry, & Nurmikari-Berry, 2006).

Cognitive qualities that may be important for connecting with one's self (knowing one's own thoughts, interests, and preferences in the moment) may depend on external conditions that support quietude. We see evidence of this in research on creativity, which concludes that for people to be creative, they must be allowed to express themselves in an environment free from disruptive noise (Kasof, 1997). In this experiment, the researcher randomly assigned participants to write a poem in quiet, or alternatively, a poem occasionally disrupted by a loud but not harmful noise piped through speakers in the lab. Research assistants blind to condition then judged the poems' creativity and word originality, and found participants assigned to quiet writing produced more creative work. This study illustrated how the external environment disrupts autonomy affordances in solitude. To reach into one's thoughts, for deciding on volitional action, expressing interests and skills, and learning about the self, one needs a quiet space and the corresponding internal experience of quietude.

**Solitude offers freedom from social demands.** Alongside freedom from disruptive noise, peaceful solitude allows us distance from immediate social demands. In comparison, when in social contexts our attention may naturally be drawn to others with whom we interact, or simply those around us. When we are interacting, we respond and adapt to others, we do a social "dance." While in that social world full of expectations and responses, we naturally often adapt ourselves to fit our current social context. Yet if we are constantly adjusting to others, we can lose sight of ourselves as individuals, and solitude offers a space to reconnect with internal inputs. Responses from our interview study (Table 20.1) highlighted that silence is not just the absence of noise but specifically the absence of social noise.

Respondents also said that solitude offers the opportunity for organismic valuing (Rogers, 1959); it offered many the opportunity to listen to their emotions and stay closely connected to their needs and desires. In solitude under the best (internal and external) conditions, people can free themselves from immediate pressure and judgment, make meaningful choices, and pursue activities that interest them. That is not to say people are separated from social influences. They likely carry those influences into their time alone,

the "voices" of others through introjects and self-imposed pressure and shame. The challenge of solitude is to take the opportunity to free oneself from social pressures, as one of our interviewees reflected, "checking in, in not a judgmental way but in a constructive way. Everything, from the simple things of what have I been thinking about, most preoccupied with, mostly using my time for, how have I been responding to the children, you know, those sorts of day-to-day things of just a little bit of reflection. And trying I guess to remember the wisdom of philosophies of kindness to oneself as well as kindness to other people" (P05).

**Solitude can be self-structured.** Closely related to quietude and relative freedom from social demands, when in solitude people are free to create their own structure that guides and demarcates the activities they undertake. SDT treats freedom as distinct from autonomy: the first involves an absence of constraints, while the latter involves the perception that one is volitional and self-congruent. Too much freedom can feel unnerving when there is a lack of structure in it: when options, goals, and boundaries feel limitless to the point that options are not meaningful (Katz & Assor, 2007). When spending time with others, our behavior and choice of activities are inevitably shaped by other people's observations, behaviors, and desires. When alone, people experience fewer of these social dynamics, freeing them to make personal choices about what to do and how to behave. Although structure is typically externally imposed through clear social expectations and consequences for action, the sense that choices have boundaries can come from internal goals and expectations. We suggest that in solitude, people find themselves with freedom to act or feel without social constraints and are challenged to develop their own self-directed structure to organize these opportunities.

We suspect that the ability to build structure into one's alone time is an important reason the time is experienced as rewarding, or otherwise, boring or provoking anxiety. Individuals who, when finding themselves alone, cannot build their own structure, may experience frustrated autonomy and competence needs. Research findings, for example, have shown that many people find it difficult to sit alone without something to set their mind to, and they prefer to distract themselves given the opportunity to do so (Westgate, Wilson, & Gilbert, 2017; Wilson et al., 2014). Furthermore, in the absence of self-directed structure, individuals may pursue too many goals mindlessly or compulsively, without establishing an effective rhythm and pace of progress that allows them to see which goals have been achieved and which have not. When in solitude for long periods, those who can set self-congruent and meaningful goals and independently collect feedback on the progress of those goals may find their time to be more rewarding. In this way, solitude provides an opportunity for self-directed action and for undertaking need-satisfying pursuits. For example, interviews of 20 older adults living alone revealed that a common strategy to cope with everyday solitude is to find a comfortable daily rhythm. Daily activities can be simple, like preparing meals, listening to the radio or reading, or placing calls to a relative

or friend at the same time every day; those activities add structure that gives elderly living alone something to look forward to (Birkeland & Natvig, 2009). Those who are comfortable with unstructured space, and who can make self-directed decisions to build their own structure, flourish as a result of the time alone.

## Autonomy Affordances in Solitude

Since solitude provides a relatively unstructured and undemanding space, individuals can focus on satisfying autonomy need in a way that complements rather than competes with the need satisfaction derived from spending time with others. In other words, without sacrificing autonomy need satisfaction derived by feeling volitional, self-congruent, and self-expressive in social interactions (Weinstein, 2014), solitude is an opportunity to satisfy autonomy by engaging with the self. In 32 out of 36 of our interviews, autonomy need satisfaction as an affordance of solitude was the theme that emerged most strongly related to positive solitude. These discussions surrounding autonomy fell into three major themes: perceived choice and volition, freedom from pressure, and self-connection and authenticity (see Figure 20.1).

**Perceived choice and volition.** Many people we interviewed felt autonomy as *perceived choice* to pursue interests and activities that mattered and were enjoyable or rewarding. This sense of choice was different from the choice *for* solitude; it reflected the opportunity for choiceful behavior when individuals were *in* solitude. Our participants' discussions of choiceful motivation in solitude were consistent with the view of choice within SDT, which argues that choice is not a direct function of *options* in the environment but rather the subjective experience of endorsing or feeling choiceful in one's pursuits (Ryan & Deci, 2006). Solitude was chosen not because it offered more options but because meaningful decisions about one's own behavior could be made while alone. Such meaningful choice has been shown to be energizing and vitalizing in past research (Moller, Deci, & Ryan, 2006). Positive energy similarly resonated in these descriptions, although choice was often related to simple (and ubiquitous and mundane) activities. The mere opportunity to choose how to live moment-to-moment was seen as rewarding to our participants.

**Freedom from pressure**. Solitude can offer individuals a sense of freedom from two types of demands, external or internalized, aligned with an SDT view that demands can be external to the self, emerging from immediate external demands by others (e.g., to behave or perform in certain ways), or internalized, coming from partially integrated self-imposed demands and pressures (Ryan & Deci, 2008). Similarly, our participants talked about external demands, including judgments and expectations experienced during their social interactions, or demands and self-judgments that were introjected and internally imposed. They saw solitude was an opportunity to be free from these demands.

It is worth noting that introjections, in particular, may carry into time spent alone, and we do not anticipate that solitude offers a cure for internalized demands and expectations. In fact, it is possible that individuals who are prone to introjections struggle with time spent alone either because they have had little autonomy support in previous close social relationships, such as with caregivers (Assor, Roth, & Deci, 2004; Roth, 2008), or because they have been rejected or stigmatized in the past (Martin, 1986). When alone, people find space to ruminate as well as to reflect (Nguyen et al., 2021b), and introjections are likely fodder for rumination. To the extent that introjections are tied to immediate social performance and expectations, solitude offers a chance to step away and focus on the self.

**Self-connection and authenticity.** A final theme that emerged in our interviews resonates well with the intrapsychic processes we described earlier in this chapter. That is, solitude is a space for self-connection—engaging with one's self fully and genuinely—and therefore feeling a sense of closeness and intimacy with oneself. Importantly, connecting to the self is autonomy-need-satisfying largely because under the best circumstances it allows time for reflecting on and developing great clarity around one's values, personal priorities, and desires. These inward-focused activities facilitate rewarding experiences of self-congruence and authenticity and support volitional action. In the humanistic tradition, such understanding and self-connection is an expression of the actualization tendency that moves individuals toward growth (Rogers, 1959), and ultimately it helps individuals toward greater self-understanding through more effective internal communication—a process of increasing self-integration (Rogers, 1961; Ryan, 1995). Self-connection similarly underlies personal growth in the SDT tradition (see in-depth review in Maurer & Daukantaitė, 2020).

Both approaches also highlight that mindful awareness is intimately linked with autonomy (Ryan, Donald, & Bradshaw, 2021). When individuals are able to reflect with a high level of awareness in the present moment and are unincumbered by defensive reactions that distort their personal reality, this process can yield insights about their internal processes. The ability to turn one's attention inward allows connection with oneself and facilitates fruitful self-insights. People gain clarity about their important emotions, values, and priorities (Brown et al., 2011; Rogers, 1961; Ryan, 1995).

Supporting this view, for many of our respondents (21 of 36), such "conversations with self" make solitude a fruitful space for growth through self-knowledge. In addition, findings of within- and between-subject experimental studies asking participants to reflect on moments of solitude that were authentic or inauthentic have highlighted that time spent alone may be an opportunity for self-reflection and retrospection (Nguyen et al., 2021b). In these studies, self-insights occurred when participants were instructed to think about a time they were alone and felt true to themselves, when they recalled authentic solitude. This experience was contrasted with time spent alone when people felt disconnected from their true self and instead aligned to a false sense of self resulting from ruminative thoughts.

## Conclusion: Time Alone Conduces to Growth

Findings from in-depth interviews of personal experiences with solitude, and from the quantitative work in solitude, offered perspectives of time spent alone to inform future empirical studies that apply an SDT perspective for a better understanding of solitude. Time spent alone, and well, affords opportunities for autonomy need satisfaction because—compared to social space in our daily lives—it is relatively free from sensory distractions, social demands, and structure. These same qualities make solitude a challenge for individuals who are self-alienated and defensive or not otherwise autonomously oriented. In these cases, solitude may feel lonely, empty, or boring.

But with a willingness to self-connect, individuals spending time alone have the opportunity to engage in activities, even mundane ones, in a choiceful way. Our interviewees who discussed their solitude also reported a sense of freedom from the immediate responsibilities and pressures of social contexts and the opportunity to behave in a self-congruent and authentic manner; they said they could self-reflect for a better understanding of their emotions, values, goals, and priorities. We argue that such opportunities for self-understanding can yield benefits in terms of growth and integration. As described within SDT, such is the result of open and unincumbered awareness of one's experiences that facilitates self-integration, internal coherence, and unity between values, emotions, motivations, and behaviors (Weinstein et al., 2013).

Whether solitude is experienced by people as beneficial or detrimental depends substantially on its self-determined or autonomous quality. In the best circumstances, solitude can be a time during which we connect with our authentic self. Solitude can offer the freedom to access our inner world in whatever ways we choose. And in that chosen space with our core self, we can relax, reflect, or regroup. In short, we can pave our own paths to insight and growth.[1]

## References

Arvanitis, A., Kalliris, K., & Kaminiotis, K. (2019). Are defaults supportive of autonomy? An examination of nudges under the lens of self-determination theory. *The Social Science Journal*, 1–11. https://doi.org/10.1016/j.soscij.2019.08.003

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of parents' conditional regard: A self-determination theory analysis. *Journal of Personality*, *72*(1), 47–88. https://doi.org/10.1111/j.0022-3506.2004.00256.x

Birkeland, A., & Natvig, G. K. (2009). Coping with ageing and failing health: A qualitative study among elderly living alone. *International Journal of Nursing Practice*, *15*(4), 257–264. https://doi.org/10.1111/j.1440-172X.2009.01754.x

Brown, K. W., West, A. M., Loverich, T. M., & Biegel, G. M. (2011). Assessing adolescent mindfulness: Validation of an Adapted Mindful Attention Awareness Scale in adolescent normative and psychiatric populations. *Psychological Assessment*, *23*(4), 1023–1033. https://doi.org/10.1037/a0021338

Buchholz, E. S. (1997). *The call of solitude: Alonetime in a world of attachment*. Simon & Schuster.

Burger, J. M. (1995). Individual differences in preference for solitude. *Journal of Research in Personality*, *29*(1), 85–108. https://doi.org/https://doi.org/10.1006/jrpe.1995.1005

---

Byrd, R. (1987). *Alone*. Queen Ann Press.

Carbaugh, D., Berry, M., & Nurmikari-Berry, M. (2006). Coding personhood through cultural terms and practices: Silence and quietude as a Finnish "natural way of being." *Journal of Language and Social Psychology, 25*(3), 203–220. https://doi.org/10.1177/0261927X06289422

Chua, S. N., & Koestner, R. (2008). A self-determination theory perspective on the role of autonomy in solitary behavior. *Journal of Social Psychology, 148*(5), 645–648. https://doi.org/10.3200/SOCP.148.5.645-648

Cramer, K. M., & Lake, R. P. (1998). The Preference for Solitude Scale: Psychometric properties and factor structure. *Personality and Individual Differences, 24*(2), 193–199. https://doi.org/10.1016/S0191-8869(97)00167-0

Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian psychology/Psychologie canadienne, 49*(1), 14.

Deci, E. L., & Ryan, R. M. (2012). Motivation, personality, and development within embedded social contexts: An overview of self-determination theory.

France, P. (1996). *Hermits: The insights of solitude.* St. Martin's Press.

Galanaki, E. (2004). Are children able to distinguish among the concepts of aloneness, loneliness, and solitude? *International Journal of Behavioral Development, 28*(5), 435–443. https://doi.org/10.1080/01650250444000153

Grassian, S. (1983). Psychopathological effects of solitary confinement. *American Journal of Psychiatry, 140*(11), 1450–1454. https://doi.org/10.1176/ajp.140.11.1450

Hall, T. (2001). Hikers' perspectives on solitude and wilderness. *International Journal of Wilderness, 7*(2), 20–24. http://www.wilderness.net/library/documents/hall1.pdf

Hammitt, W. E. (1982). Cognitive dimensions of wilderness solitude. *Environment and Behavior, 14*(4), 478–493. https://doi.org/10.1177/0013916582144005

Hammond, C. (2016). How being alone may be the key to rest. *BBC Radio 4.* https://www.bbc.co.uk/news/magazine-37444982

Haney, C. (2018). The psychological effects of solitary confinement: A systematic critique. *Crime and Justice, 47*(1), 365–416. https://doi.org/10.1086/696041

Kasof, J. (1997). Creativity and breadth of attention. *Creativity Research Journal, 10*(4), 303–315. https://doi.org/10.1207/s15326934crj1004_2

Katz, I., & Assor, A. (2007). When choice motivates and when it does not. *Educational Psychology Review, 19*(4), 429–442.

Koch, P. (1994). *Solitude: A philosophical encounter*. Open Court.

Larson, R. W. (1997). The emergence of solitude as a constructive domain of experience in early adolescence. *Child Development, 68*(1), 80–93. https://doi.org/10.1111/j.1467-8624.1997.tb01927.x

Larson, R., Csikszentmihalyi, M., & Graef, R. (1982). Time Alone in Daily Experience: Loneliness or Renewal. In L. A. Peplau (Ed.), *Loneliness: A sourcebook of current theory, research and therapy* (pp. 40–53). Wiley.

Lay, J. C., Pauly, T., Graf, P., Mahmood, A., & Hoppmann, C. A. (2020). Choosing solitude: Age differences in situational and affective correlates of solitude-seeking in midlife and older adulthood. *Journals of Gerontology—Series B: Psychological Sciences and Social Sciences, 75*(3), 483–493. https://doi.org/10.1093/geronb/gby044

Long, C. R., & Averill, J. R. (2003). Solitude: An exploration of benefits of being alone. *Journal for the Theory of Social Behaviour, 33*(1), 21–44. https://doi.org/10.1111/1468-5914.00204

Long, C. R., Seburn, M., Averill, J. R., & More, T. A. (2003). Solitude experiences: Varieties, settings, and individual differences. *Personality and Social Psychology Bulletin, 29*(5), 578–583. https://doi.org/10.1177/0146167203251535

Martin, L. G. (1986). Stigma. In *The dilemma of difference: Perspectives in social psychology. A Series of Texts and Monographs* (pp. 145–161). Springer.

Maurer, M. M., & Daukantaitė, D. (2020). Revisiting the organismic valuing process theory of personal growth: A theoretical review of Rogers and its connection to positive psychology. *Frontiers in Psychology, 11*(July), 1–15. https://doi.org/10.3389/fpsyg.2020.01706

Miles, M. B., & Huberman, A. M. (1984). Drawing valid meaning from qualitative data: Toward a shared craft. *Educational Researcher, 13*(5), 20–30. https://doi.org/10.3102/0013189X013005020

Moller, A. C., Deci, E. L., & Ryan, R. M. (2006). Choice and ego-depletion: The moderating role of autonomy. *Personality and Social Psychology Bulletin*, *32*(8), 1024–1036. https://doi.org/10.1177/0146167206288008

Mote, F. W. (1960). Confucian eremitism in the Yüan period. In A. F. Wright (Ed.), *The Confucian persuasion* (pp. 202–240). Stanford University Press.

Nguyen, T. T., Ryan, R. M., & Deci, E. L. (2018). Solitude as an approach to affective self-regulation. *Personality and Social Psychology Bulletin*, *44*(1), 92–106. https://doi.org/10.1177/0146167217733073

Nguyen, T. T., Weinstein, N., & Deci, E. L. (2020). *Alone with our thoughts: Supporting autonomy as a driver of enjoyment during time spent alone doing nothing*. Psyaxiv.com. https://doi.org/https://doi.org/10.31234/osf.io/kzw9s

Nguyen, T. T., Weinstein, N., & Ryan, R. (2022). *Do introverts enjoy solitude? An investigation of personality predictors of motivation for spending time alone. Plos One*, *17*(5), e0267185. https://doi.org/10.31234/osf.io/sjcwg

Nguyen, T. V. T., Weinstein, N., & Ryan, R. M. (2021). The possibilities of aloneness and solitude: developing an understanding framed through the lens of human motivation and needs. In *The handbook of solitude: psychological perspectives on social isolation, social withdrawal, and being alone* (pp. 224–239). https://doi.org/10.31234/osf.io/hg9as

Nguyen, T. T., Werner, K. M., & Soenens, B. (2019). Embracing me-time: Motivation for solitude during transition to college. *Motivation and Emotion*, *43*(4), 571–591. https://doi.org/10.1007/s11031-019-09759-9

Perlman, D., & Peplau, L. A. (1981). Toward a social psychology of loneliness. *Personal relationships, 3*, 31–56.

Pfeifer, E., Geyer, N., Storch, F., & Wittmann, M. (2019). "Just think"—Students feel significantly more relaxed, less aroused, and in a better mood after a period of silence alone in a room. *Psych*, *1*(1), 343–352. https://doi.org/10.3390/psych1010024

Ren, D., Wesselmann, E. D., & van Beest, I. (2020). Seeking solitude after being ostracized: A replication and beyond. *Personality and Social Psychology Bulletin, 47*(3), 426–440 https://doi.org/10.1177/0146167220928238

Ren, D., Wesselmann, E., & Williams, K. D. (2016). Evidence for another response to ostracism: Solitude seeking. *Social Psychological and Personality Science*, *7*(3), 204–212. https://doi.org/10.1177/1948550615616169

Rodriguez, M., Bellet, B. W., & McNally, R. J. (2020). Reframing time spent alone: Reappraisal buffers the emotional effects of isolation. *Cognitive Therapy and Research*, *44*(6), 1052–1067. https://doi.org/10.1007/s10608-020-10128-x

Rogers, C. R. (1959). *A theory of therapy, personality, and interpersonal relationships: As developed in the client-centered framework*. McGraw-Hill.

Rogers, C. R. (1961). *On becoming a person: A therapist's view of psychotherapy*. Constable.

Roth, G. (2008). Perceived parental conditional regard and autonomy support as predictors of young adults' self- versus other-oriented prosocial tendencies. *Journal of Personality*, *76*(3), 513–534. https://doi.org/10.1111/j.1467-6494.2008.00494.x

Roth, G., Vansteenkiste, M., & Ryan, R. M. (2019). Integrative emotion regulation: Process and development from a self-determination theory perspective. *Development and psychopathology*, *31*(3), 945–956.

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, *63*(3), 397–427. https://doi.org/10.1111/j.1467-6494.1995.tb00501.x

Ryan, R. M., & Connell, J. P. (1989). The Self-Regulation Questionnaires Scale description. *Journal of Peronality and Social Psychology*, *57*, 749–761.

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality*, *74*(6), 1557–1586. https://doi.org/10.1111/j.1467-6494.2006.00420.x

Ryan, R. M., & Deci, E. L. (2008). A self-determination theory approach to psychotherapy: The motivational basis for effective change. *Canadian Psychology*, *49*(3), 186–193. https://doi.org/10.1037/a0012753

Ryan, R. M., Donald, J. N., & Bradshaw, E. L. (2021). Mindfulness and motivation: a process view using self-determination theory. *Current Directions in Psychological Science*, *30*(4), 300–306.

Storr, A. (1988). *Solitude: A return to the self*. Harper Collins.

Thomas, V., & Azmitia, M. (2019). Motivation matters: Development and validation of the Motivation for Solitude Scale–Short Form (MSS-SF). *Journal of Adolescence*, *70*(November), 33–42. https://doi.org/10.1016/j.adolescence.2018.11.004

Thoreau, H. D. (1966). Walden. In O. Thomas (Ed.), *Walden and civil disobedience* (pp. 1–221). W. W. Norton.

Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the Work-related Basic Need Satisfaction scale. *Journal of occupational and organizational psychology, 83*(4), 981–1002.

Wang, Y. (2006). *Culture and solitude: Meaning and significance of being alone*. Unpublished manuscript. University of Massachusetts, Amherst.

Wei, M., Shaffer, P. A., Young, S. K., & Zakalik, R. A. (2005). Adult attachment, shame, depression, and loneliness: the mediation role of basic psychological needs satisfaction. *Journal of counseling psychology*, *52*(4), 591.

Weinstein, N. (2014). Human motivation and interpersonal relationships: Theory, research, and applications. *Human Motivation and Interpersonal Relationships: Theory, Research, and Applications*, 9789401785(October), 1–360. https://doi.org/10.1007/978-94-017-8542-6

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2012). The Index of Autonomous Functioning: Development of a scale of human autonomy. *Journal of Research in Personality*, *46*(4), 397–413. https://doi.org/10.1016/j.jrp.2012.03.007

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2013). The integrative process: New research and future directions. *Current Directions in Psychological Science*, *22*(1), 69–74. https://doi.org/10.1177/0963721412468001

Westgate, E. C., Wilson, T. D., & Gilbert, D. T. (2017). With a little help for our thoughts: Making it easier to think for pleasure. *Emotion*, *17*(5), 828–839. https://doi.org/10.1037/emo0000278

Wilson, T. D., Reinhard, D. A., Westgate, E. C., Gilbert, D. T., Ellerbeck, N., Hahn, C., Brown, C. L., & Shaked, A. (2014). Just think: The challenges of the disengaged mind. *Science*, *345*(6192), 75–77. https://doi.org/10.1126/science.1250830

Winnicott, D. W. (1958). Capacity to be alone. *International Journal of Psycho-Analysis*, *39*, 416.

# Philosophical Perspectives on Autonomy in Self-Determination Theory

Alexios Arvanitis *and* Konstantinos Kalliris

### Abstract

A holistic view of autonomy in self-determination theory (SDT) requires both psychological and philosophical scrutiny. This chapter discusses how SDT approaches autonomy and self-determination by explicating the nature of its psychological conception of the self. The chapter describes how this conception is congruent with phenomenological and analytical philosophical perspectives of autonomy. Although this congruence concerns mostly comprehensive views of personal autonomy that take into account both negative and positive freedom, SDT can equally be applied in the study of moral autonomy, through a holistic understanding of the self. It may thus offer a compatibilist psychological interpretation of the relationship between personal and moral autonomy, and even pave the way for a novel discussion of moral responsibility.

**Key Words:** personal autonomy, moral autonomy, compatibilism, self-authorship, moral responsibility, phenomenology

Autonomy is a highly contested concept, with a special place in the realm of philosophy. Various disciplines study the concept, with psychology and philosophy carrying most of the weight. The scientist whose work has drawn the most attention from philosophers (Keat, 1972; Scribner, 1972) is B. F. Skinner, who is also considered the most eminent psychologist of the 20th century (Haggbloom et al., 2002). He took the radical view that autonomy is used to explain behavior that we are not able to explain in other ways (Skinner, 1971) and contended that the more we understand about behavior, the less we have a need for the concept of autonomy. This statement would imply that, as the science of psychology advances and offers insight into the causes of behavior, the concept of autonomy becomes less useful. Elements of Skinner's work can be seen in the influential work of theorists such as Daniel Dennett (1984) and Bruce Waller (1990). If Skinner was right, then the focus of self-determination theory (SDT) on autonomy would preclude its treatment as a scientific theory.

The view that psychological science is not compatible with the notion of autonomy (and related notions of agency and free will) relates to a broader philosophical question

of whether causal determinism is compatible with autonomy. If all human behavior is causally determined by psychological laws, which in essence are the subject of psychological science, as well as antecedent personal and environmental factors, there may be no room left for individuals to define their behavior autonomously. For example, a great part of psychoanalytic theory traces the causes of behavior to nonvoluntary unconscious mechanisms that relate to past events (e.g., Brenner, 1955); social constructionist views approach human behavior only in the context of social interaction and view agency as a human construction (e.g., Gergen, 2009); and even some cognitive scientists focus on isolated cognitive processes and find little use for free will (e.g., Wegner, 2002). Whatever the starting point of these different approaches, a common property is that behavior is one-sidedly traced to causes outside the agentic self. (For a discussion of the agentic self, see Little et al., 2002.) When these causes are viewed as all psychological science has to offer, autonomy is relegated to some sort of illusion. Moreover, a metaphysical conception of autonomy that does not obey psychological laws would not be appropriate for a psychological theory.

A middle-ground psychological solution to the problem of autonomy, agency, and free will lies in the use of "self-determination" to refer to a certain freedom of choice in the exercise of voluntary behavior that is consistent with a person's desires and values, without rejecting the premise that behavior takes place within a deterministic, causal sequence of environmental events and organismic processes. This solution is *compatibilist* in the sense that free will and determinism are considered *compatible*. The purpose of this chapter is to explain how SDT, an empirically based scientific psychological theory, conceptualizes self-determination and autonomy in ways that are congruent with both psychological science and philosophical theory, and also, drawing on relevant philosophical theory, to offer a refinement and possible advancement of the concept of autonomy within SDT. We initially refer to SDT's concept of the self and subsequently discuss the value of personal autonomy as well as the concepts of moral autonomy and responsibility.

## The Self in Self-Determination Theory

Within a compatibilist psychological approach, autonomy refers to the enactment of behavior that is determined by the self. This self should be conceptualized as one that is capable of determining its own behavior. A classic psychological view of the concept of the self is offered by James's (1890) distinction between the "Me" and the "I." The "Me" refers to an empirical aggregate of all things known about an individual, whereas "I" is a "Thought," a process through which everything is known. While James's formulation of the self has not necessarily been followed in the form that James originally described, the self can still be treated both as a construction (e.g., Harter, 2012) and as a constructor, or a self-as-subject (Blasi, 1988). It is the latter of course that can only be associated with self-determination, since only the self-as-subject would potentially have the power

to determine its own behavior. Within SDT, the *I* is the self-as-process and the *Me* is the self-as-object (Ryan & Deci, 2017; Ryan & Rigby, 2015).

The self-as-process would serve the function of a feedback mechanism that takes in internal and external stimuli and subjects them to some sort of processing that is specific to the person. These internal and external stimuli would not directly control behavior but would instead develop a dynamic within the person that is different from the dynamic they exhibited when initially acquired. This idea reflects the concept of functional autonomy that was introduced and revised by Allport (1937, 1961) and offers an explanation of how the self represents a distinct and important link in the causal chain of internal and external events that result in human behavior. In relation to higher-order processes, Allport (1961, p. 252) introduced the concept of *propriate functional autonomy*, which refers to the organization of lower-level processes in a way that is "anchored to the self." He pointed out that the self in this case is not a "mysterious inner agent" or a "Free Willer," as Wegner (2002) would call it, but rather a tendency of all human beings toward a relative unification of life. Although SDT does not conceptualize autonomy in the same way as Allport, it does make a similar theoretical assumption about the self: that the self is a set of processes for unification and growth that are embedded in every human being. It also refers to the structure in which elements such as aspects of experiences, values, or new functions are integrated (Ryan & Deci, 2017). That is, SDT's tenets and research are based on a view of living things as, under optimal conditions, naturally growing toward greater mastery and self-regulation, a view known as an *organismic* approach (Deci & Ryan, 1985). The self, as a coherent central structure within the organism, does not always determine behavior, but when it does, we speak of autonomous functioning. The problem that arises is that, contrary to the self-as-object, the self-as-process is not empirically accessible to the person. It is difficult to study something that is not readily accessible in an empirical manner. One way is to focus on its function within the person and then try to find ways in which it manifests itself.

Since the self-as-process is not directly experienced by the person as the determinant of autonomous behavior, SDT has instead focused on the phenomenal experience of self-determined behavior. The philosophical underpinnings of this focus lie in the work of Pfander and Ricoeur (Ryan, 1993). Pfander (1967) explained that the causes of an act can be processed phenomenologically—that is, by asking whether the act has been caused by the "ego-center." The phenomenal cause of an *act of will* can be none other than the ego-center. Ricoeur (1966) introduced consent, the active adoption of a necessity, as an aspect of voluntary action. In this view of voluntary behavior, individuals may behave autonomously even in situations that might pose a threat to freedom as long as they actively adopt and concur with environmental mandates. Phenomenological psychology discusses specific aspects of autonomy such as the experience of the self-as-cause or the ability to do otherwise (Horgan, 2015; Nahmias et al., 2004), that are conceptually close to SDT's view. However, it adopts a more descriptive, introspective methodology that contrasts

with modern methods of empirical psychology (Giorgi, 1997; Jennings, 1986), which SDT employs in seeking to understand the agent's perspective. The same applies to the methodology of the related existential-phenomenological psychological approach (von Eckartsberg, 1998) that SDT refers to in its discussion of the concept of authenticity—that is, the expression of the *true* or integrated self (Deci & Ryan, 1995; Ryan & Ryan, 2019). SDT is more conceptually than methodologically related to phenomenology and existentialism.

SDT has been especially, although indirectly, influenced by phenomenology through its reliance on the work of Heider (1958), whose treatment of causality was based on his earlier influences from the field of phenomenology (Schönpflug, 2008; Spiegelberg, 1972). Heider (1958) argued that the determination of behavior is best understood through the study of the perception of the individual, that people are centrally concerned with the perceived locus of causality (PLOC) for actions, and that they distinguish between events that are personally caused or are done *intentionally* rather than unintentionally. His concept of PLOC was elaborated and further applied by DeCharms (1968) in the field of motivation. DeCharms offered preliminary empirical data that having an internal PLOC, or being an "Origin," results in different behavioral properties than having an external PLOC, or being a "Pawn." The PLOC was subsequently used in the early work of SDT as a primary concept in accounting for different qualities of motivation (Deci, 1975). In their landmark book, Deci and Ryan (1985) treat self-determination as a quality of human functioning that involves the experience of an internal PLOC. The PLOC within SDT is not strictly cognitive, as in Heider's attribution theory, but is treated as a phenomenological construct that has functional significance.

In order to differentiate acts that are initiated by the self-as-process from non-self-determined acts, Ryan and Connell (1989) introduced and validated a PLOC questionnaire that classified the research participants' motivation for performing an activity along a relative autonomy continuum. The validity of this continuum has recently been reaffirmed (Sheldon et al., 2017; Howard, Gagné, & Bureau, 2017). With the help of this tool, SDT has shown that an internal PLOC has positive functional effects for individuals in contexts as diverse as physical education (Vlachopoulos et al., 2011), healthcare settings (Ng et al., 2012), organizations (Deci, Olafsen, & Ryan, 2017), and public policy (Arvanitis, Kalliris, & Kaminiotis, 2020).

In summary, the SDT perspective of the self as a potential determinant of behavior is aligned with the compatibilist view that autonomous behavior is conceivable in a world where human behavior obeys deterministic laws. However, as a central structure with growth and integrative tendencies, the self is not empirically accessible. Therefore SDT research focuses on its phenomenological manifestations during its strivings toward growth and harmony in different contexts. We now turn to the value of personal autonomy, as studied through the lens of SDT.

## Self-Determination and the Value of Personal Autonomy

As an organismic theory, SDT postulates that individuals have intrinsic tendencies for growth and harmony. These intrinsic tendencies have a value in themselves. From an SDT perspective, autonomy, which literally means "self-rule" (from the Greek word αυτονομία: αυτό = self and νόμος = rule), refers to the ability to enact these valuable tendencies and can, therefore, be regarded as intrinsically valuable. For philosophers who view autonomy as a powerful right, this intrinsic value is almost self-evident, as something that all individuals possess by virtue of being rational human beings. Protection of autonomy in this sense focuses mainly on securing a sovereign personal space for an individual (Dworkin, 1986; Feinberg, 1989). According to a different, largely consequential account, autonomy is understood as an exercise concept, in the form of self-authorship. In this sense, an autonomous life does not depend solely on possession of a right to autonomy but on active choosing as well (Raz, 1986; Wall, 1998). Individuals who enjoy the right to be autonomous but never exercise it (by making their own decisions and choices) are not autonomous individuals. This proposition entails that autonomy requires not only "freedom from" (interference) but also "freedom to" (achieve self-chosen goals). This distinction is famously summarized by Berlin (1958/2002) with the terms "negative freedom" and "positive freedom," respectively. If autonomy is intertwined with its exercise, it follows that there are overt manifestations of autonomy, possibly leading to positive instrumental outcomes. SDT especially focuses on these outcomes, as there is a largely empirical claim embedded in the organismic approach: people live well if their intrinsic tendencies are nurtured. SDT does not cease its work at the point of simply accepting the inherent value of autonomy (in fact, this is merely its starting point), but proceeds to empirically evaluate its exercise. This approach is consistent with several conceptions of autonomy that focus on the exercise of active choice as an essential component of a good life (Raz, 1986; Wall, 1998; Kalliris, 2017).

Like SDT, autonomy as self-authorship (being an exercise concept) focuses on growth and self-development. The concept is understood as the autonomous shaping of one's life through the exercise of choice and the cultivation of the relevant tendencies and traits that support this process. This understanding presupposes the existence of a recognizable "self" that can be the author of one's (autonomous) life. The point is closely related to the nature of free will and often revolves around discussions of will as a matter of levels. One possible approach focuses on second-order desires that reflect our true will (Frankfurt, 1971) or a second-order critical reflection on first-order desires (Dworkin, 1988). In these approaches autonomy concerns one's reflective endorsement of one's actions. Another way to address the issue is by emphasizing the superiority of values over simple wants (Watson, 1975) or by attributing the significance of some desires to the value we attach to them (Ekstrom, 2005). SDT's perspective is congruent with these approaches: autonomy links behavior with the true, authentic self, namely the self that reflects the values,

principles, and interests that have a central structural standing during organismic integration (i.e., the integrated self). These views of personal autonomy (as self-authorship or self-development) identify its value in the appealing properties of its exercise, namely well-being and the good life, but remain open to empirical challenges. SDT mainly advances our understanding of the value of autonomy by producing empirical research on the relationship between autonomy and well-being.

The conception of autonomy as self-authorship might appear to be an individualist pursuit of the good life if it focuses on a self that is abstracted from social context and treats only the behaviors that are consistent with individualistic desires as self-determined. Such an individualist view is vulnerable to the feminist criticism that it neglects the role of relationships and community in the constitution of the self (Friedman, 1989). A complete view of self-authorship should take into account the social aspect of the self (simply called the "social self") and somehow incorporate the construction of meaningful relationships and community contribution into the realm of autonomous, self-determined activity. From an SDT perspective, research into the facilitation of intrinsic tendencies for growth and harmony has shown that these are facilitated by the formation of warm and meaningful relationships as well as by belonging to social groups (Vansteenkiste, Ryan, & Soenens, 2020). The need for relatedness refers to the nourishment of autonomous tendencies by warm relationships, revealing a strong interconnection between autonomy and relatedness (Deci et al., 2006; Kluwer et al., 2020). This interconnection is exemplified in philosophical conceptions of "relational autonomy" that are very useful in highlighting the significance of social conditions, including relationships, for autonomous and meaningful living (Baier, 1985; Nedelsky, 1989). In a reminder that constraints to autonomy can be both internal and external (Taylor, 1979), some feminist accounts point out that oppressive social norms and oppressive relationships undermine autonomy, regardless of whether they appear to be endorsed and direct coercion is absent. (For a discussion of possible interpretations of relational autonomy, see Christman, 2004; Mackenzie, 2008; Oshana, 1998.) The exercise of autonomy by means of free decision-making requires not only adequate and meaningful options but supportive social relationships as well (Friedman, 1997). These relationships also help the individual to develop and sustain an autonomous self, with the authority to pursue plans and projects (Mackenzie, 2008). From an SDT empirical perspective, the autonomy of a socially embedded self has in turn been linked to well-being in both individualistic and collectivistic cultures (Yu, Levesque-Bristol, & Maeda, 2018).

From our analysis so far, it should be evident that SDT, as an empirically based psychological theory, does not rest at presuming the inherent value of autonomy. Instead, it studies empirically what happens when individuals exercise aspects of their selves—in other words, when their behavior is consistent with the central structure of values, principles, and interests that develops through organismic integration. The functional effects of autonomous motivation are overwhelmingly positive in studies that pervade the fields of education, organizations, healthcare, and sports, as well as broader cultural,

economic, and political contexts. They include better health, creativity, learning, vitality, engagement, productivity, prosocial behavior, and well-being and less ill-being, dysfunction, malevolence, and psychopathology. (For a comprehensive review, see Ryan & Deci, 2017.) These effects seem to generalize across age groups, contexts, and cultures and speak to the value of autonomy for all.

The treatment of autonomy as an exercise concept has repercussions for applied political philosophy as well. Liberal democracies that aim to protect autonomy should focus not only on the absence of external constraints but also on the ability of citizens to make active autonomous choices (Arvanitis & Kalliris, 2017). Autonomy in this case should refer both to an adequate set of options in which undue external constraints are absent and to the volitional active choice that individuals make from that set of options (Arvanitis et al., 2020). This thesis is also in line with the capability approach (Nussbaum, 2000; Sen, 2009), which is a topic of interest from an SDT perspective (DeHaan, Hirai, & Ryan, 2016; Ryan & DeHaan, this volume). Autonomy is ultimately protected not through the safeguarding of an abstract natural right but through the protection of the positive functional effects of autonomous actions. Therein primarily lies the value of personal autonomy viewed through the lens of SDT.

### Self-Determination and Moral Autonomy

One of the most persistent distinctions in modern thought is between personal and moral autonomy. As discussed, the former is a kind of freedom; the latter is widely construed as moral self-rule. Most philosophers are eager to clarify which brand of autonomy is the subject of their deliberations, and the relevant debates tend to develop separately. With a few notable exceptions (Waldron, 2005; Taylor, 2005), this sharp distinction appears to stem from the widespread view that it is difficult to detect a comprehensive theory of personal autonomy in Kant's influential writings.

Moral autonomy can be seen as a different form of self-determination: it refers to moral self-legislation. In the long and still evolving Kantian tradition, this is a familiar notion: the individual subscribes to moral laws that are universal and create duties to act accordingly (Kant, 1785/2019; Korsgaard, 1996). These duties are moral "oughts" as opposed to the prudential "oughts" that emerge from an individual's commitment to the (personally) autonomous pursuit of projects, commitments, and relationships. According to Kant, this brand of autonomy stems from the exercise of practical reason. (For an alternative view of this process, see Korsgaard, 1996.) In practice, moral autonomy dictates action through the universality of moral laws, especially those concerning how we ought to treat others (as per the second formulation of the categorical imperative).

The role of moral self-legislation in shaping the way we lead our lives and treat others is indicative of its importance for self-determination. As with personal autonomy, a central question is: When is a moral rule truly ours, both a part and an expression of our integrated self? The view that personal autonomy relies on an understanding of free will

that involves some form of adherence to higher-order desires (Frankfurt, 1971) or values (Watson, 1975) is profoundly intuitive: personal autonomy seems to require a certain degree of consistency, since it is hard to envisage a true, authentic self whose choices are incoherent and random. The same intuition applies equally to the domain of moral autonomy. An SDT approach to moral autonomy would highlight the significance of endorsement: a moral norm is truly ours when we have come to integrate it. This motivational approach is a way of looking at the metaphysically burdensome Kantian ethics in a manner that leaves room for empirical inquiries. (For a complete defense of this argument, see Arvanitis, 2017.) Further developed, it allows us to shed some light on the matter of moral integrity understood as consistency and congruence with fundamental moral norms. After all, the consistent application of (higher) moral rules or principles in different circumstances and situations seems to lie at the core of moral action. A holistic understanding of moral integrity as cognitive, emotional, and motivational moral consistency reveals the importance of the development of an internal moral system of principles, emotions, and motives that regulates moral behavior (Arvanitis & Kalliris, 2020). This development is part of a broad growth process that relies both on the individuals themselves and on contextual factors that support the three basic psychological needs. The significance of this moral system for an individual's self-determination also provides a first indication of the link between moral and personal autonomy, as the former seems to dictate how individuals ought to exercise the latter in order both to be authentic and to treat others in ways that respect their self-authorship (Waldron, 2005).

## How SDT Bridges Personal and Moral Autonomy

Liberal theorists have been wary of attempts to bridge the two types of autonomy, in part owing to personal autonomy's contribution to the pursuit of the good (life). There is always the danger of mistaking the good for the right: while what is good for an individual's well-being (properly conceived to include relationships and concern for others) is (at least partly) determined by the fact that the individual autonomously decided that it is so, the same is not true for a determination of what is right (Rawls, 1971). However, as Waldron (2005) points out, too sharp a distinction ignores and downplays the interplay between the two "autonomies," which inspired the common terminology in the first place. Personal autonomy is an exercise of free action (in pursuit of the good life), which cannot ignore the demands of morality. Moral autonomy sets barriers to our personal autonomy but also guides it in a way that allows us to understand the self as a unified morally and personally autonomous entity. As Taylor (2005) observed, it may be beneficial for liberalism, as the most ardent champion of personal autonomy, to reengage with more substantial discussions of morality and virtue.

SDT has approached moral behavior mainly through the study of beneficence. It has shown that volitional acts of helping contribute to a person's well-being (Weinstein & Ryan, 2010) and that this relationship is mediated by the satisfaction of the three

basic psychological needs, as well as beneficence satisfaction as an independent predictor (Martela & Ryan, 2016a). The positive functional effect of prosocial behavior holds even when there is no contact with the beneficiary, indicating that prosocial behavior per se improves well-being (Martela & Ryan, 2016b). The seemingly important role of beneficence, although without quite the stature of basic psychological needs (Martela & Ryan, 2020), is conceptually clearer if beneficence is treated as a constitutive element of eudaimonia (Ryan & Martela, 2016). According to the SDT account of eudaimonia, being benevolent is viewed as an inherent essential striving that contributes to the good life. However, the more that morally right behavior is dependent upon inherent prosocial tendencies, the more difficult it becomes to characterize it as morally autonomous, especially in a Kantian sense. Adherence to principles, not inclination, seems to provide a more accurate picture of the morally autonomous individual.

The contradiction between acting on the basis of inherent prosocial tendencies and acting in a morally good way seems counterintuitive. Consider empathy: isn't the inherent tendency to experience the distress of others a source of morally good action? Bloom (2017a, 2017b) argued that the scope of empathy is narrow, making it prone to bias. Individuals who act empathically are prone to helping people they know, assisting in-group members or succumbing to impulsive actions that are not truly just and may even be detrimental to third parties. If the distinctive feature of moral motivation is not doing the right thing but feeling good while helping others, it is possible that the underlying moral principle will not stand the test of critical moral reasoning. This is how moral autonomy differs from personal autonomy: an autonomous action that is good for individuals (taking into account their social self and including actions that benefit people they are close to or social groups they belong to) is not necessarily what an individual *ought* to do, all things considered. The autonomy operating in the case of morally good action is reflective and involves deeper cognitive, emotional, and motivational processing that results from organismic integration (Arvanitis & Kalliris, 2020). Acting on the basis of an integrated moral principle, even in opposition to other intrinsic tendencies that may be present in a particular situation, describes the motivational state of morally autonomous actions (see also Arvanitis, 2017).

Moral autonomy, as already discussed, refers to the self-legislating of principles, not to the furthering of interests or the enactment of intrinsic tendencies. Although the self is a phenomenal ego-center comprising both interests and integrated principles, moral autonomy is associated only with principles. It might be argued that, when moral behavior is regulated by intrinsic tendencies and interests, the appropriate concept for describing behavior is personal autonomy, whereas when it is regulated by self-legislated principles— in other words, an inner moral system—the appropriate concept is moral autonomy. This view would imply, however, that the self is somehow fragmented and that there is no overlap in the processing of interests and principles. In fact, we would expect a coherent and integrated self to examine both interests and principles within the same procedure,

possibly judging the moral permissibility of the satisfaction of interests or modifying principles by taking into account the interests of oneself and others. In the discussion of beneficence, for example, a Kantian conceptualization of a global moral principle might entail that one ought to be benevolent toward others as well as toward oneself (Formosa & Sticker, 2019). Viewed in this way, the adherence to a principle of benevolence entails evaluation of the interests of others as well as one's own interests to determine what one ought to do in order to act morally. If we also take into consideration that moral situations are prevalent in everyday life, the moral system of a unifying self is likely to be extensive and applicable in a great part of the lives of individuals (for a neo-Aristotelian SDT perspective on the extensive moral system of a unifying self, see Arvanitis & Stichter, 2022). Therefore we would expect the moral system to co-regulate even actions that are consistent with intrinsic tendencies. For example, an impulsive empathic prosocial response toward a person in need will be processed by a broader moral system that will ratify this action as consistent with self-endorsed "ought" principles. At this juncture, personal and moral autonomy can be seen as two sides of the same coin. Eventually, it can be argued that the more integrated the individual, the less personal autonomy would be distinct from moral autonomy.

## Philosophical Conceptions of Autonomy in SDT: Looking at the Future

SDT's conception of autonomy fits well with comprehensive accounts of autonomy that focus on self-authorship and positive freedom. The arguments put forward by Waldron (2005) and Taylor (2005) set the stage for a less stringent philosophical study of autonomy as a fundamentally self-determining concept, while maintaining the distinction between moral and personal autonomy. SDT can shed light on particular debates, such as the nature and scope of moral motivation (Curren & Ryan, 2020). More important, it is well-equipped to describe, explain, and empirically test the interrelation between moral self-legislation and self-authorship. A holistic understanding of the self appears to be a promising starting point for a more thorough exploration of this link, whose nature and significance are still to be investigated.

Such a conception of the autonomous self, its motivations, and the interplay between morality and free action points in another important direction. Questions of moral responsibility are closely related to the puzzle of autonomy and free will. Starting from earlier discussions in a similar context, where causality is linked to the notion of responsibility (Heider, 1944, 1958), SDT can offer a new viewpoint from which to reflect on the possibility of a holistic theory of the responsible self on the basis of a PLOC conception of autonomy. Our discussion so far suggests that the more integrated the individual, the more their actions are expected to be morally good. This assertion is supported by Donald et al. (2021), who showed that prosocial outcomes are linked to autonomous regulation, and antisocial actions more linked with controlled motives. However, whether or not a behavior (what *is* done) is self-determined is only one pillar of the attribution of

responsibility; the other main pillar is social values, or what *ought to* be done (Hamilton, 1978). We have not concentrated on the question of what autonomous behavior *ought to* be, but merely on the question of what it *is*. An inescapable "ought" question is whether a person has a moral responsibility to produce self-determined acts. The answer to such a normative question necessarily takes some aspects of human nature as a starting point (Schwartz, 1987), in the sense that one cannot assert that individuals ought to do things that are impossible for them to perform. Therefore, the nature of moral integration partly determines the answer to questions of moral responsibility. The extent to which individuals are in charge of this integration process (which is also subject to environmental conditions) is strongly linked to the extent of their responsibility for their actions. For instance, the finding that individuals can proactively create conditions of autonomous actions (Legault et al. 2017), raises the question of whether they have the responsibility to do so.

With regard to the question of moral responsibility, what SDT primarily offers is a conception of human nature that addresses how individuals can be self-determined in their actions. In doing so, it explicitly rejects hard deterministic approaches that leave no room for moral responsibility. (For a seminal analysis of the puzzle of determinism and moral responsibility, see Strawson, 1986.) It also rejects indeterminist views that dominate current policy in sensitive areas by explaining the conditions under which an act can be determined by both the self and causes outside the self. These explanations would be especially useful in an attempt to rethink the link between autonomy and criminal law/punishment. (For a recent discussion of determinism and retributivism, see Caruso, 2020.) At the same time, SDT leaves ample space for work concerning what this account of human nature can tell us about moral responsibility. Future research can build on the idea of the unified self in order to explain autonomous human behavior in terms that take into account the crucial impact of the environment and yet leave enough room for the ideal of the autonomous person, which lies at the core of contemporary liberal democracies.

## Conclusion

Given the nature of social science, philosophical inquiry within any metatheory, including SDT's metatheory, requires both an aggressive willingness to propose a guide for social inquiry and a humble willingness to accept that one might be wrong in some aspects. (For this argument, see Fay, 1985.) SDT puts forward strong suppositions about the nature of the human being as an active organism that grows and incorporates aspects of experience. The self is treated both as a process that integrates these aspects of experience and as the structure into which they are integrated. The SDT approach is distinct from psychoanalytic, constructivist, behaviorist, and cognitivist metatheoretical approaches to human behavior in that it accepts that an active self can determine behavior. Self-determination in this case is strongly associated with a specific view of autonomy that is linked to an internal perceived locus of causality.

While putting forward these strong assertions, SDT is humble enough to explore how it is consistent with philosophical approaches within the phenomenological, the existentialist, the feminist, and the analytical traditions (Ryan, 1993; Ryan & Deci, 2006, 2017). Most important, it holds that all derivations from its metatheoretical view be put to the test of empirical research. Although SDT researchers cannot directly observe the existence of autonomy, they can measure the effects of the proposed construct. Autonomy is not treated as an invariant property of the individual but rather as something that can be exercised and its effects measured. In this way, SDT can be disproven. So far, SDT researchers have produced ample empirical support for the value of personal autonomy in ways that are consistent with philosophical views of self-authorship.

There are aspects of autonomy that have been less the subject of SDT research—notably moral autonomy. The study of the self, as viewed through the lens of SDT, can be applied equally to the study of personal and moral autonomy, since the self can integrate moral principles in addition to other aspects of experience. Consequently, SDT can offer guidance on the relationship between moral and personal autonomy, but also on questions relating to moral responsibility. The more SDT's conception of autonomy is explored and developed through philosophical scrutiny, the more its method and, importantly, empirical data can be brought into the relevant philosophical debates.[1]

## References

Allport, G. W. (1937). *Personality: A psychological interpretation*. Holt.

Allport, G. W. (1961). *Pattern and growth in personality*. Holt, Reinhart & Winston.

Arvanitis, A. (2017). Autonomy and morality: A self-determination theory discussion of ethics. *New Ideas in Psychology*, *47*, 57–61. https://doi.org/10.1016/j.newideapsych.2017.06.001

Arvanitis, A., & Kalliris, K. (2017). A self-determination theory account of self-authorship: Implications for law and public policy. *Philosophical Psychology*, *30*, 763–783. doi:10.1080/09515089.2017.1307333

Arvanitis, A., & Kalliris, K. (2020). Consistency and moral integrity: A self-determination theory perspective. *Journal of Moral Education*, *49*, 316–329. https://doi.org/10.1080/03057240.2019.1695589

Arvanitis A., Kalliris, K., & Kaminiotis, K. (2020). Are defaults supportive of autonomy? An examination of nudges under the lens of self-determination theory. *Social Science Journal*. Advance online publication. https://doi.org/10.1016/j.soscij.2019.08.003

Arvanitis, A., & Stichter, M. (2022). Why being morally virtuous enhances well-being: A self-determination theory approach. *Journal of Moral Education*. Advance online publication. https://doi.org/10.1080/03057240.2022.2066640

Baier, A. (1985). *Postures of the mind: Essays on mind and morals*. University of Minnesota Press.

Berlin, I. (2002). Two concepts of liberty. In H. Hardy (Ed.) *Liberty* (pp. 166–217). Oxford University Press. https://doi.org/10.1093/019924989X.001.0001 (Original work published 1958).

Blasi, A. (1988). Identity and the development of the self. In D. K. Lapsley & F. C. Power (Eds.), *Self, ego, and identity* (pp. 226–242). Springer. https://doi.org/10.1007/978-1-4615-7834-5_11

Bloom, P. (2017a). *Against empathy: The case for rational compassion*. Random House.

Bloom, P. (2017b). Empathy and its discontents. *Trends in Cognitive Sciences*, *21*(1), 24–31. https://doi.org/10.1016/j.tics.2016.11.004

Brenner, C. (1955). *An elementary textbook of psychoanalysis*. International Universities Press.

---

Caruso, G. (2020). Justice without retribution: An epistemic argument against retributive criminal punishment. *Neuroethics, 13*(1), 13–28. https://doi.org/10.1007/s12152-018-9357-8

Christman, J. (2004). Relational autonomy, liberal individualism and the social constitution of selves. *Philosophical Studies*, *117*(1–2), 143–164. http://www.jstor.org/stable/4321441

Curren, R., & Ryan, R. M. (2020). Moral self-determination: The nature, existence, and formation of moral motivation. *Journal of Moral Education*, *49*, 295–315. https://doi.org/10.1080/03057240.2020.1793744

DeCharms, R. (1968). *Personal causation: The internal affective determinants of behavior*. Academic Press.

Deci, E. L. (1975). *Intrinsic motivation*. Plenum Press. https://doi.org/10.1007/978-1-4613-4446-9

Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the benefits of giving as well as receiving autonomy support: Mutuality in close friendships. *Personality and Social Psychology Bulletin*, *32*, 313–327. https://doi.org/10.1177/0146167205282148

Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior*, *4*, 19–43. https://doi.org/10.1146/annurev-orgpsych-032516-113108

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.

Deci, E. L., & Ryan, R. M. (1995) Human autonomy. In M. H. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 31–49). The Springer Series in Social Clinical Psychology. Springer. https://doi.org/10.1007/978-1-4899-1280-0_3

DeHaan, C. R., Hirai, T., & Ryan, R. M. (2016). Nussbaum's capabilities and self-determination theory's basic psychological needs: Relating some fundamentals of human wellness. *Journal of Happiness Studies*, *17*(5), 2037–2049. https://doi.org/10.1007/s10902-015-9684-y

Dennett, D. (1984). *Elbow room*. MIT Press.

Donald, J. N., Bradshaw, E. L., Conigrave, J. H., Parker, P. D., Byatt, L. L., Noetel, M., & Ryan, R. M. (2021). *Paths to the light and dark sides of human nature: A meta-analysis of the prosocial benefits of autonomy-support and the antisocial costs of control. Psychological Bulletin, 147*(9), 921–946. https://doi.org/10.1037/bul0000338

Dworkin, G. (1988). *The theory and practice of autonomy*. Cambridge University Press.

Dworkin, R. (1986). Autonomy and the demented self. *Milbank Quarterly, 64*(2), 4–16. https://doi.org/10.2307/3349959

Ekstrom, L. W. (2005). Autonomy, alienation and the self. *Midwest Studies in Philosophy*, *29*, 45–67. https://doi.org/10.1111/j.1475-4975.2005.00105.x

Fay, B. (1985). Theory and metatheory in social science—Or, why the philosophy of science is so hard. *Metaphilosophy*, *16*(2–3), 150–165. http://www.jstor.org/stable/24436740

Feinberg, J. (1989). Autonomy. In J. Christman (Ed.), *The inner citadel: Essays on individual autonomy* (pp. 27–53). Oxford University Press.

Formosa, P., & Sticker, M. (2019). Kant and the demandingness of the virtue of beneficence. *European Journal of Philosophy*, *27*, 625–642. https://doi.org/10.1111/ejop.12455

Frankfurt, H. (1971). Freedom of the will and the concept of a person. *Journal of Philosophy*, *68*(1), 5–20. https://doi.org/10.2307/2024717

Friedman, M. (1989). Feminism and modern friendship: Dislocating the community. *Ethics*, *99*(2), 275–290. http://www.jstor.org/stable/2381435

Friedman, M. (1997). Autonomy and social relationships: Rethinking the feminist critique. In D. T. Meyers (Ed.), *Feminists rethink the self* (pp. 40–61). Westview. https://doi.org/10.1093/0195138503.003.0004

Gergen, K. J. (2009). *Relational being: Beyond self and community*. Oxford University Press.

Giorgi, A. (1997). The theory, practice, and evaluation of the phenomenological method as a qualitative research procedure. *Journal of Phenomenological Psychology*, *28*(2), 235–260. https://doi.org/10.1163/156916297X00103

Haggbloom, S. J., Warnick, R., Warnick, J. E., Jones, V. K., Yarbrough, G. L., Russell, T. M., Borecky, C. M., McGahhey, R., Powell, J. L., Beavers, J., & Monte, E. (2002). The 100 most eminent psychologists of the 20th century. *Review of General Psychology*, *6*(2), 139–152. https://doi.org/10.1037/1089-2680.6.2.139

Hamilton, V. (1978). Who is responsible? Toward a social psychology of responsibility attribution. *Social Psychology*, *41*(4), 316–328. https://doi.org/10.2307/3033584

Harter, S. (2012). *The construction of the self: Developmental and sociocultural foundations* (2nd ed.). Guilford Press.

Heider, F. (1944). Social perception and phenomenal causality. *Psychological Review*, *51*(6), 358–374. https://doi.org/10.1037/h0055425

Heider, F. (1958). *The psychology of interpersonal relations*. John Wiley & Sons. https://doi.org/10.1037/10628-000

Horgan, T. (2015). Injecting the phenomenology of agency into the free will debate. In D. Shoemaker (Ed.), *Oxford studies in agency and responsibility* (Vol. 3, pp. 34–61). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198744832.003.0003

Howard, J. L., Gagné, M., & Bureau, J. S. (2017). Testing a continuum structure of self-determined motivation: A meta-analysis. *Psychological Bulletin*, *143*(12), 1346–1377. https://doi.org/10.1037/bul0000125

James, W. (1890). *The principles of psychology*. H. Holt.

Jennings, J. L. (1986). Husserl revisited: The forgotten distinction between psychology and phenomenology. *American Psychologist*, *41*(11), 1231–1240. https://doi.org/10.1037/0003-066X.41.11.1231

Kalliris, K. (2017). Self-authorship, well-being and paternalism. *Jurisprudence, 8*(1), 23–51. https://doi.org/10.1080/20403313.2015.1116200

Kant, I. (2019). *Groundwork for the metaphysics of morals*. Oxford University Press (Original work published 1785).

Keat, R. (1972). A critical examination of B. F. Skinner's objections to mentalism. *Behaviorism*, *1*(1), 53–70. http://www.jstor.org/stable/27758792

Kluwer, E. S., Karremans, J. C., Riedijk, L., & Knee, C. R. (2020). Autonomy in relatedness: How need fulfillment interacts in close relationships. *Personality and Social Psychology Bulletin*, *46*(4), 603–616. https://doi.org/10.1177/0146167219867964

Korsgaard, C. (1996). *The sources of normativity*. Cambridge University Press.

Legault, L., Ray, K., Hudgins, A., Pelosi, M., & Shannon, W. (2017). Assisted versus asserted autonomy satisfaction: Their unique associations with wellbeing, integration of experience, and conflict negotiation. *Motivation and Emotion*, *41*(1), 1–21. https://doi.org/10.1007/s11031-016-9593-3

Little, T. D., Hawley, P. H., Heinrich, C. C., & Marsland, K. W. (2002). *Three views of the agentic self: A developmental synthesis*. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 389–404). University of Rochester Press.

Mackenzie, C. (2008). Relational autonomy, normative authority and perfectionism. *Journal of Social Philosophy, 39*(4), 512–533. https://doi.org/10.1111/j.1467-9833.2008.00440.x

Martela, F., & Ryan, R. M. (2016a). The benefits of benevolence: Basic psychological needs, beneficence, and the enhancement of well-being. *Journal of Personality*, *84*, 750–764. https://doi.org/10.1111/jopy.12215

Martela, F., & Ryan, R. M. (2016b). Prosocial behavior increases well-being and vitality even without contact with the beneficiary: Causal and behavioral evidence. *Motivation and Emotion*, *40*, 351–357. https://doi.org/10.1007/s11031-016-9552-z

Martela, F., & Ryan, R. M. (2020). Distinguishing between basic psychological needs and basic wellness enhancers: The case of beneficence as a candidate psychological need. *Motivation and Emotion*, *44*, 116–133. https://doi.org/10.1007/s11031-019-09800-x

Nahmias, E., Morris, S., Nadelhoffer, T., & Turner, J. (2004). The phenomenology of free will. *Journal of Consciousness Studies*, *11*(7–8), 162–179.

Nedelsky, J. (1989). Reconceiving autonomy: Sources, thoughts and possibilities. *Yale Journal of Law and Feminism*, *1*(1), 7–36. https://digitalcommons.law.yale.edu/yjlf/vol1/iss1/5

Ng, J. Y. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-determination theory applied to health contexts: A meta-analysis. *Perspectives on Psychological Science*, *7*(4), 325–340. https://doi.org/10.1177/1745691612447309

Nussbaum, M. (2000). Women's capabilities and social justice. *Journal of Human Development*, *1*, 219–247. https://doi.org/10.1080/713678045

Oshana, M. (1998). Personal autonomy and society. *Journal of Social Philosophy 29*(1), 81–102. https://doi.org/10.1111/j.1467-9833.1998.tb00098.x

Pfander, A. (1967). *Phenomenology of willing and motivation and other phaenomenologica* (H. Spiegelberg, Trans.). Northwestern University Press.

Raz, J. (1986). *The morality of freedom*. Clarendon.

Rawls, J. (1971). *A theory of justice*. Oxford University Press.

Ricoeur, P. (1966). *Freedom and nature: The voluntary and the involuntary*. Northwestern University Press.

Ryan, R. M. (1993). *Agency and organization: Intrinsic motivation, autonomy, and the self in psychological development*. In J. E. Jacobs (Ed.), *Current theory and research in motivation, Vol. 40: Nebraska Symposium on Motivation, 1992: Developmental perspectives on motivation* (pp. 1–56). University of Nebraska Press.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*(5), 749–761. https://doi.org/10.1037/0022-3514.57.5.749

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination and will? *Journal of Personality*, *74*, 1557–1585. https://doi.org/10.1111/j.1467-6494.2006.00420.x

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., & Martela, F. (2016). Eudaimonia as a way of living: Connecting Aristotle with self-determination theory. In J. Vittersø (Ed.), *Handbook of eudaimonic well-being* (pp. 109–122). Springer. https://doi.org/10.1007/978-3-319-42445-3_7

Ryan, R. M., & Rigby, C. S. (2015). Did the Buddha have a self? No-self, self, and mindfulness in Buddhist thought and Western psychologies. In K. W. Brown, R. M. Ryan, & J. D. Creswell (Eds.), *Handbook of mindfulness: Theory, research, and practice* (pp. 245–265). Guilford Press.

Ryan, W. S., & Ryan, R. M. (2019). Toward a social psychology of authenticity: Exploring within-person variation in autonomy, congruence, and genuineness using self-determination theory. *Review of General Psychology*, *23*(1), 99–112. https://doi.org/10.1037/gpr0000162

Schönpflug, W. (2008). Fritz Heider—My academic teacher and his academic teachers: Heider's "Seminar in Interpersonal Relations" and comments on his European background. *Social Psychology*, *39*(3), 134–140. https://doi.org/10.1027/1864-9335.39.3.134

Schwartz, B. (1987). *The battle for human nature: Science, morality and modern life*. W. W. Norton.

Scribner, P. (1972). Escape from freedom and dignity. *Ethics*, *83*(1), 13–36. http://www.jstor.org/stable/2380154

Sen, A. (2009). *The idea of justice*. Harvard University Press.

Sheldon, K. M., Osin, E. N., Gordeeva, T. O., Suchkov, D. D., & Sychev, O. A. (2017). Evaluating the dimensionality of self-determination theory's relative autonomy continuum. *Personality and Social Psychology Bulletin*, *43*(9), 1215–1238. https://doi.org/10.1177/0146167217711915

Skinner, B. F. (1971). *Beyond freedom and dignity*. Knopf/Random House.

Spiegelberg, H. (1972). *Phenomenology in psychology and psychiatry: An historical introduction*. Northwestern University Press.

Strawson, G. (1986). *Freedom and belief*. Clarendon Press.

Taylor, C. (1979). What's wrong with negative liberty. In A. Ryan (Ed.), *The Idea of Freedom: Essays in Honour of Isaiah Berlin* (pp. 175–193). Oxford University Press.

Taylor, R. S. (2005). Kantian personal autonomy. *Political Theory*, *33*(5), 602–628. https://doi.org/10.1177/0090591705278397

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, *44*, 1–31. https://doi.org/10.1007/s11031-019-09818-1

Vlachopoulos, S. P., Katartzi, E. S., Kontou, M. G., Moustaka, F. C., & Goudas, M. (2011). The revised Perceived Locus of Causality in Physical Education Scale: Psychometric evaluation among youth. *Psychology of Sport and Exercise*, *12*(6), 583–592. https://doi.org/10.1016/j.psychsport.2011.07.003

von Eckartsberg, R. (1998). Existential-phenomenological research. In R. Valle (Ed.), *Phenomenological inquiry in psychology* (pp. 21–61). Springer. https://doi.org/10.1007/978-1-4899-0125-5_2

Waldron, J. (2005). Moral autonomy and personal autonomy. In J. Christman & J. Anderson (Eds.), *Autonomy and the challenges to liberalism: New essays* (pp. 307–329). Cambridge University Press. https://doi.org/10.1017/CBO9780511610325.015

Wall, S. (1998). *Liberalism, perfectionism and restraint*. Cambridge University Press.

Waller, B. (1990). *Freedom without responsibility*. Temple University Press.

Watson, G. (1975). Free agency. *Journal of Philosophy, 72*(8), 205–220. https://doi.org/10.2307/2024703

Wegner, D. M. (2002). *The illusion of conscious will*. MIT Press.

Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, *98*(2), 222–244. https://doi.org/10.1037/a0016984

Yu, S., Levesque-Bristol, C., & Maeda, Y. (2018). General need for autonomy and subjective well-being: A meta-analysis of studies in the US and East Asia. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, *19*(6), 1863–1882. https://doi.org/10.1007/s10902-017-9898-2

# Psychometric Approaches in Self-Determination Theory: Meaning and Measurement

Joshua L. Howard

**Abstract**

The valid measurement of psychological constructs is an essential and necessary component of research within self-determination theory (SDT). Without effective scales and psychometric practices, the meaning and knowledge contributed by any given study is severely undermined. This chapter discusses various psychometric approaches that have been applied to examine multidimensional constructs within SDT, such as basic psychological needs, motivational regulation types, and sources of autonomy support. The chapter covers both traditional and contemporary approaches including confirmatory and exploratory factor analysis as we all as higher-order and bifactor models. Several directions for further attention are discussed, notably the benefits to SDT that can be seen from publicly available data of published studies.

**Key Words:** psychometrics, Relative Autonomy Index, bifactor, exploratory structural equation modeling, self-determination

The complex and multidimensional nature of many SDT concepts raises some interesting and complex questions concerning measurement practices and the inherent meaning of the variables we study. Suitable measures and methodological procedures are essential because the validity of psychological concepts is derived directly from the quality of these instruments and psychometric procedures. Without strong measures and suitable psychometric treatment of collected data, the meaning and knowledge we gain from empirical research is severely compromised. While issues concerning the development of valid and reliable scales have been covered in depth elsewhere, the psychometric choices researchers make when using these scales is less frequently discussed. For example, what are the implications of combining the three needs into a single "need satisfaction" variable? Should we measure motivation types by subscales or use autonomous and controlled composite factors? How useful is the Relative Autonomy Index (RAI), and in what situations? Furthermore, the past decade of SDT research has seen a great deal of interest in the multidimensionality of constructs, with need frustration variables coming to prominence (Bartholomew et al., 2011), and more recent work expanding autonomy support into

competence- and relatedness-support variables, and the addition of negatively valanced equivalents (e.g., Rocchi et al., 2017; Mageau et al., 2015), as well as discussions concerning the continuum of self-determination (Sheldon et al., 2017; Howard et al., 2018). All of this indicates a desire and need to measure aspects of human motivation at different and increasingly specific levels of analysis. This chapter discusses some of these developments, specifically focusing on the methods commonly applied and the meaning these different approaches entail. The goal of this chapter is to provide food for thought on the uses and limitations of common and emerging approaches and to assist researchers in using these methods with intentionality.

I begin with a discussion of the more traditional methods of confirmatory factor analysis CFA and higher-order models as means of representing SDT constructs before discussing the common issue of multicollinearity and how it can be dealt with by more advanced factor analysis techniques (i.e., exploratory structural equation modeling [ESEM]) or relative weight procedures. The RAI (Grolnick & Ryan, 1989) also warrants discussion as a means of representing motivation through an aggregate of motivation types before discussing more recent developments in bifactor approaches to measurement. Finally, a collection of interesting areas of development are outlined, such as profile analysis, item response theory, and the implications of data availability and transparency for the purposes of secondary data analysis (e.g., meta-analysis).

## SDT Subscales: CFA, Higher-Order, ESEM, and Relative Weight Analysis

Measuring variables though use of subscales is relatively common across SDT research due to the high degree of specificity it permits. In contemporary research, the subscale approach involves creating latent factors representing each SDT variable through the application of structural equational modeling procedures such as CFA. While simple averages of subscale items have been used in the past, CFA has become the predominant methodology for calculating subscale scores as it has the advantages of controlling for measurement error and producing standardized fit statistics and parameter estimates that can be compared between alternate models and alternate studies. The subscale approach to measurement is arguably the truest conceptualization of SDT variables (whether motivation types or basic needs) as this approach captures the most construct-relevant information (Howard, Gagné et al., 2020) and is the primary method used to design these scales in validation papers (e.g., Bartholomew et al., 2011; Gagné et al., 2015).

This approach is uniquely well suited to research questions examining, for example, individual types of motivation with the SDT framework. While it is commonly accepted that more autonomous types of motivation will produce more desirable results (for meta-analytic evidence, see Howard et al., 2021; Ntoumanis et al., 2020; Van den Broeck et al., 2021; Vasconcellos et al., 2020), if each type of regulation is definably different and not superfluous, then each should be able to predict at least some outcomes uniquely. That is, identified regulation should be a stronger predictor of some outcomes than intrinsic

motivation due to the unique characteristics inherent in identified regulation (i.e., perceived meaningfulness of the behavior) within particular situations. Likewise, introjected and external regulations should be uniquely well suited to predicting other outcomes. Existing research supports this notion, though these unique regulation-specific effects are less common and at times difficult to detect. For example, Losier and Koestner (1999) and Burton and colleagues (2006) demonstrate unique effects of identified regulation on voting behavior and student academic performance, respectively. Similar effects have been demonstrated meta-analytically by Howard and colleagues (2021), who found that student persistence is uniquely dependent upon identified regulation more than intrinsic motivation. Likewise in the workplace context, Van den Broeck and colleagues (2021) found identified regulation to be at least as important as intrinsic motivation in predicting employee performance (broadly defined). A meta-analysis by Cerasoli, Nicklin, and Ford (2014) showed the potentially unique effects of external incentives (a proxy measure of external regulation) particularly for performance of noninteresting tasks. Additionally, external regulation is a unique predictor of continuance commitment, whereas introjected regulation may be particularly relevant in predicting normative commitment and organization citizenship behaviors (Van den Broeck et al., 2021). These effects, while surprisingly rare, are central to the multidimensional nature of motivation within SDT and warrant the use of measurement approaches such as CFA.

While CFA operationalizations of motivation are in many ways ideal in that they capture all possible construct-relevant data, the key drawback comes in the form of multicollinearity. This occurs when an analysis contains highly correlated predictor variables, so that it becomes difficult to determine which of the correlated predictors is influencing the outcome, and regression coefficients become increasingly unreliable and uninterpretable as the correlation between predictors increases. Analyses in SDT using multiple types of motivation, which themselves are predictably and at times highly correlated, experience this phenomenon on a regular basis and can result in nonsignificant and/or unusual regression coefficients (e.g., suppression effects and Hayward cases). Given the correlation between basic psychological needs are typically around .60 (Van den Broeck et al., 2016), multicollinearity will be present when needs are simultaneously used to predict outcomes as well. The risk of uninterpretable results due to multicollinearity and the added complexity of using a complex multidimensional representation of SDT constructs is a notable barrier to using this approach to measurement in SDT and helps explain why more simple methods are often chosen.

Two notable solutions to multicollinearity should be considered and will likely see more widespread application in coming years, specifically ESEM (Asparouhov & Muthén, 2009; Marsh et al., 2014) and relative weight analysis (Johnson & LeBreton, 2004; Tonidandel & LeBreton, 2011, 2015). ESEM is an alternate to CFA procedures that combines the benefits of CFA and exploratory factor analysis into a single procedure. Specifically, by allowing cross-loadings to be estimated, ESEM allows all construct-relevant

information to be freely modeled in the appropriate factor and in doing so reduces inter-factor correlations (i.e., correlations between regulation types or between basic needs). This more elaborate measurement model greatly reduces the influence of multicollinearity and thereby improves the reliability and precision of subsequent regression analyses. Several notable pieces of research in SDT have applied this approach in recent years (see Guay et al., 2015).

A second approach is the use of relative weight analysis or dominance analysis (Johnson & LeBreton, 2004; Tonidandel & LeBreton, 2011). When used as a supple-mentary to regression analysis, this approach can provide nuanced information regarding which of the correlated predictors are uniquely influencing a given outcome variable. This approach has seen use in several recent meta-analyses (see Howard et al., 2021; Van den Broeck et al., 2016, 2021) to highlight the unique effects of basic psychological needs and motivation types across a wide range of outcomes, leading to some notable results. However, this approach can equally be applied to primary data. Tonidandel and LeBreton (2015) provide a simple web-based interface through which R syntax for relative weight analysis can be generated.

Taken together, due to the specific and transparent nature of using subscales, this approach will continue to be highly important in the increasingly specific realm of psy-chological science. Once addressing multicollinearity, subscale approaches stand to con-tribute a great deal to our knowledge of human motivation and as such will be around for many years to come.

Higher-order models represent an extension of the CFA subscale approaches and are commonly used in SDT research. Higher-order models reduce a set of subscales to a smaller number of common factors. When measuring need satisfaction, this often results in the three needs being combined to form a general need satisfaction higher-order factor. When measuring regulation types, this approach typically results in two factors describ-ing autonomous and controlled motivation. Autonomous motivation is a combination of intrinsic, identified, and, when measured, integrated regulation, whereas controlled motivation encompasses introjected and external regulations. Amotivation is most often considered a third factor when measured, as a lack of motivation is considered theoreti-cally distinct from controlled regulation.

While this higher-order approach to measurement has been relatively popular across SDT, criticisms have been made concerning their suitability (Howard, Gagné et al., 2020). Most relevant to this chapter, higher-order models play a less theoretically well-defined role in the SDT research landscape. For example, with respect to regulation types, while the RAI explicitly attempts to measure the degree of self-determination (detailed below), and subscale approaches specify each individual type of motivation, higher-order models tread the middle ground and as such do not capture either theoretical position clearly. These models do not recognize the unique aspects of subscales, while also dividing the autonomy continuum into two (somewhat arbitrary) factors. As such, the theoretical

support for this approach to measurement is unclear, and accordingly, the relevant information derived from use of these models is less informative than it may first seem. This approach is more useful when aggregating basic needs into a single factor, though it must be noted that unique characteristics of each need will be excluded from this factor as it captures only what is common between subscales. While these models are methodologically simple enough to calculate and convenient to use, the potentially ambiguous theoretical meaning of higher-order factors warrants caution when considering this approach to measurement.

These methods intersect across SDT in several interesting ways, as exemplified in goal contents theory (Bradshaw, this volume; Kasser & Ryan, 1996). Research in this area of SDT typically focuses on two broad categories of intrinsic and extrinsic goals, while acknowledging that these categories comprise several subscales representing more specific goals. (See Martela, Bradshaw, & Ryan, 2019 for a recent update.) This raises an interesting question of whether each individual goal type relates to outcomes differently, or alternatively, whether all intrinsic goals are functionally the same. A recent study examined this proposition and found that while goals classified as intrinsic tended to relate to positive well-being, and extrinsic goals to negative well-being, differences were also noted between specific goal types (Martela et al., 2019). This has been further emphasized by a subsequent study that utilized bifactor measurement models and profile analysis (Bradshaw et al., 2020; more on these methods below). These differences were most obvious for less central goals, such as spirituality and hedonism, that were not as clearly definable within the intrinsic/extrinsic dichotomization. Such results highlight the difficulties of higher-order categories and the possibility of individual characteristics associated with each type of goal. This suggests several potentially interesting directions for research examining these factors, the implications of grouping them together under intrinsic and extrinsic categories, as well as the implications of intrinsic and extrinsic goals co-occurring. These issues will be particularly important as research continues to extend the scope of captured goals.

## Motivation Types and the Relative Autonomy Index

The RAI (Grolnick & Ryan, 1989; Ryan & Connell, 1989) seeks to examine the degree to which a person's motives are self-determined or autonomous by producing a single composite score. This method requires data to be collected on each regulation type before combining subscales to form the single index score. The weighting system is determined by the position on the SDT continuum such that autonomous forms of motivation are positively weighted, whereas controlling types of motivation receive increasingly negative weights. The logic involved in this method posits that individuals who have more autonomous than controlled motivation will experience more optimal functioning than those who are driven by more controlled compared to autonomous motivation. Sheldon

and colleagues (2017) advocate strongly for the use of the RAI. A general formula for calculating the RAI is as follows:

$$RAI = (-2* External) + (-1* Introjected) + (1* Identified) + (2* Intrinsic)$$

The exact procedures for calculating the RAI, including weighting procedures, which motivation subscales are included, and how subscale scores are calculated from raw data, all vary as there is no empirically demonstrated best course of action (see Howard, Gagné et al., 2020 for further details). While these factors undoubtedly reduce the reliability of the RAI approach (Edwards, 2001; Johns, 1981), research by Sheldon and colleagues (2017) indicates that issues such as the specific weighting scheme used were largely irrelevant, and that no weights at all were necessary in order to calculate a functional RAI.

While the RAI has seen widespread use since its inception in the late 1980s (Grolnick & Ryan, 1989), it must be noted that this procedure comes with several rather large limitations that may hinder its applicability in the increasingly complex and rigorous future of SDT research. The first and most notable issue concerns the meaning of the RAI, which captures only the continuum of self-determination and does not account for regulation subscales. That is, while it is derived from the subscale scores as depicted by the above formula, it is not able to examine the direct influence any one motivation type has on a given outcome. For example, if identified regulation were particularly relevant to predicting voting behavior (see Losier & Koestner, 1999), this effect would be lost when calculating the RAI as identified regulation is no longer examinable. Therefore, it cannot answer questions relating to the multidimensional aspect of SDT's view on motivation. In this respect, the RAI is consistent with the theoretical position that motivation varies along a continuum of self-determination, but it does not align with the theoretical position that motivation types are separable and contribute unique motivational elements. While not a definitive condemnation of this approach, this limitation must be considered when planning and assessing research.

Given the demonstrable uses of the RAI and its noted limitations, it must be considered carefully whether this approach is suitable for a given piece of research. The inconsistent research practices used in calculating the RAI and the unreliability inherent in the difference score approach raises questions of whether the RAI meets the reliability requirements expected from contemporary psychometric practices within a developed area of research. However, it is also true that while methodologically inconsistent, the RAI does indeed capture the spirit of what it attempts to measure, that is, an estimate of whether an individual is primarily driven by autonomous or controlling forms of motivation. Given this conclusion and the state of psychological research that is likely to become more and more complex and rigorous, it may be the case that the RAI will need to adopt a standardized and methodologically rigorous procedure or risk being phased out from many areas of psychological research.

Note. CFA = Confirmatory factor analyses; ESEM = Exploratory Structural Equation Modeling; X1–X9 = Items; u1–u3 = uniquenesses associated with factors. G = Global factor in a bifactor model; full unidirectional arrows represent main factor loadings; dotted unidirectional arrows represent cross-loadings.
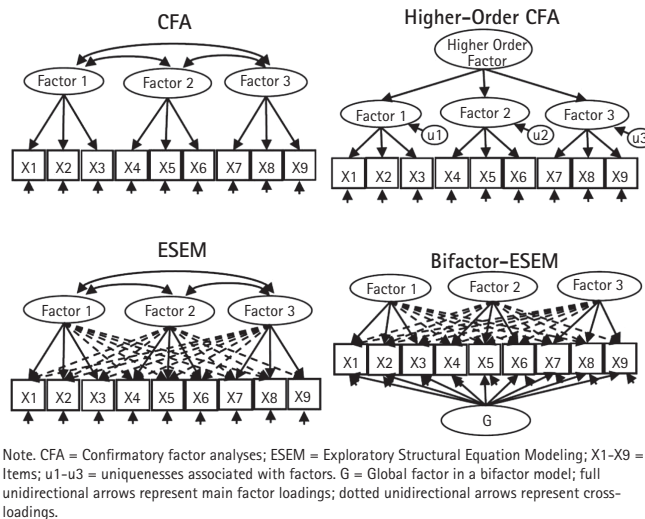
**Figure 22.1** Graphical representation of psychometric models

*Note*: CFA = confirmatory factor analyses; ESEM = exploratory structural equation modeling; X1–X9 = items; u1–u3 = uniquenesses associated with factors; G = global factor in a bifactor model. Solid unidirectional arrows represent main factor loadings; dotted unidirectional arrows represent cross-loadings.

## Bifactor Models in SDT

A more recent approach to measurement in SDT has been the application of bifactor models (Gunnell & Gaudreau, 2015), and specially bifactor-ESEM (Howard et al., 2018; Litalien et al., 2017; see Figure 22.1 for diagrammatic representations of each model). Bifactor models attempt to measure an underlying general factor (G-factor) and unique subscales factors (S-factors) simultaneously alongside one another. When applied to motivation regulations, for example, it becomes possible to determine if it is the degree of self-determination (similar to the RAI) that is responsible for predicting an outcome, or the regulation-specific characteristics (e.g., meaningfulness of voting in Losier & Koestner, 1999). The same logic has been applied to measures of psychological need satisfaction, with several studies finding these models not only fitting well but also predicting outcomes in a meaningful manner (e.g., Chong et al., 2020; Gillet et al., 2019; Sánchez-Oliva et al., 2017; Tóth-Király et al., 2018). These models have proven very interesting and may help explain the multidimensionality of motivation, need satisfaction, need support, and goal orientations in a nuanced manner.

However, a notable criticism remains to be answered, specifically, what precisely each factor means once variance is divided in this manner. For example, while it is now possible to model identified regulation as a unique factor after removing the continuum of self-determination (see Howard et al., 2018; Litalien et al., 2017), it remains unclear what exactly this identified regulation factor now represents. It may be argued that it contains information relating specifically to meaningfulness of a behavior, but not any information concerning overall self-determination. However, this conceptualization may not align

with real-world experience as it is difficult to imagine pursuing a behavior because of perceived meaningfulness without also feeling self-determined in this endeavor. This practice of removing variance presumed to represent self-determination from perceived value or personal importance may not be feasible as a way to capture variables of phenomenological or functional relevance. Therefore, while this approach and the resulting factors may make sense from a methodological perspective, the real-world meaning of such a procedure is less clear and remains to be resolved, indicating a need for further construct validity of the component variables derived from bifactor models.

A second point worth raising concerns the theoretical support for a general factor within SDT constructs. The examination of regulation types is particularly interesting because a continuum of self-determination has been theorized to exist from the foundations of SDT and is represented in the above-mentioned measurement procedures (e.g., RAI; Connell & Ryan, 1989). In this instance, the use of bifactor models to separate the continuum of self-determination from the unique characteristics of each regulation type is a pertinent theoretical question. Application of bifactor models to need satisfaction, for example, is potentially less theoretically supported. While it is commonly acknowledged that the three needs of autonomy, competence, and relatedness will be relatively highly correlated in most survey-based research, SDT does not argue for an underlying continuum of need satisfaction or any predictable ordering between the needs. As such, when applying bifactor models to the psychological needs, the meaning of the extracted factors is less theoretically clear. For example, what is competence satisfaction once general need satisfaction is partitioned out? Pointing out that this factor would represent competence without common need satisfaction variance is a true description of the model from a methodological perspective, but it does not identify specifically what this "competence" factor means, for either theory or practice. In instances such as this, it may be advisable to draw a distinction between bifactor modeling as a test of a theoretical structure as opposed to an atheoretical or methodological test of discriminant validity.

While much of the bifactor modeling within SDT has aimed to test theoretical structures, bifactor modeling can also be used as an atheoretical and methodological tool to examine multidimensionality. For example, a bifactor model applied to a need satisfaction scale would yield three S-factors, one for each of the three needs, as well as a general factor representing the shared variance. This can then be used to determinate how much unique information each of the subscales contributes. In this example it would be expected that each subscale (S-factor) retains relatively strong factor loadings and remains able to predict outcomes to some extent, indicating that these factors capture unique construct-relevant information. If, however, the need satisfaction factors were not able to explain variance in any outcomes beyond the general factor, this would indicate that the subscales are not adequately capturing unique information. When used as an atheoretical psychometric tool, bifactor models can be a powerful method of testing discriminate validity and multidimensionality and useful, for example, in scale development procedures.

To provide an example, it may be useful to further examine the satisfaction and frustration of basic psychological needs (Bartholomew et al., 2011). With growing interest in the frustration of basic psychological needs, it may be interesting to further test whether these factors are truly distinct from need satisfaction scales through bifactor modeling (e.g., Tóth-Király et al., 2018). Specifically, when examining need frustration, the implicit question is whether need satisfaction/frustration is a bipolar or unipolar construct (Tay & Jebb, 2018), that is, whether it is a single construct that ranges from –1 (frustration) to +1 (satisfaction; one bipolar construct), or whether these are separate psychological constructs that each range from 0 (absence of satisfaction or frustration) to +1 (presence of satisfaction or frustration, i.e., two unipolar constructs). Such a question requires theoretical examination as well as appropriate methodological assessment. Current literature with theoretical backing suggests these factors are separate unipolar constructs, and therefore separate variables of need satisfaction and need frustration exist simultaneously.

From a methodological point of view, it could be argued that more robust and appropriate tests could be conducted to further validate this position (Kam, Meyer, & Sun, 2021). Validation procedures for these need frustration scales (and most psychological constructs) typically examine correlations and fit indices between CFA-derived factors. However, CFA procedures tend to favor models with multiple unipolar constructs (ranging from 0 to +1) over bipolar constructs (i.e., ranging from –1 to +1; see Tay & Jebb, 2018 for a detailed discussion of continua in research) and as such are not a definitive test (Kam et al., 2021). Bifactor modeling can be used to test this multidimensionality in a more rigorous manner by specifying a model with, for example, competence satisfaction, competence frustration, and a general factor. In this examination, the general factor will extract all variance that is common to the competence-related variables, leaving behind only the information uniquely captured by each satisfaction/frustration subscale. If these satisfaction/frustration subscales are identifiable in such a model and can predict outcomes uniquely above the general competence factor, then we can be confident that these scales are capturing unique and construct-relevant information. If not, that would provide evidence that competence satisfaction and frustration are two ends of a single competence variable, and therefore need not be measured by two separate scales.

In examples such as this, bifactor models can be used as a means of capturing common variance in order to simultaneously isolate unique construct-relevant variance, and thereby examine methodological issues of multidimensionality and scale construction. Given the wealth of multidimensional scales within SDT, and the psychology literature more broadly, it may be the case that bifactor models are most widely applicable to validity questions such as this, though noting that these models will also remain relevant to testing theory in some circumstances as well. Accordingly, when using bifactor models, it is imperative to be transparent about whether the study is explicitly testing a theoretical structure or using the partitioning of variance to test methodological questions of multidimensionality.

Lastly on bifactor models, several recent variations may be particularly useful in SDT. Specifically, the use of anchor items (Zhang et al., 2020) and S-1 models (Burns et al., 2019) may have implications for testing of theoretical models, such as SDT's conceptualization of motivation. Most notably, the use of anchor items may prove important in validating the meaning of each factor within bifactor models. For example, it is common for the meaning of the general factor (G-factor) to change depending on the items included in the analysis. From a broad perspective, the G-factor simply represents variance common to all included items. As such, the G-factor derived from a scale measuring engagement will be different from the G-factor derived from regulation subscales. It is less clear, however, whether the nature of this factor changes when amotivation is added or removed from a bifactor model of regulation scales. While initial evidence suggests it does not change (Howard, Morin, & Gagné, 2020), this matter could be examined more directly through use of an anchor item. In this case, if an item were measured that captured self-determination, the factor loading of this item on the G-factor could be constrained to 1, ensuring that the G-factor is clearly defined by that single item while continuing to simultaneously capture variance common among remaining items. Similar procedures should likewise be applied to investigate the validity and meaning of S-factors. More imaginative use of these procedure will be essential in fully validating the existing bifactor models (Gillet et al., 2019; Howard et al., 2018; Litalien et al., 2017; Tóth-Király et al., 2018).

## Methodological Directions for Future Research

### Profile Analyses

Recent years have seen the rise of person-centered analyses in SDT, of which cluster analysis and, more recently, latent profile analysis are examples (Morin & Marsh, 2015). Whereas most SDT research to date adopts a variable-centered approach in which individual variables are linked together and their correlations and regression coefficients examined, in person-centered analyses the unit of analysis shifts from the variables to the individual person as a more complete whole. In other words, in these analyses it is assumed that individuals are entities characterized by many co-occurring variables. These analyses therefore seek to describe the organized whole of the individual through simultaneous examination of these variables. Several excellent examples can be seen in recent years across several domains of SDT research, including education (Vansteenkiste et al., 2009), physical education (Wang et al., 2016), and workplaces (Howard, Morin, & Gagné, 2020; Fernet et al., 2020), to name but a few specifically examining combinations of motivation types.

This approach has several key advantages that enable it to test new research questions or those that would be prohibitively difficult with variable-centered approaches. For example, profile analyses can identify subpopulations within a sample and estimate the proportion of a sample belonging to each group. We would not, for example, expect all individuals to possess the same motivation profile. Instead, it might be the case that some employees have high

intrinsic motivation and low external regulation, whereas another subpopulation has high levels of both intrinsic motivation and external regulation. These two groups are likely to perform differently and experience different levels of well-being, and therefore it is meaningful to distinguish between these groups. Profile analyses also indicate the prevalence of these subgroups, which can be vital in assessing a situation. In this way, identification of subgroups can be pertinent to diagnosing ideal and nonideal subpopulations and can be used to inform and direct interventions. Profile analyses are especially informative when considering a taxonomy of different though clearly related constructs, such as regulation types or goal orientations (Bradshaw et al., 2020). In these instances, it is assumed that individuals have each of these goals or regulation types to some degree, so examining them as isolated variables introduces obvious constraints. A profile approach allows the coexistence of goals or regulations to be modeled and the cumulative and interactive effects to be noticed.

Profile analysis has perhaps the greatest potential in practical application. For example, once enough research has been conducted to form reliable normative profiles of, for example, workplace motivation or goal orientations, these normative profiles can then be used as references points upon which individuals can be compared. Consultants can then, for example, measure the motivation of an employee and compare their individual motivation profile against the normalized profiles. After making this comparison, the consultant can seek to make the necessarily changes to the workplace to ensure the employee is experiencing more autonomous than controlled types of motivation.

While person-centered analyses have been around for some years in the form of cluster analysis, the recent developments in latent profile analysis have opened many doors and prompted many research questions for SDT. The basic latent profile analysis is in most ways a more rigorous version of cluster analysis, with several advantages; however, the ability to examine latent profiles over time through latent transition analysis and growth mixture modeling represents significant developments in this area. These analyses allow us to track when and why individuals change between profiles, as well as track the trajectory of outcomes for each profile over time.

Several areas of SDT may benefit from further use of profile analyses. For example, motivation types have been the primary focus of profile analysis to date, though practical implementation of these could be expanded. Profiles of need satisfaction/frustration have begun to be explored, as have the coexistence of autonomy support and structure of teachers in classrooms (Vansteenkiste et al., 2012), though further clarification will be required in this area as new variables are added and these are examined across domains. Likewise, profiles of goal orientations (see Bradshaw et al., 2020) appear highly relevant and offer a clear application for further profile analyses.

### Item Response Theory

As measurement becomes increasingly complex and specific, SDT may benefit from examining alternative approaches to scale creation and validation. Item response theory

(IRT; Lord, 1952; Harvey & Hammer, 1999) has a long history in education and psychology research, though it has seen surprisingly few applications in SDT. (See Freund & Lohbeck, 2020 for a recent exception.) To date none of the validated and commonly used SDT measures has undergone IRT examination in a publicly available forum. This alternative to classical test theory (under which Confirmatory Factor Analysis, Exploratory Factor Analysis, bifactor models, and the like are subsumed) examines the functioning of each particular item. In doing so this approach allows examination of aspects such as the response patterns for each item (e.g., normal or skewed distribution of responses), whether subpopulations are answering each question in a consistent manner or whether certain individuals are poorly measured, and the degree to which items are measuring the same information to ensure both high and low ends of a continuum are being captured effectively (Harvey & Hammer, 1999).

This approach to item assessment and scale creation has been used more widely in aptitude testing (i.e., examinations) but remains a fringe methodology within many areas of social psychological research, including SDT. This is likely due to the fact that aptitude tests contain questions with correct and incorrect answers (i.e., binary responses containing a desired answer), as opposed to most psychological measures that attempt to assess the degree to which a given psychological variable is present. However, it must be noted that contemporary IRT analyses are equally useful in refining these more complex psychological measures (See Lang & Tay, 2020 for an excellent discussion and R syntax examples). For example, items should be designed to maximize discrimination, that is, the degree to which high and low scorers are differentiated. An item that encourages all participants to return a midpoint score (e.g., 3 on a five-point scale) will be less effective than an item that returns more differentiated scores (e.g., responses of 1 and 5). Examining the discrimination curves of items is only one example of how IRT may be valuable in designing and refining more precise SDT questionnaire measures.

## Data Transparency for Secondary Analysis

This section outlines the importance of transparent and robust reporting of results and data for use in secondary analyses. While theoretical justification should be the primary determinant of which psychometric approach to measurement is taken in a given study, data and results should be reported at the most specific level possible in order to ensure availability and transparency of findings. I argue this is increasingly important given recent trends toward large-scale and potentially open science meta-analysis, and it indicates the benefits SDT as a theory and a community may gain from such developments.

The idea of open science has become increasingly prominent over recent years, to the point where raw data is now required to be made publicly available upon acceptance into many journals. This movement toward open science may have originally been driven by concerns of nonreproducible findings and novelty being valued over less attractive but no less valid research (Nosek, Spies, & Motyl, 2012), but it also stands to proactively

revolutionize the manner in which academic research is conducted and to facilitate the acceleration of knowledge accumulation within SDT and related fields. Specifically, by making descriptive statistics readily available in manuscripts or associated supplementary material, and primary data publicly available online, it will become increasingly feasible to maintain a perpetual, open-access database containing all data collected on SDT-related variables and covariates. This centralized repository of empirical data relating to SDT would not only provide an invaluable resource for summarizing what we as a field currently know in an easily accessible manner but could also be used to conduct extremely large-scale meta-analyses. The scale of these meta-analyses would permit testing of various effects that would be difficult or impossible to notice in any given primary study. The metaBus project (Bosco et al., 2015) is an excellent prototype of this idea originating in the management disciple of research, and others have proposed avenues though which adaptations, refinements, and expansions can be made upon this (see Banks et al., 2018; Howard, 2021). Such an approach to cataloguing and synthesizing the complete wealth of empirical data may prove to be influential in the future of SDT.

In order to facilitate this, and relating to measurement within SDT, it is imperative for us as a field to report data and results robustly and transparently. For example, reporting correlations between all variables in a study is an excellent start and should be included in all manuscripts (or associated supplementary materials). Additionally, reporting information relating to specific subscales will be important to ensure each data set can contribute its full potential. For example, a study applying the RAI (or equivalent) may report a correlation matrix consisting of the RAI and covariates in the main manuscript; however, this will prevent future meta-analysts from examining this data at the individual subscale level. Alternatively, reporting a correlation matrix that includes each of the motivation subscales, alongside covariates, provides the maximum amount of information. A meta-analyst can aggregate this data into simpler operationalizations if required (i.e., calculate the RAI from reported subscale data), but they are not able to derive more complex subscale information from simplified measures (cannot calculate subscale data from a reported RAI). Accordingly, it is strongly recommended that information relating to individual subscales be reported whenever possible.

Likewise, the availability of raw data (cleaned and labeled) will enable even more robust meta-analyses as alternative measurement models can be estimated by advancing procedures, once again maximizing the potential information derivable from a given data set. While ambitious, this fine-grained approach to cataloguing and synthesizing data and knowledge across SDT represents an important direction for the field. Researchers can facilitate this by taking steps to make data publicly available. Ideally, it may be possible for the Center for Self-Determination Theory to provide an open-access portal, similar to Open Science Framework and related services, though which all SDT-related data can be publicly housed.

Given much of our research uses survey methodologies to assess internal constructs such as need satisfaction, motivation, and perceived autonomy support, we are in a fortunate position of working in a largely standardized field of research. The notable benefit of this standardization of measures and procedures is that we share a common understanding of what each concept means and can integrate findings across studies very easily, both thematically and empirically. This ultimately places us in an ideal position to take advantage of these developing meta-analytic trends, so long as we take steps to ensure data transparency and availability.

## Conclusion

Current measurement procedures and scales have served us well and have been instrumental in developing SDT into the expansive and multilayered theory of human functioning it currently represents. However, this should not engender complacency, as the adoption of new and novel approaches to psychometric testing and validation procedures may open up new research questions and improve the validity, reliability, and applicability of SDT in academia and practical settings. These methodological changes must be met and supported by equivalent theoretical work to ensure our research continues to be academically and practically meaningful.

## References

Asparouhov, T., & Muthén, B. (2009). Exploratory structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, *16*(3), 397–438.

Banks, G. C., Foy, D., Kim, B., Korman, J., Makel, M. C., Schrodt, P., & Thapa, S. (2018, November 1). The meta machine: Using automation to catalyze leaps forward in meta-analytic reviews. https://doi.org/10.31219/osf.io/932qp

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., & Thøgersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport and Exercise Psychology*, *33*(1), 75–102.

Bosco, F. A., Steel, P., Oswald, F. L., Uggerslev, K., & Field, J. G. (2015). Cloud-based meta-analysis to bridge science and practice: Welcome to metaBUS. *Personnel Assessment and Decisions*, *1*(1), 3–17.

Bradshaw, E. L., Sahdra, B. K., Ciarrochi, J., Parker, P. D., Martos, T., & Ryan, R. M. (2020). A configural approach to aspirations: The social breadth of aspiration profiles predicts well-being over and above the intrinsic and extrinsic aspirations that comprise the profiles. *Journal of Personality and Social Psychology*, *120*(1), 226.

Burns, G. L., Geiser, C., Servera, M., Becker, S. P., & Beauchaine, T. P. (2019). Application of the bifactor S–1 model to multisource ratings of ADHD/ODD symptoms: An appropriate bifactor model for symptom ratings. *Journal of Abnormal Child Psychology*, *48*(7), 1–14.

Burton, K. D., Lydon, J. E., D'Alessandro, D. U., & Koestner, R. (2006). The differential effects of intrinsic and identified motivation on well-being and performance: Prospective, experimental, and implicit approaches to self-determination theory. *Journal of Personality and Social Psychology*, *91*(4), 750.

Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin*, *140*(4), 980.

Chong, J. X., Beenen, G., Gagné, M., & Dunlop, P. D. (2020). Satisfying newcomers' needs: The role of socialization tactics and supervisor autonomy support. *Journal of Business and Psychology*, *36*(2), 1–17.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*(5), 749.

Edwards, J. R. (2001). Ten difference score myths. *Organizational Research Methods*, 4, 265–287. doi:10.1177/109442810143005

Fernet, C., Litalien, D., Morin, A. J., Austin, S., Gagné, M., Lavoie-Tremblay, M., & Forest, J. (2020). On the temporal stability of self-determined work motivation profiles: A latent transition analysis. *European Journal of Work and Organizational Psychology*, *29*(1), 49–63.

Freund, P. A., & Lohbeck, A. (2021). Modeling self-determination theory motivation data by using unfolding IRT. *European Journal of Psychological Assessment*, *37*(5), 388–396.

Gagné, M., Forest, J., Vansteenkiste, M., Crevier-Braud, L., Van den Broeck, A., Aspeli, A. K., Bellerose, J., Benabou, C., Chemolli, E., Güntert, S. T., & Halvari, H. (2015). The Multidimensional Work Motivation Scale: Validation evidence in seven languages and nine countries. *European Journal of Work and Organizational Psychology*, *24*(2), 178–196.

Gillet, N., Morin, A. J., Huart, I., Colombat, P., & Fouquereau, E. (2019). The forest and the trees: Investigating the globality and specificity of employees' basic need satisfaction at work. *Journal of Personality Assessment*, *102*(5) 1–12.

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, *81*(2), 143.

Guay, F., Morin, A. J., Litalien, D., Valois, P., & Vallerand, R. J. (2015). Application of exploratory structural equation modeling to evaluate the Academic Motivation Scale. *Journal of Experimental Education*, *83*(1), 51–82.

Gunnell, K. E., & Gaudreau, P. (2015). Testing a bi-factor model to disentangle general and specific factors of motivation in self-determination theory. *Personality and Individual Differences*, *81*, 35–40.

Harvey, R. J., & Hammer, A. L. (1999). Item response theory. *Counseling Psychologist*, *27*(3), 353–383.

Howard, J. L., (2021). Crowdsourced meta-analysis in psychological science: An open science approach to compiling and synthesizing scientific knowledge. https://osf.io/fas6d/?view_only=af9603ea50094b548acc403f50fcd3cd

Howard, J. L., Bureau, J. S., Guay, F., Chong, J. X. Y., & Ryan, R. M. (2021). Student motivation and associated outcomes: A meta-analysis from self-determination theory. *Perspectives on Psychological Science*, *16*(6), 1300–1323.

Howard, J. L., Gagné, M., Morin, A. J., & Forest, J. (2018). Using bifactor exploratory structural equation modeling to test for a continuum structure of motivation. *Journal of Management*, *44*(7), 2638–2664.

Howard, J. L., Gagné, M., Van den Broeck, A., Guay, F., Chatzisarantis, N., Ntoumanis, N., & Pelletier, L. G. (2020). A review and empirical comparison of motivation scoring methods: An application to self-determination theory. *Motivation and Emotion*, *44*(4), 534–548.

Howard, J. L., Morin, A. J., & Gagné, M. (2020). A longitudinal analysis of motivation profiles at work. *Motivation and Emotion*, *45*(1), 39–59.

Johns, G. (1981). Difference score measures of organizational behavior variables: A critique. *Organization Behavior and Human Performance*, *27*, 443–463.

Johnson, J. W., & LeBreton, J. M. (2004). History and use of relative importance indices in organizational research. *Organizational Research Methods*, *7*(3), 238–257.

Kam, C. C. S., Meyer, J. P., & Sun, S. (2021). Why do people agree with both regular and reversed items? A logical response perspective. *Assessment*, *28*(4), 1110–1124.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*(3), 280–287.

Lang, J. W., & Tay, L. (2020). The science and practice of item response theory in organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, *8*, 311–338.

Litalien, D., Morin, A. J., Gagné, M., Vallerand, R. J., Losier, G. F., & Ryan, R. M. (2017). Evidence of a continuum structure of academic self-determination: A two-study test using a bifactor-ESEM representation of academic motivation. *Contemporary Educational Psychology*, *51*, 67–82.

Lord, F. M. (1952). A theory of test scores. *Psychometric Monographs*, no. 7, 84.

Losier, G. F., & Koestner, R. (1999). Intrinsic versus identified regulation in distinct political campaigns: The consequences of following politics for pleasure versus personal meaningfulness. *Personality and Social Psychology Bulletin*, *25*, 287–298.

Mageau, G. A., Ranger, F., Joussemet, M., Koestner, R., Moreau, E., & Forest, J. (2015). Validation of the Perceived Parental Autonomy Support Scale (P-PASS). *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, *47*(3), 251.

Marsh, H. W., Morin, A. J., Parker, P. D., & Kaur, G. (2014). Exploratory structural equation modeling: An integration of the best features of exploratory and confirmatory factor analysis. *Annual Review of Clinical Psychology*, *10*, 85–110.

Martela, F., Bradshaw, E. L., & Ryan, R. M. (2019). Expanding the map of intrinsic and extrinsic aspirations using network analysis and multidimensional scaling: Examining four new aspirations. *Frontiers in Psychology*, *10*, 2174.

Morin, A. J., & Marsh, H. W. (2015). Disentangling shape from level effects in person-centered analyses: An illustration based on university teachers' multidimensional profiles of effectiveness. *Structural Equation Modeling: A Multidisciplinary Journal*, *22*(1), 39–59.

Nosek, B. A., Spies, J. R., & Motyl, M. (2012). Scientific utopia: II. Restructuring incentives and practices to promote truth over publishability. *Perspectives on Psychological Science*, *7*(6), 615–631.

Ntoumanis, N., Ng, J. Y., Prestwich, A., Quested, E., Hancox, J. E., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Lonsdale, C., & Williams, G. C. (2021). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health Psychology Review*, *15*(2), 214–244.

Rocchi, M., Pelletier, L., Cheung, S., Baxter, D., & Beaudry, S. (2017). Assessing need-supportive and need-thwarting interpersonal behaviours: The Interpersonal Behaviours Questionnaire (IBQ). *Personality and Individual Differences*, *104*, 423–433.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*(5), 749.

Sánchez-Oliva, D., Morin, A. J. S., Teixeira, P. J., Carraça, E. V., Palmeira, A. L., & Silva, M. N. (2017). A bifactor exploratory structural equation modeling representation of the structure of the Basic Psychological Needs at Work Scale. *Journal of Vocational Behavior*, *98*, 173–187.

Sheldon, K. M., Osin, E. N., Gordeeva, T. O., Suchkov, D. D., & Sychev, O. A. (2017). Evaluating the dimensionality of self-determination theory's relative autonomy continuum. *Personality and Social Psychology Bulletin*, *43*(9), 1215–1238.

Tay, L., & Jebb, A. T. (2018). Establishing construct continua in construct validation: The process of continuum specification. *Advances in Methods and Practices in Psychological Science*, *1*(3), 375–388.

Tonidandel, S., & LeBreton, J. M. (2011). Relative importance analysis: A useful supplement to regression analysis. *Journal of Business and Psychology*, *26*(1), 1–9.

Tonidandel, S., & LeBreton, J. M. (2015). RWA web: A free, comprehensive, web-based, and user-friendly tool for relative weight analyses. *Journal of Business and Psychology*, *30*(2), 207–216.

Tóth-Király, I., Morin, A. J., Bőthe, B., Orosz, G., & Rigó, A. (2018). Investigating the multidimensionality of need fulfillment: A bifactor exploratory structural equation modeling representation. *Structural Equation Modeling: A Multidisciplinary Journal*, *25*(2), 267–286.

Van den Broeck, A., Ferris, D. L., Chang, C. H., & Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *Journal of Management*, *42*(5), 1195–1229.

Van den Broeck, A., Howard, J. L., Van Vaerenbergh, Y., Leroy, H., & Gagné, M. (2021). Beyond intrinsic and extrinsic motivation: A meta-analysis on self-determination theory's multidimensional conceptualization of work motivation. *Organizational Psychology Review*, *11*(3), 240–273.

Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., Dochy, F., Mouratidis, A., Aelterman, N., Haerens, L., & Beyers, W. (2012). Identifying configurations of perceived teacher autonomy support and structure: Associations with self-regulated learning, motivation and problem behavior. *Learning and Instruction*, *22*(6), 431–439.

Vansteenkiste, M., Sierens, E., Soenens, B., Luyckx, K., & Lens, W. (2009). Motivational profiles from a self-determination perspective: The quality of motivation matters. *Journal of Educational Psychology*, *101*(3), 671.

Vasconcellos, D., Parker, P. D., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., Ryan, R. M., & Lonsdale, C. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. *Journal of Educational Psychology*, *112*(7), 1444.

Wang, J. C., Morin, A. J., Ryan, R. M., & Liu, W. C. (2016). Students' motivational profiles in the physical education context. *Journal of Sport and Exercise Psychology*, *38*(6), 612–630.

Zhang, B., Sun, T., Cao, M., & Drasgow, F. (2020). Using bifactor models to examine the predictive validity of hierarchical constructs: Pros, cons, and solutions. *Organizational Research Methods*, *24*(3), 530–571.

# Development

# A Lifespan Perspective on the Importance of the Basic Psychological Needs for Psychosocial Development

Bart Soenens *and* Maarten Vansteenkiste

## Abstract

According to self-determination theory (SDT), people have a natural propensity to develop toward higher levels of psychosocial maturity. This growth tendency requires ongoing support for the basic psychological needs for autonomy, competence, and relatedness. Using Erikson's theory as an organizing framework, this chapter provides an overview of SDT-based developmental research on the role of psychological need satisfaction in psychosocial adjustment across the lifespan. This research increasingly shows that psychological need satisfaction contributes to age-specific and cumulative psychosocial strengths in every stage of human life. Although support for the basic psychological needs (e.g., by attachment figures) is crucial throughout the lifespan, the specific manifestations of contextual need support differ somewhat depending on individuals' developmental stage. Moreover, as they age, people increasingly contribute in proactive ways to their own need-based experiences. Ultimately, satisfaction of the basic psychological needs and contextual need support represent essential resources for people to tackle developmental challenges and to experience psychosocial growth.

**Key Words:** basic psychological needs, need support, lifespan perspective, developmental psychology, psychosocial adjustment, growth tendency, self-determination theory

As an organismic-dialectical framework, self-determination theory (SDT; Ryan & Deci, 2017) assumes that people have a natural inclination for psychological growth, developing toward higher levels of psychosocial maturity as they age. However, this growth tendency does not unfold automatically but requires support from the environment. According to SDT, environments are supportive as far as they furnish people with experiences of autonomy, relatedness, and competence. To use a metaphor, individuals' growth tendency represents the engine of a car heading toward a destination, and their experiences of need satisfaction represent the fuel needed to get the engine started and to keep it running.

Given these assumptions about human nature, it is important to consider the role of need-based experiences in psychosocial adjustment from a *lifespan perspective*. Based on SDT, it can be predicted that psychological need satisfaction and contextual support

for the needs play a key role in individuals' mental health from infancy to late adulthood (Ryan & Deci, 2017). Contextual need support can be direct, or interactive, insofar as individuals interact with the environment in dynamic and highly transactional (i.e., dialectical) ways, sometimes eliciting and sometimes hindering or shunning external support for their growth tendency. However derived, the energy provided by the psychological needs is seen as essential for people to effectively tackle the specific developmental challenges at different stages of the lifespan. Important from a developmental viewpoint is also that successful resolution of these challenges can be critical for subsequent need satisfaction, personal well-being, and social adjustment.

One classic developmental theory describing the developmental tasks confronted by people throughout life is the theory of Erikson (1968, 1997). This theory shares with SDT the organismic-dialectal assumption that people have an innate potential to develop toward higher levels of personality organization (referred to as "ego synthesis" by Erikson, and "integration" within SDT), with this development occurring in continuous interaction with close others and with the broader cultural environment (Ryan, 1995; Soenens & Vansteenkiste, 2011). More specifically, Erikson posited that personality development proceeds through the resolution of eight psychosocial crises that arise in successive stages along an individual's life path. Each psychosocial crisis represents a developmental challenge that, when dealt with effectively, results in increased psychosocial strength. Successful resolution of a developmental task requires support from the environment and prepares the individual for adequate coping with a subsequent psychosocial crisis encountered during the next developmental stage. According to Erikson's principle of *epigenetic development*, all developmental tasks build upon each other cumulatively, as individuals typically progress toward greater maturity as they manage to resolve each subsequent developmental crisis. However, when people fail to deal effectively with one developmental task, they are ill prepared for the following task and more likely to face future developmental problems. When unresolved developmental conflicts and a corresponding lack of psychosocial strengths accumulate, individuals are more likely to display increasing vulnerability to psychological difficulties over time.

The goal of this chapter is to provide an SDT-based perspective on the importance of psychological need satisfaction across the lifespan. Because Erikson's theory is a well-established developmental framework and because it converges with SDT at the metatheoretical level around several key points, the discussion is organized around Erikson's eight developmental tasks. The overall aim is to seek for cross-fertilization between both theories and literatures, thereby outlining the contours of a developmental approach within SDT.

## The Psychological Needs as Nutrients for Psychological Growth across the Lifespan

The most important developmental tasks in life require substantial cognitive resources, mental energy, and psychological flexibility. During developmental transitions, individuals have

to adjust to quickly changing circumstances and to shifting demands for age-appropriate behavior. They need to gradually leave behind earlier modes of functioning, acquire new skills and attitudes, and adapt to unfamiliar social conditions. Because these transitional periods can elicit uncertainty or even stress, people need sufficient psychological resources that provide the necessary energy to cope with the myriad challenges they face (Weinstein & Ryan, 2011). In SDT, it is argued that the three psychological needs represent such essential resources during transitional periods (Duineveld et al., 2017; Grolnick et al., 2000). They function as "vitamins" for psychological growth, strengthening individuals' resilience and potential for adaptive development (Vansteenkiste & Soenens, 2015).

Although psychological need satisfaction is key to healthy development across the lifespan, the pathways and opportunities for individuals to experience need satisfaction change throughout life. In the early years of development, children depend strongly on their most important attachment and socialization figures for responsiveness and protection. As such, in early childhood contextual support for the psychological needs (as provided, for instance, by parents and teachers) is of primordial importance for children's development. Gradually, children play a more agentic role in socialization processes, thereby eliciting certain responses from their parents and teachers and profoundly affecting the relationship with their socialization figures through their own behavior (Soenens & Vansteenkiste, 2020). Moreover, with increasing age new interpersonal relationships beyond primary caregivers become important for individuals' development. Particularly during middle childhood and adolescence, the social context of individuals widens, and peers and friends gain importance (Soenens, Vansteenkiste, & Beyers, 2019; Zhou, Ntoumanis, & Thøgersen-Ntoumani, 2019. Later in life, many other people in the social environment (e.g., romantic partners, colleagues) also can affect individuals' psychological need satisfaction (Moreau & Mageau, 2012). From adolescence onward, individuals begin to steer their own development in certain directions (Soenens et al., 2019). By making identity-relevant choices and selecting their environments, individuals gradually contribute more actively to their own development. Thus, with increasing age individuals' psychological needs become a function not only of support provided by the (widening) context but also of personal characteristics that determine their choices and their responses to the environment (Laporte et al., 2021).

In addition to the observation that there is an age-related change in the relative importance of contextual need support and personal (agentic) contributions to development, it is important to note that the *nature* of contextual need support also changes as individuals grow older. Although it is important for socialization figures to be warm and autonomy-supportive and to provide structure at every age, the exact *manifestation* of these need-supportive practices may differ somewhat across developmental periods (Côté-Lecaldare, Joussemet, & Dufour, 2016). To give but a few examples, parental warmth is expressed more often physically at a younger age (e.g., hugging and kissing) than at later ages. Further, the provision of choice, as an autonomy-supportive practice, becomes

more relevant after infancy and shifts shape as children grow older (Patall & Hooper, 2018). For instance, there are changes in the complexity and the ideal number of options provided (younger children preferring simpler choices and a lower number of options; Bereby-Meyer, Assor, & Katz, 2004) and in the issues about which choice is granted (older children being allowed to decide about a broader range of issues than younger children; Smetana, 2018). Similarly, as children grow older parents provide structure and involvement in different domains, thereby attending particularly to issues and domains children are unfamiliar with (Mauras, Grolnick, & Friendly, 2013).

## Need Support and Need Satisfaction in Each of Erikson's Developmental Stages

Although the relative importance of contextual need support (compared to personal agency) and the nature of such support change across time, ultimately people are assumed to benefit from perceived contextual support (and corresponding experiences of need satisfaction) at every age (Vansteenkiste, Ryan, & Soenens, 2020). Here, we provide an overview of research documenting the role of contextual need support and psychological need satisfaction in individuals' development and mental health across the lifespan, thereby presenting the evidence according to Erikson's eight stages of life.

### Infancy

During the first years of life, children ideally develop a sense of basic trust in their caregivers (Erikson, 1968). This sense of trust emerges when caregivers provide a predictable and affectively nurturing climate in which children learn that they can rely on their caregivers for both their physical and emotional needs. Erikson's theory shares this emphasis on the importance of supportive early relationships with attachment theory. Indeed, Bowlby (1980, 1988) similarly argued that children's working models of attachment develop in close interaction with caregivers during infancy. In turn, these working models form a template for relationships with people outside the family context and a basis for self-regulation and psychosocial adjustment. Children with more secure attachment representations are better able to deal effectively with negative emotions and, as such, adjust more easily to stressful events and challenging transitions later in life (Cassidy, 1994; Mikulincer, Shaver, & Pereg, 2003).

Abundant research on the role of early attachment figures (typically parents) in young children's basic trust and attachment security has demonstrated the importance of parental sensitivity (Ainsworth et al., 1978; Main, Kaplan, & Cassidy, 1985; Van Ijzendoorn, 1995). Sensitivity was operationalized typically as parental responsiveness to a child's distress, with sensitive parents accurately noticing the child's distress and providing adequate comfort. There is now extensive and very convincing evidence that children raised by sensitive parents, thereby experiencing their parents as a safe haven, have more secure

attachment representations and display greater resilience and psychosocial adjustment later in life (Ainsworth et al., 1978; De Wolff & Van Ijzendoorn, 1997).

The concept of sensitivity is somewhat similar to SDT's concept of relatedness support, which indeed refers to parental warmth, involvement, and responsiveness to distress (Grolnick, Deci, & Ryan, 1997; Joussemet, Landry, & Koestner, 2008; Soenens, Deci, & Vansteenkiste, 2017). However, according to SDT, there is more to relatedness support than sensitivity in moments of distress (Ryan, Brown, & Creswell, 2007). Attachment figures can strengthen the bond with a child not only by attending to distress but also by displaying warmth, reciprocity, and closeness during nondistressing activities (e.g., during moments of joint attention, play, book reading, physical activity). As such, relatedness support is not only relevant in contexts of danger and threats; attachment figures can support the ongoing need for relatedness by engaging in warm, affectionate, and caring interactions with their child (Ryan et al., 2007; Vansteenkiste & Soenens, 2015).

In addition to the safe haven function, attachment theory also emphasizes the importance of the secure base function of early attachments. Ideally, children experience their parents as a basis for exploration of the environment. Children who experience their parents as a secure base have the courage to take the initiative and to explore unfamiliar activities and contexts (Ainsworth et al., 1978; Grossmann et al. 2008). Although attachment theory emphasizes the importance of both the safe haven and the secure base functions for children's basic trust in caregivers, research has focused rather one-sidedly on the role of parental sensitivity in attachment security, thereby attending mainly to the safe haven function.

Based on SDT, Bernier et al. (2014) argued that it is important to attend also to the secure base function and to the role of autonomy support in particular. Autonomy support involves attunement to the child's perspective (preferences, goals, and needs) as well as parental attempts to create room for initiative and personal exploration (Ryan & Deci, 2017; Soenens et al., 2018). In infancy, parental autonomy support manifests as the capacity to follow the child's rhythm, to show a clear interest in the child's utterances, and to reciprocate the child's affective expressions and initiatives. Because autonomy-supportive parental practices would be uniquely important for the secure base function of attachment, Bernier et al. (2014) stated that parental autonomy support would contribute to the prediction of attachment security and developmental assets associated with attachment security (such as self-regulation) beyond the contribution of parental sensitivity.

Several studies confirmed the unique roles of parental autonomy support and sensitivity in attachment security among infants 12 to 15 months olds (see Bernier et al., 2014 for an overview). Whipple, Bernier, and Mageau (2011a) found that observed and coded sensitivity and autonomy support were each uniquely related to children's attachment security (measured using an independent observational measure), indicating that both sets of parental practices matter for children's early basic trust in caregivers. Further, Whipple, Bernier, and Mageau (2011b) demonstrated that mothers' dismissing attachment

representations (reflecting a distant relationship with their own parents during childhood) related to lower current sensitivity toward their own child, whereas mothers' preoccupied attachment representations (reflecting an ambivalent attachment history) related to lower current autonomy support. These parenting practices further contributed to the child's attachment security and were found to play an intervening role in the intergenerational transmission of attachment quality. Thus, not only sensitivity but also autonomy support helped to explain how mothers' own developmental history translates into the current quality of the attachment bond with their child (Bernier et al., 2014).

Another study demonstrated the importance of maternal autonomy-support for 12-month-old infants' enthusiastic engagement during a play situation (Grolnick, Frodi, & Bridges, 1984). Autonomy support observed during a joint mother-child play situation (the mother following the child's lead and encouraging continued play) predicted the child's greater persistence during a subsequent phase in which the child could play independently (i.e., without the mother being involved). This finding further underscores the secure base function of attachment, where autonomy support contributes to greater independence and more eagerness to explore the world.

**Summary.** In line with Erikson and classical attachment theory, SDT-based research on infancy has corroborated the important role of parental sensitivity in children's development of basic trust in their caregivers. Yet beyond the emphasis on responsiveness to distress and provision of safety within attachment theory, SDT research highlights that parental autonomy-support matters as well. Children receiving more autonomy support more often use their attachment figures as a secure base to explore their environment freely and independently.

*The Preschool Years*

During the preschool years, children face two developmental tasks that build upon the sense of trust they ideally developed during infancy (Erikson, 1968). Around the age of two, toddlers begin to assert their independence, for instance by refusing to comply with parental requests. Toddlers gradually realize that they have a will of their own, and they learn to act upon their preferences. Yet children also learn that their impulses can conflict with the expectations of others and that reconciliation between their own desires and external guidelines for appropriate behavior is sometimes needed. Children learn to "practice" with their independence, and they develop a sense of competence if they manage to control their own impulses and to negotiate effectively with people in their social environment. In the absence of such experiences of autonomy and competence, children can develop a sense of shame (Erikson, 1968). Children then seriously doubt their ability to regulate their own impulses, their doubts manifesting either as passive compliance or as blunt defiance.

Developmental research has demonstrated convincingly that parental warmth and responsiveness (i.e., relatedness need support) are related to more effective self-regulation

(including impulse control), a more receptive orientation toward parents, and more will-ing or committed compliance to parental directives during toddlerhood (Chen et al., 2003; Kochanska, Aksan, & Carlson, 2005). Children more easily internalize adult guide-lines when they can identify with adults who are experienced as involved, warm, and caring (Kopp, 1982). Based on SDT, it can be predicted that caregivers' structure (i.e., competence support) and autonomy support play important additional roles in children's self-regulation, internalization, and compliance (Grolnick et al., 1997). When children simultaneously experience room to voice their emotions and desires while receiving help and guidance for how to regulate impulses at their own pace, they are more likely to accept adult requests and to develop competence in self-regulation.

Confirming the importance of competence support, research has shown that paren-tal structure plays a role in toddler's self-control and appropriate behavior. For instance, parental provision of structure during emotionally difficult episodes at 18 months of age predicted increases in children's use of an adaptive self-regulation strategy (distraction) during a task requiring much self-control (waiting for a reward; Ravindran, Genaro, & Cole, 2021). Another study showed that, in their second year of life, children were increasingly willing to help out others (parents or an experimenter) during standardized tasks if their parents provided high levels of competence support (e.g., modeling, encour-agement, and positive feedback) during shared chores tasks (Kärtner, Giner Torréns, & Schuhmacher, 2021). Parental provision of structure thus seems to contribute to toddlers' capacities for self-regulation and corresponding prosocial behaviors.

The importance of parental autonomy support in toddlers' self-regulation has been confirmed in several studies. For example, a longitudinal study showed that observed maternal autonomy support (assessed at 15 months) predicted better performance (at 18 months) in tasks requiring considerable attention and impulse control (Bernier, Carlson, & Whipple, 2010). Similarly, Bindman, Pomerantz, and Roisman (2015) reported that parental autonomy support during the first three years of life predicted improved executive functioning (e.g., greater delay of gratification) at the end of kindergarten, which related to higher academic achievement in elementary school and even high school. Studies also documented associations between parental autonomy support and toddlers' internaliza-tion of rules (Andreadakis, Joussemet, & Mageau, 2019; Dong et al., 2022; Laurin & Joussemet, 2017). For instance, Laurin and Joussemet found that autonomy-supportive parental practices observed during a cleanup task at age 2 were related to an increase in internalization at age 3.5, as reflected in more willing compliance with parental requests not to play with attractive toys. Clearly, autonomy support fosters developmental changes in internalization across time.

Although SDT assumes that autonomy support is ideally combined with structure to promote self-regulation and internalization (Grolnick & Pomerantz, 2009; Soenens & Vansteenkiste, 2010), no studies to date explicitly examined this combination of predic-tors in early childhood. It should be noted, however, that the observational measures of

autonomy support used in toddlerhood often combine elements of autonomy support (such as following the child's pace) with elements of structure (offering adequate help), presumably because these different practices often co-occur in practice. As such, the findings obtained by Bernier et al. (2010) and Laurin and Joussemet (2017) support at least indirectly the assumption that autonomy support and structure have joint effects on children's self-regulation and internalization.

Later during the preschool years (ages 3–5), Erikson (1963, 1968) describes children as developing a sense of initiative. Children's initiative at this stage is more proactive in nature than their initial displays of autonomy earlier in toddlerhood. Rather than simply responding to adult requests, children now initiate activities of their own and try to contribute constructively to their environment. For instance, they try to get dressed independently, want to help choose products in the supermarket and carry groceries or be involved during cooking. Through these activities, they ideally experience that their proactive inclination to engage in socially valued behaviors and to provide adequate help is recognized and supported. Opposite to this experience of initiative, children can develop a sense of guilt, where they are afraid to fail or feel unable to carry out activities effectively. Because of their anxieties and emerging fear of failure, these children refrain from trying out new activities and ultimately no longer even try to display initiative, thus precluding further experiences of autonomy and competence need satisfaction.

Caregivers' warmth and responsiveness (i.e., relatedness support) contribute to children's initiative because children have more courage to experiment with activities within the context of close and trusting relationships (Linkiewich et al., 2021). In addition, caregivers' scaffolding (i.e., a key element of competence support) is important because children then engage in feasible and optimally challenging activities, thereby building a sense of competence while displaying initiative (Verhoeven, van Baar, & Dekovic, 2019). In addition to relatedness support and competence support, autonomy support is considered important for initiative because children experience more room to try out new activities in autonomy-supportive contexts. Underscoring the importance of autonomy support for children's initiative, van der Kaap-Deeder, Soenens, Mouratidis et al. (2020) showed that an autonomy-supportive parental reminiscence style was related positively to three- to six-year-old children's engagement during parent-child conversations about past events. When parents showed an active interest in the child's input during the conversation, acknowledged the child's feelings, and listened attentively (i.e., practiced autonomy support), children participated in the conversation with more enthusiasm and enjoyment, thereby displaying more initiative during the conversation.

In contrast, controlling and overinvolved practices undermine children's sense of initiative (Leonard et al., 2021; Linkiewich et al., 2021; Obradovic, Sulik, & Shaffer, 2021). For instance, Leonard et al. (2021, Study 1) showed that parents' observed tendency to take over tasks (e.g., a challenging puzzle) from their four- to five-year-old child was related to the child's lower parent-reported persistence. This undermining effect of

parental taking over (which can be considered a controlling practice) was also demonstrated experimentally (Leonard et al., 2021, Study 2), with children persisting less on a task when they were in a condition in which an adult took over. Controlling communication even contributes to children's anxiety, excessive concerns about failing (i.e., a facet of guilt in Erikson's model), and helplessness. For instance, Laurin et al. (2015) showed that controlling maternal practices (i.e., physical coercion and overprotectiveness) measured at age 2.5 were predictive of a developmental trajectory throughout the preschool years and into the early elementary school years (i.e., from 2.5 to 8 years of age) characterized by high and increasing levels of child anxiety. Further, mothers' use of achievement-oriented control observed during an interaction when children were 1.5 years old predicted the children's observed helpless coping with a difficult task at age 5 (Assor, Buhnick-Atzil et al., 2020).

**Summary.** SDT-based research on preschoolers' development has shown that autonomy-supportive and, more broadly, need-supportive socialization matters for children's early self-regulation, internalization of parental rules, and active engagement. These developmental capacities reflect Erikson's notions of autonomy and initiative. In contrast, autonomy-suppressing parenting was found to relate to reduced persistence, helplessness, and greater anxiety, such anxiety perhaps signaling a sense of guilt as defined by Erikson. Driven by fear of failure or concerns about being unable to meet pressuring parental expectations, children then feel paralyzed to try out new activities.

### Elementary School

During the elementary school years, children ideally develop a sense of industry (Erikson, 1968). Children at this age ideally want to learn and are eager to master new skills, many of which are taught in a school context. A sense of industry signals competence satisfaction as it emerges when children feel capable of mastering challenging learning materials and when they experience progress in developing their talents. These children think it is worthwhile to invest in learning and to make efforts in order to make progress. In contrast, children with a sense of inferiority feel deeply insecure about their own competence. They make downward comparisons with others or feel that they fall short of meeting others' expectations.

There is a striking similarity between Erikson's notion of industry and SDT's concept of intrinsic motivation, which is characteristic of children who are eager to learn because the learning activities are inherently interesting and enjoyable to them. According to SDT, satisfaction of the needs for competence and autonomy (as well as contextual support for these needs) nurtures children's intrinsic motivation. Children are more likely to be fully absorbed in learning when they feel able to master the tasks involved and when they feel free to engage in learning activities that really appeal to their own interests and preferences. Accordingly, contexts that support the needs for competence (e.g., by providing

constructive feedback; Deci, Koestner, & Ryan, 1999) and autonomy (e.g., by providing choice; Patall, Cooper, & Robinson, 2008) are assumed to foster children's intrinsic motivation.

Several experimental studies indeed showed that contextual competence support contributes to intrinsic motivation in middle childhood. For instance, Mabbe, Soenens, De Muynck et al. (2018) found that children who received positive feedback when engaging in in a series of interesting puzzle activities reported higher intrinsic motivation and were more likely to engage in challenge-seeking during a subsequent free-choice period than children receiving negative feedback. These effects were mediated by children' self-reported experiences of competence and autonomy need satisfaction.

Similarly, experimental studies have yielded evidence for the motivating role of contextual autonomy support. The experimental induction of autonomy-supportive communication (including inviting language) versus more controlling communication (including more pressuring and evaluative language) was found to predict children's self-reported intrinsic motivation beyond effects of positive feedback (Mabbe, Soenens, De Muynck et al., 2018). Such communication can also buffer against experiences of failure (Baten et al. 2020). Although 10th- through 12th-grade children's intrinsic motivation generally decreased when they had to complete more difficult (compared to easier) math exercises, autonomy-supportive instructions dampened this undermining effect of task difficulty. Apparently, autonomy support took the sharp sting out of children's failure and kept their intrinsic motivation relatively more intact under challenging circumstances. In addition to inviting language, the provision of choice is another practice potentially contributing to children's autonomy and subsequent intrinsic motivation (Patall & Hooper, 2018). Waterschoot, Vansteenkiste, and Soenens (2019) found that children who were allowed to engage in a self-chosen painting activity in their natural school context reported more intrinsic motivation and a greater interest in pursuing the painting activity than children who were denied their choice.

In contrast to autonomy-supportive contexts, controlling contexts undermine elementary school children's intrinsic motivation. In an experimental study with six- to seven-year-olds and their mothers, Deci et al. (1993) found that when mothers used more controlling language (e.g., statements about deadlines and containing words such as "should" and "have to") during a joint play situation, the child was less likely to freely continue playing with the toys in the mother's absence. These results indicated that controlling maternal language forestalls children's intrinsic motivation.

Because need-supportive contexts foster intrinsic motivation, such contexts have also been found to promote children's engagement and achievement. Children provided with autonomy-supportive (versus more controlling) experimental instructions to read a text were found to perform better on a test about this text, in particular in terms of deep-level learning (Grolnick & Ryan, 1987; Vansteenkiste et al., 2005). Observational studies have shown that children whose parents interacted with them in more autonomy-supportive ways performed better and persisted longer (Grolnick et al., 2002, 2007; Wuyts et al.,

2017). Correlational studies have shown that both parents' and teachers' autonomy support relate positively to children's engagement and achievement at school, a finding that was documented at both the cross-sectional (Grolnick & Ryan, 1989; Reeve, 2006; Vasquez et al., 2016) and longitudinal (e.g., Cimon-Paquet et al., 2020; Joussemet et al., 2005) level. Moreover, there is evidence that parents can be taught (through interventions) to assist their children in doing homework in more autonomy-supportive and competence-supportive ways, with children developing a more positive attitude toward homework and displaying more engagement as a consequence (Froiland, 2011; Moè, Katz, & Alesi, 2018).

The benefits of need-supportive conditions for children's learning and performance have been demonstrated not only in the context of school but also in the context of physical activity and sports. For many elementary school children, sports represent an important domain in which a sense of industry and competence can be developed, next to school achievements. Both need support provided by parents (De Muynck et al., 2021; McDavid, Cox, & Amorose, 2012) and need support provided by coaches (Mageau & Vallerand, 2003) have been found to foster children's high-quality motivation for sports, persistence, and achievement. Among children transitioning into adolescence, peers begin to play an additional and more prominent role in intrinsic motivation for sports. Jõesaar, Hein, and Hagger (2012), for instance, demonstrated that a task-involved peer motivational climate (which reflects peers' interest in learning, improvement, and effort) predicted increases across a one-year interval in pre- and early adolescents' intrinsic motivation for sports. This longitudinal effect was obtained even when taking into account coaches' autonomy support.

One criticism sometimes leveled against SDT's emphasis on autonomy support is that adults should not only nurture children's interests but also provide guidelines for appropriate behavior and sometimes even restrict forbidden or undesirable behaviors. Although at first sight it may seem as if there is a tension or trade-off between the provision of autonomy support and structure, SDT argues that both dimensions of a need-supportive context can co-occur and even are combined ideally to foster intrinsic motivation and internalization (Aelterman et al., 2019; Grolnick & Pomerantz, 2009; Vansteenkiste et al., 2019). The provision of structure does not necessarily undermine intrinsic motivation, at least if this structure is conveyed in an autonomy-supportive fashion. An experimental study by Koestner et al. (1984) showed that six- and seven-year-olds continued to persist in a free-choice painting activity (reflecting intrinsic motivation) when guidelines for neatness were conveyed in an autonomy-supportive fashion. Children displayed lowered intrinsic motivation only when guidelines were communicated in controlling language. As such, autonomy-supportive language enables adults to introduce structure without harming children's intrinsic motivation.

The importance of combining structure with autonomy support has been demonstrated both in the context of teaching and motivation for school (e.g., Jang, Reeve, &

Deci, 2010) and in the context of coaching and motivation for sports (e.g., Curran, Hill, & Niemiec, 2013). This combination of structure and autonomy support is particularly important when children need to engage in tedious, rather uninteresting, or even boring activities that are nevertheless critical for their development (Joussemet et al., 2004). By communicating clear expectations (structure) and by simultaneously recognizing the child's perspective and providing a meaningful rationale (autonomy support), adults contribute to children's internalization of the expectations, such that children accept and endorse the expectations instead of feeling compelled to meet them (Vansteenkiste et al., 2012, 2014). A combination of structure and autonomy support also helps children to build a sense of competence in meeting socially valued goals (Grolnick et al., 1997). Children then feel that the goals are clear, that there is room to find their own pathway to meet their goals, and that help is available when they encounter difficulties.

**Summary.** Contextual need support matters a great deal for elementary school children's development of competence and intrinsic motivation; these resources reflect Erikson's notion of industry. To support children's industry, socialization figures, including not only parents but also teachers and coaches, do well to provide both structure and autonomy support in particular.

### Adolescence and Emerging Adulthood

According to Erikson (1963, 1968), the formation of a personal identity is the central developmental task of adolescence. In Erikson's view, adolescence is a pivotal period in human development because a well-established and solid identity represents the cornerstone of psychosocial maturity. Adolescents face the complex task of integrating childhood identifications into a personally meaningful and unified whole; adolescents no longer passively adopt socially prescribed roles but instead explore different, alternative roles and ultimately define themselves in terms of personally endorsed attributes (Berzonsky & Adams, 1999; Grotevant, 1987; Kroger & Marcia, 2011). In doing so, they differentiate themselves from others and in particular from introjected social expectations. In addition, they need to seek harmony between their identity-relevant attributes, thereby developing an integrated identity that provides a sense of spatial-temporal continuity (i.e., the feeling that one remains the same person across time and across different situations; Erikson, 1968; Van Hoof, 1999).

Developmental research has shown that identity development extends beyond adolescence into emerging adulthood, the transitional period between adolescence and early adulthood (i.e., between 18 and 25 years of age; Arnett, 2000, 2007). Emerging adulthood is a moratorium during which many individuals have the opportunity to experiment with social roles, thereby continuing to build their identity. Identity development is a very dynamic process during this developmental period, in which people explore identity options and make commitments but also continually reevaluate their commitments (Crocetti, Rubini, & Meeus, 2008; Luyckx, Goossens, & Soenens, 2006; Luyckx et al.,

2008; Meeus, 2011). Ideally, this period of exploration, decision-making, and deep reflection results in identification with commitments, meaning that people fully endorse their identity-relevant goals and derive a sense of confidence from their commitments (Bosma & Kunnen, 2001; Luyckx et al., 2008).

Erikson's view on identity formation meshes well with the SDT perspective on identity (Ryan & Deci, 2003; Soenens & Vansteenkiste, 2011). According to SDT, there is more to identity development than the establishment of clear commitments (i.e., identity-relevant choices). Ideally, these commitments are well-anchored in deeply held values, long-term interests, and preferences. Commitments connected to this solid basis become well-integrated in the vertical sense. Yet, another challenge is to achieve a sense of harmony between different commitments, reflecting integration in the horizontal sense. Because adolescents and emerging adults have multiple roles (e.g., as a friend, athlete, student), they can struggle to find an optimal fit between these roles and thereby feel conflicted due to a lack of time and resources to pursue all roles simultaneously. When commitments are fully endorsed and regulated by autonomous motives, they come with a sense of self-expression and authenticity. When commitments instead are based on social expectations or demanding and introjected personal standards, they are regulated by controlled motives and give rise to feelings of alienation (Ryan & Deci, 2017).

Many studies among adolescents and emerging adults have shown that autonomous goal pursuit and autonomous regulation of identity commitments contribute to goal attainment and psychological well-being, even when controlling for the strength of identity commitment (Koestner et al., 2008; Sheldon & Elliot, 1999; Soenens et al., 2011). These findings underscore Erikson's claim that healthy identity development is based on the exploration and formulation of personally endorsed goals and commitments rather than on commitments passively adopted from a pressuring social environment.

The processes of exploring identity alternatives, making commitments, and continually reevaluating commitments require substantial mental energy, flexibility, and courage. From an SDT perspective, psychological need satisfaction is a much needed resource providing such energy and promoting healthy identity development (La Guardia, 2009). Consistent with this assumption, Luyckx et al. (2009) showed that psychological need satisfaction predicted increases across time in emerging adults' broad exploration of alternatives, commitment making, and identification with commitment. Other studies among emerging adults confirmed that psychological need satisfaction relates positively to identity achievement (e.g., Cordeiro et al., 2018; Skhirtladze et al., 2019).

Given the important role of psychological need satisfaction in identity development, SDT-based studies have examined contextual need support as a source of influence on adolescents' and emerging adults' identity. Cordeiro et al. (2018) showed that perceived need-supportive parenting was related to indicators of healthy identity development (such as commitment and exploration), with psychological need satisfaction mediating these associations. Parental autonomy support in particular appears to be important, as several

studies show that perceived autonomy-supportive parenting is related to more exploration and commitment making (e.g., Kaniušonytė & Žukauskienė, 2018; Sznitman, Van Petegem, & Zimmerman, 2019; Zong et al., 2019). Specifically in the domain of education, Katz et al. (2018) found that adolescents who perceived more parental autonomy support made more self-endorsed and authentic decisions about a higher education study when they were in the last year of secondary education. In turn, this more authentic study decision predicted higher satisfaction with the study choice and better grades when these students were actually in higher education. Autonomy-supportive parenting was also found to relate to adolescents' greater self-acceptance, both when measured directly through questionnaires (Inguglia et al., 2018) and when measured indirectly through convergence between implicit and explicit measures of self-relevant attributes such as sexual orientation (Weinstein et al., 2012). Adolescents growing up in an autonomy-supportive family experience room to be themselves, which allows them to freely explore different roles and to make personally endorsed choices that contribute to a secure and accepting sense of self (Ryan & Ryan, 2019).

Recent work further identified several need-supportive parental practices with specific relevance to adolescents' identity formation (Assor, 2018). One such practice is inherent value demonstration (IVD), that is, the degree to which adults demonstrate in their own behavior that they direct their behavior on the basis of deeply endorsed values. By witnessing their parents' IVD, adolescents can learn to trust and use their own interests, preferences, and values in regulating behavior and making choices. Research has indeed shown that parental IVD relates positively to adolescents' autonomous self-regulation and subjective well-being (Brambilla et al., 2015; Yu, Assor, & Liu, 2015). In addition to this modeling process, parents can also explicitly encourage their children to explore their personal values and interests (i.e., support for value examination [SVE]; Assor, 2018) and recommend that they attend carefully to these values and interests when they face dilemmas or difficult decisions (i.e., fostering inner valuing [FIV]; Assor, 2018). SVE and FIV were found to relate positively to adolescents' sense of being in touch with their most important interests, values, and preferences, an experience that was related to autonomous regulation of identity commitments and subsequent well-being (Assor, Soenens et al., 2020) as well as greater resistance against peer pressure to engage in deviant behavior (Assor, Benita et al., 2020). This research illustrates clearly the important point that the manifestations of need support can change across developmental periods, with IVD, SVE, and FIV representing need-supportive practices with specific relevance in adolescence and with the potential to facilitate healthy identity development in particular.

In contrast to need-supportive parenting, need-thwarting parenting was found to forestall identity development. Luyckx et al. (2007) showed that psychologically controlling parenting (i.e., an autonomy-thwarting parental style characterized by love withdrawal and guilt induction) predicted decreases over time in commitment making and in identification with commitment. In a pressuring and manipulative parenting climate,

emerging adults experience little room to be themselves and instead feel obliged to direct their identity toward parent-prescribed goals. The sense of alienation following from this pressure undermines emerging adults' capacity to arrive at firm commitments and to feel secure about their identity-relevant choices.

The important role of parents in identity development was confirmed also in research on emerging adults' goal pursuit (Koestner et al., 2020). Participants in this research nominated their parents and friends as the most important sources of support for personal goal pursuit. Importantly, emerging adults relied more strongly on parents than on friends for important and demanding goals, indicating that parents play a prominent role in identity-relevant goals in particular. Underscoring the importance of parents' autonomy support, autonomy-supportive parental communication about personal goals predicted increases in emerging adults' progress in goal achievement and well-being across the semester (Koestner et al., 2020). Another study showed that parental autonomy support affects not only youths' success in achieving personal goals but also the type of life goals they pursue (Lekes et al., 2010). Adolescents who experienced their parents as more autonomy-supportive were found to give more priority to intrinsic goals (such as affiliation and community contribution) over extrinsic goals (such as financial success and popularity), and intrinsic goal pursuit in turn predicted higher well-being. The latter finding confirms SDT-based reasoning (Kasser & Ryan, 1996; Vansteenkiste, Soenens, & Duriez, 2008) and research showing that intrinsic goal pursuit is conducive to satisfaction of the psychological needs (Unanue et al., 2014) and to adequate resolution of the identity formation task (Hope et al., 2014).

Because the breadth of individuals' social network widens during adolescence and emerging adulthood, the family is of course not the only source of influence on identity development. Experiences during leisure activities also play a role in identity formation. Madjar and Cohen-Malayev (2013), for instance, found that adolescents who experienced more need satisfaction and more encouragement to explore their identity in youth movements displayed a more mature personal identity. Testifying to the importance of peer relationships and nonformal leisure activities for adolescents' development, adolescents' experiences in the youth movement context were more strongly predictive of their identity maturity than their experiences in the school context.

Particularly during emerging adulthood, friends and romantic partners also begin to play an important role in identity development. Emerging adults display more autonomous motivation for their goals and make greater progress in achieving their goals when they feel that their romantic partners and friends communicate about their goals in autonomy-supportive ways (Koestner et al., 2012, 2015). Autonomy support provided by one's partner and friends also has a positive effect on emerging adults' quality of motivation for long-term goals (i.e., goals pursued over a period of three to five years; Koestner et al., 2015). Emerging adults also tend to report more goal progress when they feel that their romantic partners and friends help them to meet these goals, for instance by

reminding them about the importance of the goals and by engaging in joint problem-solving (Koestner et al., 2012). The effects of such "directive support" are less pronounced, however, than effects of autonomy support (Koestner et al., 2015). Thus, when friends and romantic partners support emerging adults' experiences of autonomy and (to a lesser extent) competence during goal pursuit, emerging adults feel that their personal goals more deeply reflect their most important values and interests and report being actually more successful in attaining these identity-relevant goals.

**Summary.** Experiences of psychological need satisfaction and contexts that support the psychological needs clearly contribute to a healthier identity development. Although various sources of social support beyond the family (e.g., friends, romantic partners, and peers in leisure activities) matter for adolescents' and emerging adults' identity, parents continue to play an important role in identity formation during this crucial developmental phase. Autonomy-supportive communication in particular is related to important aspects of a mature identity, including the formulation of clear commitments and personal goals, a high-quality motivational regulation of identity commitments (rooted in personally endorsed values and interests), and a focus on goals that promote psychosocial growth and well-being (i.e., intrinsic rather than extrinsic goals).

### Early Adulthood

After the individual has established a clear sense of identity, the main developmental task of early adulthood (25–40 years) is, in Erikson's view, to achieve intimacy in close relationships. Intimacy involves a readiness to open up in close relationships and to invest in the quality and maintenance of these relationships (commitment). Ideally, people experience reciprocity, emotional attunement, and security in their most intimate relationships, including close friendships and the relationship with a romantic partner. Commitment in close relationships requires that people know who they are and what they are aiming for in life (Erikson, 1997). In contrast, when people are still struggling with identity issues, the process of achieving intimacy is hampered. People may then either take a dependent and self-sacrificing position in close relationships (thereby having their identity determined passively by their partner) or adopt a distant and avoidant interpersonal attitude (out of fear of giving up on the independence they need to establish their identity). In both cases, people end up in a state of isolation, where they experience feelings of loneliness and social alienation.

SDT-based research has shown convincingly that satisfaction of the needs for autonomy, competence, and relatedness within close relationships is essential for people to experience their relationships as intimate and secure. La Guardia et al. (2000) examined within-person variations in experiences of attachment security across university students' relationships with their parents, romantic partner, and best friend. They found that psychological need satisfaction accounted for within-person differences in attachment security between these relationships. Relationships characterized by higher levels

of need satisfaction were experienced as relatively more secure, a finding that has been replicated and extended in numerous other studies (see La Guardia & Patrick, 2008 for a review). For instance, Patrick et al. (2007) focused specifically on romantic relationships and showed that young adults' psychological need satisfaction in these relationships contributed to both higher relationship satisfaction and individual well-being. In addition, recollections of need satisfaction in romantic partners' memories were found to relate positively to relationship quality, even when taking into account the partners' current levels of relational need satisfaction (Philippe, Koestner, & Lekes, 2013). Ryan et al. (2005) found that individuals displayed more emotional reliance in close relationships (including friendships and romantic relationships) when they experienced more psychological need satisfaction in these relationships. This finding indicates that psychological need satisfaction contributes to individuals' willingness to disclose their emotions authentically, to admit vulnerability, and to appeal to their partner on moments of emotional difficulty. In turn, such emotional reliance predicted more well-being among individuals from different cultural backgrounds (Ryan et al., 2005).

Because young adults' most important close relationships (such as friendships and romantic relationships) are egalitarian (rather than hierarchical), the dynamics in these relationships are highly reciprocal in nature. Therefore, one partner's experiences have repercussions for the other partner's functioning, and vice versa. Patrick et al. (2007, Study 2) showed that psychological need satisfaction experienced by one partner in a romantic relationship contributed not only to this partner's own relationship satisfaction but also to the other partner's relationship satisfaction (and vice versa). This carryover effect suggests that the benefits associated with relationship need satisfaction are contagious and can contribute to a self-reinforcing cycle of positive experiences in intimate relationships.

Given the central role of psychological need satisfaction in intimacy, it is important for relationship partners to support each other's needs (Knee & Browne, this volume; La Guardia & Patrick, 2008). This can be done by showing affection and being responsive to a partner's distress (relatedness support), by conveying trust in the partner's abilities and helping to solve problems (competence support), and by showing an active interest in the partner's perspective and creating room for self-expression (autonomy support). Although a number of studies demonstrated the role of partners' relatedness support in relationship satisfaction and commitment (e.g., Hadden, Smith, & Knee, 2014; Moller, Deci, & Elliot, 2010), most SDT-based research on need support in intimate relationships has focused on the unique role of autonomy support (Anderson, 2020; Knee et al., 2013). Deci et al. (2006) showed that individuals who received more autonomy support from their friends experienced more relationship need satisfaction, displayed more emotional reliance, and reported more attachment security. Further testifying to the bidirectional dynamics involved in close relationships, all of these experiences were related positively between two friends in a dyad (indicating mutuality of these experiences). Interestingly, Deci et al. also found that giving autonomy support to a friend yielded personal and

social benefits in addition to the benefits associated with receiving autonomy support. Individuals who provided more autonomy support to their best friend reported more relational need satisfaction, attachment security, emotional reliance, and relationship satisfaction as well as higher personal well-being, even when taking into account the role of received autonomy support. Apparently, the very act of supporting a friend's autonomy is inherently satisfying and important for the development of intimacy, beyond the contribution of receiving autonomy support.

Many other studies confirmed the importance of autonomy support for the quality of intimate relationships (Knee & Browne, this volume). Higher levels of autonomy support in close relationships were found to relate positively to disclosure and honesty (Hodgins, Koestner, & Dunan, 1996; Legate, Ryan, & Weinstein, 2012; Ryan et al., 2017), to relationship satisfaction and commitment (Blais et al., 1990), to general well-being (Ratelle, Simard, & Guay, 2013), and even to physical benefits, as indicated by blood pressure (Weinstein et al., 2016). In contrast, individuals experiencing a partner's conditional regard, an autonomy-suppressing practice where the partner's love and affection depend on meeting the partner's expectations, reported less autonomy need satisfaction, less closeness, and lower relationship satisfaction in various close relationships (Kanat-Maymon et al., 2016). Faced with a partner's conditional regard, individuals feel an inner conflict between their need for relatedness and their need for autonomy, a tension that undermines relationship satisfaction.

**Summary.** Experiences of autonomy, competence, and relatedness are key to achieve a sense of intimacy in close relationships. Early adults are more likely to engage in open and honest disclosure, to commit to relationships, and to rely on their partner for emotional support when they experience psychological need satisfaction within their relationships. Relationship partners thereby affect each other's needs and relationship satisfaction in mutually reinforcing and highly transactional ways. One factor contributing strongly to such mutual experiences of relational need satisfaction is the provision of autonomy support. In addition to showing love, care, and attention, it is important for partners to display a sincere interest in each other's perspective and to leave room for personal initiative and independence. With such an autonomy-supportive interaction style, partners experience their relationships as more fulfilling and genuinely intimate.

*Middle Adulthood*

Erikson (1968, 1997) named generativity as the central developmental task of middle adulthood. In this developmental period (situated roughly between 40 and 65 years), people develop a concern for others that surpasses people in their direct social environment. Whereas young adults ideally gain intimacy in close relationships such as friendships and partner relationships, middle adults gradually adopt a generous attitude toward broader groups of people and sometimes even toward society at large. Generativity involves a concern with younger generations and even with the future of generations to come. Adults

with a high level of generativity aim to support young people's development, for instance by raising children, by mentoring younger colleagues at work, by volunteering in their community, or even by engaging in activism for a broader cause. The opposite of generativity is stagnation, where people struggle with the regret of missed opportunities and are preoccupied with personal aspirations and ambitions at the expense of generosity. Stagnation can manifest in cynicism and contempt for younger generations. In line with Erikson's theorizing, developmental research has shown an age-related increase in generativity during adulthood (McAdams, St. Aubin, & Logan, 1993), where generativity predicts better mental health (McAdams, 2001). Underscoring the developmental salience of generativity specifically during adulthood, Lekes et al. (2016) showed that endorsement of the value for community contribution (which denotes a more generative attitude) was related more strongly to well-being among adult teachers than among students.

Many adults take initial and important steps toward generativity in their role as a parent (Peterson, 2006). Raising children in such a way that children can actualize their own potential and grow up to become responsible and engaged citizens represents an act of generosity for which parents sometimes need to downscale (at least temporarily) their personal goals. The parenting role is also quite intensive and sometimes even energy-consuming (Nelson, Kushlev, & Lyubomirsky, 2014). Supporting their children's needs and development requires sufficient psychological energy for parents to be attuned to their children's perspective, to be flexible, and to be creative in finding solutions for parenting problems (Soenens et al., 2017). Thus, from an SDT perspective, it is important for parents to experience sufficient psychological need satisfaction in order to interact with their children in need-supportive ways. This assumption was confirmed by van der Kaap-Deeder et al. (2015), who found that mothers' psychological need satisfaction was related to more autonomy-supportive parenting (albeit only as perceived by younger siblings in the family). Maternal autonomy support was related to both younger and older siblings' own psychological need satisfaction, suggesting a pattern of intergenerational transmission in experiences of need satisfaction. Mothers' experiences of need satisfaction were even found to relate to need-supportive parenting already in the postpartum period (Brenning & Soenens, 2017).

Subsequent studies replicated and extended this finding to fathers (Costa et al., 2019) and further examined the possibility that parents' need-based experiences also matter for their daily engagement in need-supportive parenting practices. Parents were found to be more autonomy-supportive on days when their own psychological needs were satisfied (Mabbe, Soenens, Vansteenkiste et al., 2018), an effect that could be explained by parents' heightened psychological availability on those days (van der Kaap-Deeder et al., 2019). In contrast, on days when parents experienced more personal need frustration, they were more inclined to resort to controlling practices (Mabbe, Soenens, Vansteenkiste et al., 2018), an effect that is accounted for by parents' greater experiences of stress on such days (van der Kaap-Deeder et al., 2019). The role of parents' needs-based experiences in

high-quality parenting was confirmed among parents who experience many challenges to their parental role, including parents of children with autism spectrum disorder (Dieleman et al., 2019) and parents of children with cerebral palsy (Dieleman et al., 2021).

Clearly, then, for parents to fulfill their role in need-supportive and truly generative ways, it is important for them to have a stable basis of psychological need satisfaction and, in addition, to experience need satisfaction on a daily basis. Parents' basis of need satisfaction is likely influenced by numerous interacting factors, including their own parenting history. Research suggests that a history of need-thwarting parenting increases parents' current risk of engaging in need-thwarting practices toward their own children, including psychologically controlling practices (Brenning et al., 2020) and conditional approval (Assor, Roth, & Deci, 2004; Assor, Buhnick-Atzil et al., 2020; Otterpohl et al., 2020). One potential reason parents with a need-thwarting developmental history repeat patterns from the past in their own childrearing is that their history affected (through various transactional processes) their overall level of need frustration, contributing to stagnation and lowering the threshold to engage in need-thwarting practices themselves.

Another expression of generativity during midlife is volunteering. Research has shown convincingly that adults are more inclined to volunteer and to develop high-quality motivation for sustained volunteering when their psychological needs are satisfied. Adult employees who experience more need satisfaction at work engage in more corporate volunteering, thereby using company time to engage in community service (Grant, 2007; Haski-Leventhal, Kach, & Pournader, 2019). There is even experimental evidence showing that priming individuals with experiences of need satisfaction, and with relatedness need satisfaction in particular, increases intentions to volunteer (Pavey, Greitemeyer, & Sparks, 2011). Within volunteering organizations, experiences of need satisfaction (Bidee et al., 2017; Haivas, Hofmans, & Pepermans, 2013; Huang et al., 2020) and contextual need support (Gagné, 2003; Millette & Gagné, 2008) were found to relate positively to volunteers' satisfaction, motivation, and engagement. Autonomy-supportive leadership was found to be particularly important for volunteering satisfaction and commitment (De Clerck et al., 2021; Gagné, 2003; Haivas, Hofmans, & Pepermans, 2012; Oostlander, Güntert, & Wehner, 2014), with the provision of choice (about the type of volunteering activity to engage in), for instance, fostering motivation for volunteering (van Schie et al., 2019).

Most likely, associations between need satisfaction and volunteering are reciprocal in nature. Individuals' general and context-specific experiences of need satisfaction contribute to greater engagement in volunteering because need satisfaction awakens individuals' prosocial tendencies and provides them with the energy needed to engage in volunteering (Gagné, 2003). In turn, volunteering increases individuals' need satisfaction (Wray-Lake et al., 2019), probably because volunteering (and autonomously regulated volunteering in particular) is a direct expression of individuals' prosocial nature. Because volunteering, much like other altruistic activities (e.g., helping others; Kindt et al., 2015; Weinstein &

Ryan, 2010) reflects an important aspect of individuals' growth tendency, it is an inherently and deeply satisfying activity feeding back into individuals' psychological needs (Kasser, 2002).

Whereas volunteering typically involves prosocial engagement for causes and organizations in individuals' proximal context (e.g., through community service), people can also display engagement for broader ideals with societal relevance, for instance through activism or political engagement. SDT argues that psychological need satisfaction and contextual need support lay the foundation for these broader prosocial engagements, and that political activism and engagement in turn contribute to further need satisfaction and mental health (Kasser, Koestner, & Lekes, 2002; Williams et al., 2000). In two large and long-term longitudinal samples, Wuttke (2020) found that children growing up in a more need-supportive family context reported greater interest in politics when they were adults, with parental involvement playing a particularly strong role. Possibly testifying to the reciprocal associations between need satisfaction and activism, Klar and Kasser (2009) found that individuals engaged in political activism reported more psychological need satisfaction in their current life.

**Summary.** Psychological need satisfaction fosters manifold expressions of generativity during middle adulthood. These expressions vary from care for children to volunteering in one's own community and broader political and societal engagement. Associations between need satisfaction and generativity are bidirectional in nature. Adults are more likely to display generativity when they have a longer history of need satisfaction. In turn, generativity feeds back into experiences of need satisfaction. Recent research has shown that beneficence, the feeling of having a positive impact in the lives of other people (Martela & Ryan, 2016, 2020), contributes to psychological need satisfaction, and that need satisfaction mediates (at least partially) associations between beneficence and adults' well-being (Martela & Ryan, 2016). Through participation in acts of generativity (e.g., childrearing, volunteering, activism), people likely experience more beneficence, with the experiences of need satisfaction following from this sense of beneficence contributing substantially to middle adults' well-being.

### Late Adulthood

The final task in Erikson's (1963, 1968) model is developing ego integrity. Late adults achieve a sense of ego integrity when they feel that the puzzle pieces of their identity fit. Looking back at their life, they feel that both their peak experiences (e.g., moments of happiness and success) and their struggles (i.e. moments of loss, doubt, and failure) were meaningful and have contributed to the person they are today. Ego integrity does not entail a naïve, optimistic outlook on life. Instead, it denotes an attitude of acceptance whereby people authentically come to terms with both positive and negative life events. Ideally, ego integrity contributes to feelings of serenity, harmony, and death acceptance. Conversely, despair is characteristic of elderly who continue to feel sharp regret over past

events. They still dwell over their failures and missed opportunities, ultimately experiencing resentment and bitterness over a life not fully lived or perhaps even wasted. Late adults experiencing despair more often suffer from death anxiety, loneliness, and mental health problems (Dezutter et al., 2013; James & Zarrett, 2006; Van Hiel & Vansteenkiste, 2009).

As ego integrity represents the final chapter of individuals' identity development, it can again be assumed that experiences of psychological need satisfaction accumulated throughout life contribute to more ego integrity. In turn, ego integrity is likely to contribute to elderly's current experiences of need satisfaction because they have more positive appraisals of life events, thereby deriving more need satisfaction from the same event (e.g., a visit from a grandchild, a letter from a friend) than people suffering from despair. A number of studies have provided indirect evidence for the role of need satisfaction in ego integrity. Some studies focused on the transition to retirement, which represents an important juncture in the development of ego integrity. Indeed, during retirement people need to reorganize their identity, thereby accepting the diminished prominence of their professional identity, adding or extending other roles (e.g., a role as a grandparent, as an amateur photographer, as a traveler), and seeking new ways to find meaning in life. Longitudinal research showed that people generally experience more autonomy need satisfaction after the transition to retirement, indicating that they typically experience increased freedom to arrange their life and to build their identity (Stenling et al., 2021). Moreover, this research showed that people experiencing episodes of increased need satisfaction, and autonomy need satisfaction in particular, during the retirement transition reported higher well-being (Henning et al., 2019) and were less vulnerable to depressive symptoms (Stenling, et al. 2021).

The transition to a nursing home is another identity-relevant change because people again abandon previous roles, need to accept loss, and may become more aware of their mortality. The nursing home context also provides opportunities for further psychosocial growth because people may develop new friendships and may spend more time engaging in life review (through reminiscence). Several studies have shown that experiences of need satisfaction (e.g., Custers et al., 2012, 2014) and contextual support for the needs (e.g., through caregivers' autonomy support; O'Connor & Vallerand, 1994; Vallerand, O'Connor, & Blais, 1989) contribute to better mental health among nursing home residents. One study even showed that nursing home residents' psychological need satisfaction predicted longevity, with autonomy again playing the most important role (Kasser & Ryan, 1999).

Other indirect evidence for the importance of need satisfaction in ego integrity comes from research demonstrating positive associations between need satisfaction and meaning in life (Eakman, 2013; Martela, Ryan, & Steger, 2018). Psychological need satisfaction was found to relate positively to both general, trait levels of meaning as well as to daily experiences of meaning in life (Hadden & Smith, 2019). Although most of these studies

involved early and middle adults, experiencing a sense of meaning is central to ego integrity and can be considered an important precursor of ego integrity in late adulthood.

Only a few studies to date directly examined associations between psychological need satisfaction and ego integrity among late adults. Van der Kaap-Deeder, Soenens, Van Petegem et al. (2020) showed that elderly who generally reported more need satisfaction when looking back on their life currently experienced more ego integrity and lower despair. Moreover, ego integrity mediated associations between accumulated need satisfaction and death acceptance. Van der Kaap-Deeder et al. (2022) showed that ego integrity not only follows from a developmental history of need satisfaction but also relates positively to late adults' current experiences of need satisfaction. This positive effect of ego integrity on late adults' need satisfaction was demonstrated during the COVID-19 pandemic, a period of crisis seriously hampering individuals' psychological needs, threatening their physical health, and perhaps even increasing their awareness of mortality (van der Kaap-Deeder et al., 2022). As such, these findings suggest that ego integrity is an important developmental asset during challenging periods, simultaneously rooted in an accumulation of need-satisfying experiences throughout life and contributing to further experiences of need satisfaction and subsequent well-being in difficult times.

Importantly, people scoring high on ego integrity do not attend exclusively to experiences of need satisfaction, thereby minimizing or even denying need-frustrating experiences in their life. Quite the contrary, according to both Erikson (1963) and SDT (Ryan & Deci, 2017; Weinstein, Przybylski, & Ryan, 2013), integrated functioning involves an open and unbiased acceptance of both need-satisfying and need-frustrating memories. All people inevitably encounter moments of need frustration, and ego integrity is not a matter of erasing these moments from one's memory. Instead, it is a matter of being aware of them and of what was learned from them. By bringing experiences of need frustration into awareness rather than suppressing them, people are better able to see the personal relevance of these experiences to their identity, thereby achieving a fuller, better processed, and more balanced view on who they are as a person (Houle & Philippe, 2020). Consistent with the notion that individuals' capacity to engage in this process of integration improves with age, van der Kaap-Deeder et al. (2016) showed that late adults were better able than emerging adults to accept need-frustrating memories. Late adults also reported more connection to their need-frustrating memories, indicating that they had given a clearer role to these memories in their identity and that their need-frustrating memories were more imbued with meaning.

**Summary.** There is indirect and direct evidence that experiences of need satisfaction accumulated throughout life contribute to a greater sense of meaning and ego integrity in late adulthood. With higher levels of ego integrity, people come to terms with difficult episodes in their life and see how both their successes and their failures were meaningful and relevant to their personal identity. Moreover, contextual need support increases individuals' resilience to cope well with the key transitions of late adulthood (e.g., retirement

and living in a nursing home), thereby enabling people to maintain high levels of well-being and to further grow as a person even during the final stages of life.

## Conclusion

Throughout this review we highlighted how the satisfaction of the psychological needs is involved in the successful resolution of the key developmental tasks in every period of the lifespan. Thus, psychological need satisfaction can be considered a driving force behind the epigenetic process through which developmental strengths build upon each other. It provides the mental fuel needed to deal with developmental challenges in flexible, creative, and growth-promoting ways. Importantly, individuals play an increasingly agentic role in processes of need satisfaction. In addition to receiving (or not) support for their psychological needs from the context, individuals also select their contexts, engage in goal pursuit, regulate emotional experiences, and process their memories in ways that affect their need-based experiences. Consequently, the role of need satisfaction in psychosocial development is not a one-way street. A history of (contextually provided) need satisfaction provides an initial reservoir of resilience and mental energy needed for individuals to develop higher levels of psychosocial maturity. In turn, the developmental strengths achieved in every life period help people to elicit more need-satisfying experiences, preparing these individuals for effective coping with the next challenge on their life path. As such, there is a highly transactional interplay between contextual need support, agentic efforts to obtain need satisfaction, and psychosocial maturity.

This review also underscores the compatibility between SDT and Erikson's lifespan theory across many themes. SDT shares with Erikson's theory, and other humanistic developmental theories, the assumption that—under supportive circumstances—people develop toward higher levels of psychosocial maturity and integrity (Ryan & Deci, 2017). Other commonalities between these two theories include an emphasis on (dialectical) person x context interactions in development, the recognition that people's development can be forestalled (resulting in an accumulation of socioemotional deficits and an increasing risk for psychopathology), and the centrality of identity formation in human development. Erikson and SDT assume that self-endorsed identity commitments, that is, commitments reflecting individuals' deepest interests, values, and preferences, contribute to well-being throughout the lifespan and to a sense of meaning and ego integrity at the end of life.

Both theories also enrich each other. Although Erikson generally assumed that individuals need appropriate contextual support to thrive and to grow as a person, SDT is more explicit about the nature of this contextual support. It argues that people specifically need experiences of autonomy, competence, and relatedness to deal effectively with each developmental task and to progress successfully throughout the epigenetic series of stages in the lifespan. In turn, because Erikson's theory provides a detailed account of the specific developmental challenges that come across individuals' life paths, it raises important

questions about age-specific requirements for psychosocial growth. It urges SDT-based developmental research to attend to the age-related manifestations of contextual support for the three psychological needs. Ultimately, such more refined knowledge about the inputs needed during specific age periods is essential not only from a fundamental perspective but also from an applied point of view because it can inform developmentally tailored efforts to support individuals' needs, psychosocial maturity, and mental health throughout the lifespan.

## References

Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J. R., & Reeve, J. (2019). Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. *Journal of Educational Psychology*, *111*(3), 497.

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment*. Erlbaum.

Anderson, J. R. (2020). Inviting autonomy back to the table: The importance of autonomy for healthy relationship functioning. *Journal of Marital and Family Therapy*, *46*(1), 3–14.

Andreadakis, E., Joussemet, M., & Mageau, G. A. (2019). How to support toddlers' autonomy: Socialization practices reported by parents. *Early Education and Development*, *30*(3), 297–314.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*, 469–480.

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? *Child Development Perspectives*, *1*(2), 68–73.

Assor, A. (2018). The striving to develop an authentic inner compass as a key component of adolescents' need for autonomy: Parental antecedents and effects on identity, well-being, and resilience. In B. Soenens, M. Vansteenkiste, & S. Van Petegem (Eds.), *Autonomy in adolescent development: Toward conceptual clarity* (pp. 119–144). Psychology Press.

Assor, A., Benita, M., Yitshaki, N., Geifman, Y., & Maree, W. (2020). Sense of authentic inner compass as a moral resource across cultures: Possible implications for resisting negative peer-pressure and for parenting. *Journal of Moral Education*, *49*(3), 346–364.

Assor, A., Buhnick-Atzil, O., Rabinovitz-Magen, L., Auerbach, J., Kanat-Maymon, Y., Smiley, P., & Moed, A. (2020). Maternal prenatal conditional regard orientation and postnatal controlling behaviour as predictors of preschoolers' helpless coping with failure: A prospective study. *European Journal of Developmental Psychology*, *17*(6), 828–854.

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of parents' conditional regard: A self-determination theory analysis. *Journal of Personality*, *72*(1), 47–88.

Assor, A., Soenens, B., Yitshaki, N., Ezra, O., Geifman, Y., & Olshtein, G. (2020). Towards a wider conception of autonomy support in adolescence: The contribution of reflective inner-compass facilitation to the formation of an authentic inner compass and well-being. *Motivation and Emotion*, *44*(2), 159–174.

Baten, E., Vansteenkiste, M., De Muynck, G. J., De Poortere, E., & Desoete, A. (2020). How can the blow of math difficulty on elementary school children's motivational, cognitive, and affective experiences be dampened? The critical role of autonomy-supportive instructions. *Journal of Educational Psychology*, *112*(8), 1490–1505.

Bereby-Meyer, Y., Assor, A., & Katz, I. (2004). Children's choice strategies: The effects of age and task demands. *Cognitive Development*, *19*, 127–146.

Bernier, A., Carlson, S. M., & Whipple, N. (2010). From external regulation to self-regulation: Early parenting precursors of young children's executive functioning. *Child Development*, *81*(1), 326–339.

Bernier, A., Matte-Gagné, C., Bélanger, M. È., & Whipple, N. (2014). Taking stock of two decades of attachment transmission gap: Broadening the assessment of maternal behavior. *Child Development*, *85*(5), 1852–1865.

Berzonsky, M. D., & Adams, G. R. (1999). Reevaluating the identity status paradigm: Still useful after 35 years. *Developmental Review*, *19*, 557–590.

Bidee, J., Vantilborgh, T., Pepermans, R., Willems, J., Jegers, M., & Hofmans, J. (2017). Daily motivation of volunteers in healthcare organizations: Relating team inclusion and intrinsic motivation using self-determination theory. *European Journal of Work and Organizational Psychology*, *26*(3), 325–336.

Bindman, S. W., Pomerantz, E. M., & Roisman, G. I. (2015). Do children's executive functions account for associations between early autonomy-supportive parenting and achievement through high school? *Journal of Educational Psychology*, *107*(3), 756–770.

Blais, M. R., Sabourin, S., Boucher, C., & Vallerand, R. J. (1990). Toward a motivational model of couple happiness. *Journal of Personality and Social Psychology*, *59*(5), 1021–1031.

Bosma, H. A., & Kunnen, E. S. (2001). Determinants and mechanisms in ego identity development: A review and synthesis. *Developmental Review*, *21*(1), 39–66.

Bowlby, J. (1980). *Attachment and loss, Vol 3: Sadness and depression*. Basic Books.

Bowlby, J. (1988). *A secure base: Clinical applications of attachment theory*. Routledge.

Brambilla, M., Assor, A., Manzi, C., & Regalia, C. (2015). Autonomous versus controlled religiosity: Family and group antecedents. *International Journal for the Psychology of Religion*, *25*(3), 193–210.

Brenning, K., & Soenens, B. (2017). A self-determination theory perspective on postpartum depressive symptoms and early parenting behaviors. *Journal of Clinical Psychology*, *73*(12), 1729–1743.

Brenning, K., Soenens, B., Van der Kaap-Deeder, J., Dieleman, L., & Vansteenkiste, M. (2020). Psychologically controlling parenting during toddlerhood: The role of mothers' perceived parenting history and emotion regulation style. *Journal of Child and Family Studies*, *29*, 2257–2267.

Cassidy, J. (1994). Emotion regulation: Influences of attachment relationships. In N. A. Fox (Ed.), The development of emotion regulation: Biological and behavioral considerations. *Monographs of the Society for Research in Child Development*, *59*(Serial No. 240), 228–249.

Chen, X., Rubin, K., Liu, M., Chen, H., Wang, L., Li, D., Gao, X., Cen, G., Gu, H., & Li, B. (2003). Compliance in Chinese and Canadian toddlers: A cross-cultural study. *International Journal of Behavioral Development*, *27*(5), 428–436.

Cimon-Paquet, C., Bernier, A., Matte-Gagné, C., & Mageau, G. A. (2020). Early maternal autonomy support and mathematical achievement trajectories during elementary school. *Learning and Individual Differences*, *79*, 101855.

Cordeiro, P. M. G., Paixão, M. P., Lens, W., Lacante, M., & Luyckx, K. (2018). Parenting styles, identity development, and adjustment in career transitions: The mediating role of psychological needs. *Journal of Career Development*, *45*(1), 83–97.

Costa, S., Gugliandolo, M. C., Barberis, N., Cuzzocrea, F., & Liga, F. (2019). Antecedents and consequences of parental psychological control and autonomy support: The role of psychological basic needs. *Journal of Social and Personal Relationships*, *36*(4), 1168–1189.

Côté-Lecaldare, M., Joussemet, M., & Dufour, S. (2016). How to support toddlers' autonomy: A qualitative study with child care educators. *Early Education and Development*, *27*(6), 822–840.

Crocetti, E., Rubini, M., & Meeus, W. (2008). Capturing the dynamics of identity formation in various ethnic groups: Development and validation of a three-dimensional model. *Journal of Adolescence*, *31*(2), 207–222.

Curran, T., Hill, A. P., & Niemiec, C. P. (2013). A conditional process model of children's behavioral engagement and behavioral disaffection in sport based on self-determination theory. *Journal of Sport and Exercise Psychology*, *35*(1), 30–43.

Custers, A. F. J., Cillessen, A. H. J., Westerhof, G. J., Kuin, Y., & Riksen-Walraven, J. M. (2014). Need fulfillment, need importance, and depressive symptoms of residents over the first eight months of living in a nursing home. *International Psychogeriatrics*, *26*(7), 1161–1170.

Custers, A. F. J., Westerhof, G. J., Kuin, Y., Gerritsen, D. L., & Riksen-Walraven, J. M. (2012). Relatedness, autonomy, and competence in the caring relationship: The perspective of nursing home residents. *Journal of Aging Studies*, *26*, 319–326.

Deci, E. L., Driver, R. E., Hotchkiss, L., Robbins, R. J., & Wilson, I. M. (1993). The relation of mothers' controlling vocalizations to children's intrinsic motivation. *Journal of Experimental Child Psychology*, *55*, 151–162.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668.

Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the benefits of giving as well as receiving autonomy support: Mutuality in close friendships. *Personality and Social Psychology Bulletin*, *32*(3), 313–327.

De Clerck, T., Willem, A., Aelterman, N., & Haerens, L. (2021). Volunteers managing volunteers: The role of volunteer board members' motivating and demotivating style in relation to volunteers' motives to stay volunteer. *Voluntas*, *32*, 1271–1284.

De Muynck, G. J., Morbée, S., Soenens, B., Haerens, L., Vermeulen, O., Vande Broek, G., & Vansteenkiste, M. (2021). Do both coaches and parents contribute to youth soccer players' motivation and engagement? An examination of their unique (de)motivating roles. *International Journal of Sport and Exercise Psychology, 195*(5), 761–779.

Dezutter, J., Wiesmann, U., Apers, S., & Luyckx, K. (2013). Sense of coherence, depressive feelings and life satisfaction in older persons: A closer look at the role of integrity and despair. *Aging and Mental Health*, *17*, 839–843.

Dieleman, L., Soenens, B., Prinzie, P., De Clercq, L., Ortibus, E., & De Pauw, S. (2021). Daily parenting of children with cerebral palsy: The role of daily child behavior, parents' daily psychological needs, and mindful parenting. *Development and Psychopathology*, *33*, 184–200.

Dieleman, L. M., Soenens, B., Vansteenkiste, M., Prinzie, P., Laporte, N., & De Pauw, S. S. (2019). Daily sources of autonomy-supportive and controlling parenting in mothers of children with ASD: The role of child behavior and mothers' psychological needs. *Journal of Autism and Developmental Disorders*, *49*(2), 509–526.

De Wolff, M. S., & Van Ijzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, *68*(4), 571–591.

Dong, S., Dubas, J. S., Deković, M., Wang, Z., van Aken, M. A., & Wu, M. (2022). Committed compliance and maternal parenting behaviors predict internalization of rules and externalizing behaviors in Chinese preschool children. *Early Education and Development, 33*(1), 58–74.

Duineveld, J. J., Parker, P. D., Ryan, R. M., Ciarrochi, J., & Salmela-Aro, K. (2017). The link between perceived maternal and paternal autonomy support and adolescent well-being across three major educational transitions. *Developmental Psychology*, *53*, 1978–1994.

Eakman, A. M. (2013). Relationships between meaningful activity, basic psychological needs, and meaning in life: Test of the meaningful activity and life meaning model. *OTJR: Occupation, Participation and Health*, *33*(2), 100–109.

Erikson, E. H. (1963). *Childhood and society*. W. W. Norton.

Erikson, E. H. (1968). *Identity: Youth and crisis*. W. W. Norton.

Erikson, E. H. (1997). *The life cycle completed* (Revised ed.). W. W. Norton.

Froiland, J. M. (2011). Parental autonomy support and student learning goals: A preliminary examination of an intrinsic motivation intervention. *Child & Youth Care Forum*, *40*, 135–149.

Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion*, *27*(3), 199–223.

Grant, A. M. (2007). Relational job design and the motivation to make a prosocial difference. *Academy of Management Review*, *32*(2), 393–417.

Grolnick, W. S., Deci, E. L., & Ryan, R. M. (1997). Internalization within the family: The selfdetermination perspective. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 135–161). Wiley.

Grolnick, W., Frodi, A., & Bridges, L. (1984). Maternal control style and the mastery motivation of one-year-olds. *Infant Mental Health Journal*, *5*(2), 72–82.

Grolnick, W. S., Gurland, S. T., DeCourcey, W., & Jacob, K. (2002). Antecedents and consequences of mothers' autonomy support: An experimental investigation. *Developmental Psychology*, *38*(1), 143–155.

Grolnick, W. S., Kurowski, C. O., Dunlap, K. G., & Hevey, C. (2000). Parental resources and the transition to junior high. *Journal of Research on Adolescence*, *10*(4), 465–488.

Grolnick, W. S., & Pomerantz, E. M. (2009). Issues and challenges in studying parental control: Toward a new conceptualization. *Child Development Perspectives*, *3*(3), 165–170.

Grolnick, W. S., Price, C. E., Beiswenger, K. L., & Sauck, C. C. (2007). Evaluative pressure in mothers: Effects of situation, maternal, and child characteristics on autonomy supportive versus controlling behavior. *Developmental Psychology*, *43*, 991–1002.

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, *52*, 890–898.

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, *81*(2), 143–154.

Grossmann, K. E., Grossmann, K., Kindler, H., & Zimmermann, P. (2008). A wider view of attachment and exploration: The influence of mothers and fathers on the development of psychological security from infancy to young adulthood. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment theory and research* (2nd ed., pp. 857–879). Guilford.

Grotevant, H. D. (1987). Toward a process model of identity formation. Journal of Adolescent Research, 2(3), 203–222.

Hadden, B. W., & Smith, C. V. (2019). I gotta say, today was a good (and meaningful) day: Daily meaning in life as a potential basic psychological need. *Journal of Happiness Studies*, *20*(1), 185–202.

Hadden, B. W., Smith, C. V., & Knee, C. R. (2014). The way I make you feel: How relatedness and compassionate goals promote partner's relationship satisfaction. *Journal of Positive Psychology*, *9*(2), 155–162.

Haivas, S., Hofmans, J., & Pepermans, R. (2012). Self-determination theory as a framework for exploring the impact of the organizational context on volunteer motivation: A study of Romanian volunteers. *Nonprofit and Voluntary Sector Quarterly*, *41*(6), 1195–1214.

Haivas, S., Hofmans, J., & Pepermans, R. (2013). Volunteer engagement and intention to quit from a self-determination theory perspective. *Journal of Applied Social Psychology*, *43*(9), 1869–1880.

Haski-Leventhal, D., Kach, A., & Pournader, M. (2019). Employee need satisfaction and positive workplace outcomes: The role of corporate volunteering. *Nonprofit and Voluntary Sector Quarterly*, *48*(3), 593–615.

Henning, G., Bjälkebring, P., Stenling, A., Thorvaldsson, V., Johansson, B., & Lindwall, M. (2019). Changes in within- and between-person associations between basic psychological need satisfaction and well-being after retirement. *Journal of Research in Personality*, *79*, 151–160.

Hodgins, H. S., Koestner, R., & Duncan, N. (1996). On the compatibility of autonomy and relatedness. *Personality and Social Psychology Bulletin*, *22*(3), 227–237.

Hope, N. H., Milyavskaya, M., Holding, A. C., & Koestner, R. (2014). Self-growth in the college years: Increased importance of intrinsic values predicts resolution of identity and intimacy stages. *Social Psychological and Personality Science*, *5*(6), 705–712.

Houle, I., & Philippe, F. L. (2020). Is the negative always that bad? Or how emotion regulation and integration of negative memories can positively affect well-being. Journal of Personality, 88(5), 965–977.

Huang, Y., Bortree, D. S., Yang, F., & Wang, R. (2020). Encouraging volunteering in nonprofit organizations: The role of organizational inclusion and volunteer need satisfaction. *Journal of Nonprofit & Public Sector Marketing*, *32*(2), 147–165.

Inguglia, C., Liga, F., Coco, A. L., Musso, P., & Ingoglia, S. (2018). Satisfaction and frustration of autonomy and relatedness needs: Associations with parenting dimensions and psychological functioning. *Motivation and Emotion*, *42*(5), 691–705.

James, J. B., & Zarrett, N. (2006). Ego-integrity in the lives of older women. *Journal of Adult Development*, *13*(2), 61–75.

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology*, *102*(3), 588–600.

Jõesaar, H., Hein, V., & Hagger, M. S. (2012). Youth athletes' perception of autonomy support from the coach, peer motivational climate and intrinsic motivation in sport setting: One-year effects. *Psychology of Sport and Exercise*, *13*(3), 257–262.

Joussemet, M., Koestner, R., Lekes, N., & Houlfort, N. (2004). Introducing uninteresting tasks to children: A comparison of the effects of rewards and autonomy support. *Journal of Personality*, *72*, 139–166.

Joussemet, M., Koestner, R., Lekes, N., & Landry, R. (2005). A longitudinal study of the relationship of maternal autonomy support to children's adjustment and achievement in school. *Journal of Personality*, *73*, 1215–1236.

Joussemet, M., Landry, R., & Koestner, R. (2008). A self-determination theory perspective on parenting. *Canadian Psychology*, *49*(3), 194–200.

Kanat-Maymon, Y., Roth, G., Assor, A., & Raizer, A. (2016). Controlled by love: The harmful relational consequences of perceived conditional positive regard. *Journal of Personality*, *84*(4), 446–460.

Kaniušonytė, G., & Žukauskienė, R. (2018). Relationships with parents, identity styles, and positive youth development during the transition from adolescence to emerging adulthood. *Emerging Adulthood*, *6*(1), 42–52.

Kärtner, J., Giner Torréns, M., & Schuhmacher, N. (2021). Parental structuring during shared chores and the development of helping across the second year. *Social Development*, *30*(2), 374–395.

Kasser, T. (2002). *The high price of materialism*. MIT Press.

Kasser, T., Koestner, R., & Lekes, N. (2002). Early family experiences and adult values: A 26-year, prospective longitudinal study. *Personality and Social Psychology Bulletin*, *28*(6), 826–835.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*(3), 280–287.

Kasser, V. G., & Ryan, R. M. (1999). The relation of psychological needs for autonomy and relatedness to vitality, well-being, and morality in a nursing home. *Journal of Applied Social Psychology*, *29*, 935–954.

Katz, I., Cohen, R., Green-Cohen, M., & Morsiano-davidpur, S. (2018). Parental support for adolescents' autonomy while making a first career decision. *Learning and Individual Differences*, *65*, 12–19.

Kindt, S., Vansteenkiste, M., Loeys, T., Cano, A., Lauwerier, E., Verhofstadt, L. L., & Goubert, L. (2015). When is helping your partner with chronic pain a burden? The relation between helping motivation and personal and relational functioning. *Pain Medicine*, *16*(9), 1732–1744.

Klar, M., & Kasser, T. (2009). Some benefits of being an activist: Measuring activism and its role in psychological well-being. *Political Psychology*, *30*(5), 755–777.

Knee, C. R., Hadden, B. W., Porter, B., & Rodriguez, L. M. (2013). Self-determination theory and romantic relationship processes. *Personality and Social Psychology Review*, *17*(4), 307–324.

Kochanska, G., Aksan, N., & Carlson, J. J. (2005). Temperament, relationships, and young children's receptive cooperation with their parents. *Developmental Psychology*, *41*(4), 648–660.

Koestner, R., Otis, N., Powers, T. A., Pelletier, L., & Gagnon, H. (2008). Autonomous motivation, controlled motivation, and goal progress. *Journal of Personality*, *76*(5), 1201–1230.

Koestner, R., Powers, T. A., Carbonneau, N., Milyavskaya, M., & Chua, S. N. (2012). Distinguishing autonomous and directive forms of goal support: Their effects on goal progress, relationship quality, and subjective well-being. *Personality and Social Psychology Bulletin*, *38*(12), 1609–1620.

Koestner, R., Powers, T. A., Holding, A., Hope, N., & Milyavskaya, M. (2020). Relation of parental support of emerging adults' goals to well-being over time: The mediating roles of goal progress and autonomy need satisfaction. *Motivation Science*, *6*, 374–385.

Koestner, R., Powers, T. A., Milyavskaya, M., Carbonneau, N., & Hope, N. (2015). Goal internalization and persistence as a function of autonomous and directive forms of goal support. *Journal of Personality*, *83*(2), 179–190.

Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling vs. informational styles on intrinsic motivation and creativity. *Journal of Personality*, *52*(3), 233–248.

Kopp, C. B. (1982). Antecedents of self-regulation: A developmental perspective. *Developmental Psychology*, 18, 199–214.

Kroger, J., & Marcia, J. E. (2011). The identity statuses: Origins, meanings, and interpretations. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 31–53). Springer.

La Guardia, J. G. (2009). Developing who I am: A self-determination theory approach to the establishment of healthy identities. *Educational Psychologist*, *44*(2), 90–104.

La Guardia, J. G., & Patrick, H. (2008). Self-determination theory as a fundamental theory of close relationships. *Canadian Psychology*, *49*(3), 201–209.

La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology*, *79*(3), 367–384.

Laporte, N., Soenens, B., Brenning, K., & Vansteenkiste, M. (2021). Adolescents as active managers of their own psychological needs: The role of psychological need crafting in adolescents' mental health. *Journal of Adolescence*, *88*, 67–83.

Laurin, J. C., & Joussemet, M. (2017). Parental autonomy-supportive practices and toddlers' rule internalization: A prospective observational study. *Motivation and Emotion*, *41*(5), 562–575.

Laurin, J. C., Joussemet, M., Tremblay, R. E., & Boivin, M. (2015). Early forms of controlling parenting and the development of childhood anxiety. *Journal of Child and Family Studies*, *24*(11), 3279–3292.

Legate, N., Ryan, R. M., & Weinstein, N. (2012). Is coming out always a "good thing"? Exploring the relations of autonomy support, outness, and wellness for lesbian, gay, and bisexual individuals. *Social Psychological and Personality Science*, *3*(2), 145–152.

Lekes, N., Gingras, I., Philippe, F. L., Koestner, R., & Fang, J. (2010). Parental autonomy-support, intrinsic life goals, and well-being among adolescents in China and North America. *Journal of Youth and Adolescence*, *39*(8), 858–869.

Lekes, N., Houlfort, N., Milyavskaya, M., Hope, N. H., & Koestner, R. (2016). The role of intrinsic values for self-growth and community contribution at different life stages: Differentially predicting the vitality of university students and teachers over one year. *Personality and Individual Differences*, *98*, 48–52.

Leonard, J., Martinez, D. N., Dashineau, S., Park, A., & Mackey, A. (2021). Children persist less when adults take over. *Child Development*, *92*(4), 1325–1336.

Linkiewich, D., Martinovich, V. V., Rinaldi, C. M., Howe, N., & Gokiert, R. (2021). Parental autonomy support in relation to preschool aged children's behavior: Examining positive guidance, negative control, and responsiveness. *Clinical Child Psychology and Psychiatry*, *26*(3), 810–822.

Luyckx, K., Goossens, L., & Soenens, B. (2006). A developmental contextual perspective on identity construction in emerging adulthood: Change dynamics in commitment formation and commitment evaluation. *Developmental Psychology*, *42*(2), 366–380.

Luyckx, K., Schwartz, S. J., Berzonsky, M. D., Soenens, B., Vansteenkiste, M., Smits, I., & Goossens, L. (2008). Capturing ruminative exploration: Extending the four-dimensional model of identity formation in late adolescence. *Journal of Research in Personality*, *42*(1), 58–82.

Luyckx, K., Soenens, B., Vansteenkiste, M., Goossens, L., & Berzonsky, M. D. (2007). Parental psychological control and dimensions of identity formation in emerging adulthood. *Journal of Family Psychology*, *21*(3), 546–550.

Luyckx, K., Vansteenkiste, M., Goossens, L., & Duriez, B. (2009). Basic need satisfaction and identity formation: Bridging self-determination theory and process-oriented identity research. *Journal of Counseling Psychology*, *56*(2), 276–288.

Mabbe, E., Soenens, B., De Muynck, G., & Vansteenkiste, M. (2018). The impact of feedback valence and communication style on intrinsic motivation in middle childhood: Experimental evidence and generalization across individual differences. *Journal of Experimental Child Psychology*, *170*, 134–160.

Mabbe, E., Soenens, B., Vansteenkiste, M., van der Kaap-Deeder, J., & Mouratidis, A. (2018). Day-to-day variation in autonomy-supportive and psychologically controlling parenting: The role of parents' daily experiences of need satisfaction and need frustration. *Parenting*, *18*(2), 86–109.

Madjar, N., & Cohen-Malayev, M. (2013). Youth movements as educational settings promoting personal development: Comparing motivation and identity formation in formal and non-formal education contexts. *International Journal of Educational Research*, *62*, 162–174.

Mageau, G. A., & Vallerand, R. J. (2003). The coach-athlete relationship: A motivational model. *Journal of Sports Science*, *21*(11), 883–904.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), Growing points in attachment theory and research. *Monographs of the Society for Research in Child Development*, *50*(1–2, Serial No. 209), 66–106.

Martela, F., & Ryan, R. M. (2016). The benefits of benevolence: Basic psychological needs, beneficence, and the enhancement of well-being. *Journal of Personality*, *84*(6), 750–764.

Martela, F., & Ryan, R. M. (2020). Distinguishing between basic psychological needs and basic wellness enhancers: The case of beneficence as a candidate psychological need. *Motivation and Emotion*, *44*(1), 116–133.

Martela, F., Ryan, R. M., & Steger, M. F. (2018). Meaningfulness as satisfaction of autonomy, competence, relatedness, and beneficence: Comparing the four satisfactions and positive affect as predictors of meaning in life. *Journal of Happiness Studies*, *19*(5), 1261–1282.

Mauras, C. P., Grolnick, W. S., & Friendly, R. W. (2013). Time for "The talk" . . . Now what? Autonomy support and structure in mother-daughter conversations about sex. *Journal of Early Adolescence*, *33*(4), 458–481.

McAdams, D. P. (2001). *Generativity in midlife*. In M. E. Lachman (Ed.), *Handbook of midlife development* (pp. 395–443). Wiley series on adulthood and aging. Wiley.

McAdams, D. P., St. Aubin, E. de, & Logan, R. L. (1993). Generativity among young, midlife, and older adults. *Psychology and Aging*, *8*(2), 221–230.

McDavid, L., Cox, A. E., & Amorose, A. J. (2012). The relative roles of physical education teachers and parents in adolescents' leisure-time physical activity motivation and behavior. *Psychology of Sport and Exercise*, *13*(2), 99–107.

Meeus, W. (2011). The study of adolescent identity formation 2000–2010: A review of longitudinal research. *Journal of Research on Adolescence*, *21*(1), 75–94.

Mikulincer, M., Shaver, P. R. & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and Emotion*, *27*, 77–102.

Millette, V., & Gagné, M. (2008). Designing volunteers' tasks to maximize motivation, satisfaction and performance: The impact of job characteristics on volunteer engagement. *Motivation and Emotion*, *32*(1), 11–22.

Moè, A., Katz, I., & Alesi, M. (2018). Scaffolding for motivation by parents, and child homework motivations and emotions: Effects of a training programme. *British Journal of Educational Psychology*, *88*(2), 323–344.

Moller, A. C., Deci, E. L., & Elliot, A. J. (2010). Person-level relatedness and the incremental value of relating. *Personality and Social Psychology Bulletin*, *36*(6), 754–767.

Moreau, E., & Mageau, G. A. (2012). The importance of perceived autonomy support for the psychological health and work satisfaction of health professionals: Not only supervisors count, colleagues too! *Motivation and Emotion*, *36*(3), 268–286.

Nelson, S. K., Kushlev, K., & Lyubomirsky, S. (2014). The pains and pleasures of parenting: When, why, and how is parenthood associated with more or less well-being? *Psychological Bulletin*, *140*(3), 846–895.

Obradovic, J., Sulik, M. J., & Shaffer, A. (2021). Learning to let go: Parental over-engagement predicts poorer self-regulation in kindergartners. *Journal of Family Psychology*, *35*(8), 1160–1170.

O'Connor, B. P., & Vallerand, R. J. (1994). The relative effects of actual and experienced autonomy on motivation in nursing home residents. *Canadian Journal on Aging*, *13*, 528–538.

Oostlander, J., Güntert, S. T., & Wehner, T. (2014). Linking autonomy-supportive leadership to volunteer satisfaction: A self-determination theory perspective. *Voluntas*, *25*(6), 1368–1387.

Otterpohl, N., Steffgen, S. T., Stiensmeier-Pelster, J., Brenning, K., & Soenens, B. (2020). The intergenerational continuity of parental conditional regard and its role in mothers' and adolescents' contingent self-esteem and depressive symptoms. *Social Development*, *29*(1), 143–158.

Patall, E. A., Cooper, H., & Robinson, J. C. (2008). The effects of choice on intrinsic motivation and related outcomes: A meta-analysis of research findings. *Psychological Bulletin*, *134*(2), 270–300.

Patall, E. A., & Hooper, S. Y. (2018). The role of choice in understanding adolescent autonomy and academic functioning. In B. Soenens, S. Van Petegem, & M. Vansteenkiste (Eds.), *Autonomy in adolescent development: Towards conceptual clarity* (pp. 145–167). Routledge.

Patrick, H., Knee, C. R., Canevello, A., & Lonsbary, C. (2007). The role of need fulfillment in relationship functioning and well-being: A self-determination theory perspective. *Journal of Personality and Social Psychology*, *92*(3), 434–457.

Pavey, L., Greitemeyer, T., & Sparks, P. (2011). Highlighting relatedness promotes prosocial motives and behavior. *Personality and Social Psychology Bulletin*, *37*(7), 905–917.

Peterson, B. E. (2006). Generativity and successful parenting: An analysis of young adult outcomes. *Journal of Personality*, *74*(3), 847–870.

Philippe, F. L., Koestner, R., & Lekes, N. (2013). On the directive function of episodic memories in people's lives: A look at romantic relationships. *Journal of Personality and Social Psychology*, *104*, 164–179.

Ratelle, C. F., Simard, K., & Guay, F. (2013). University students' subjective well-being: The role of autonomy support from parents, friends, and the romantic partner. *Journal of Happiness Studies*, *14*(3), 893–910.

Ravindran, N., Genaro, B. G., & Cole, P. M. (2021). Parental structuring in response to toddler negative emotion predicts children's later use of distraction as a self-regulation strategy for waiting. *Child Development*, *92*(5), 1969–1983.

Reeve, J. (2006). Teachers as facilitators: What autonomy-supportive teachers do and why their students benefit. *Elementary School Journal*, *106*(3), 225–236.

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, *63*(3), 397–427.

Ryan, R. M., Brown, K. W., & Creswell, J. D. (2007). How integrative is attachment theory? Unpacking the meaning and significance of felt security. *Psychological Inquiry*, *18*(3), 177–182.

Ryan, R. M., & Deci, E. L. (2003). On assimilating identities to the self: A self-determination theory perspective on internalization and integrity within cultures. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (pp. 255–273). Guilford.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., La Guardia, J. G., Solky-Butzel, J., Chirkov, V., & Kim, Y. (2005). On the interpersonal regulation of emotions: Emotional reliance across gender, relationships, and cultures. *Personal Relationships*, *12*(1), 145–163.

Ryan, W. S., Legate, N., Weinstein, N., & Rahman, Q. (2017). Autonomy support fosters lesbian, gay, and bisexual identity disclosure and wellness, especially for those with internalized homophobia. *Journal of Social Issues*, *73*(2), 289–306.

Ryan, W. S., & Ryan, R. M. (2019). Toward a social psychology of authenticity: Exploring within-person variation in autonomy, congruence, and genuineness using self-determination theory. *Review of General Psychology*, *23*(1), 99–112.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, *76*(3), 482–497.

Skhirtladze, N., Van Petegem, S., Javakhishvili, N., Schwartz, S. J., & Luyckx, K. (2019). Motivation and psychological need fulfillment on the pathway to identity resolution. *Motivation and Emotion*, *43*(6), 894–905.

Smetana, J. G. (2018). The development of autonomy during adolescence: A social-cognitive domain theory view. In B. Soenens, M. Vansteenkiste, and S. Van Petegem (Eds.), *Autonomy in adolescent development: Toward conceptual clarity* (pp. 53–73). Psychology Press.

Soenens, B., Berzonsky, M. D., Dunkel, C. S., Papini, D. R., & Vansteenkiste, M. (2011). Are all identity commitments created equally? The importance of motives for commitment for late adolescents' personal adjustment. *International Journal of Behavioral Development*, *35*(4), 358–369.

Soenens, B., Deci, E. L., & Vansteenkiste, M. (2017). How parents contribute to children's psychological health: The critical role of psychological need support. In L. Wehmeyer, T. D. Little, S. J. Lopez, K. A. Shogren, & R. Ryan (Eds.), *Handbook on the development of self-determination* (pp. 171–187). Springer.

Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review*, *30*(1), 74–99.

Soenens, B., & Vansteenkiste, M. (2011). When is identity congruent with the self? A selfdetermination theory perspective. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 381–402). Springer.

Soenens, B., & Vansteenkiste, M. (2020). Taking adolescents' agency in socialization seriously: The role of appraisals and cognitive-behavioral responses in autonomy-relevant parenting. *New Directions for Child and Adolescent Development*, *2020*(173), 7–26.

Soenens, B., Vansteenkiste, M., & Beyers, W. (2019). Parenting adolescents. In M. H. Bornstein (Ed.), *Handbook of parenting, Vol. 1: Parenting across the lifespan* (3rd ed., pp. 101–167). Routledge.

Soenens, B., Vansteenkiste, M., Van Petegem, S., Beyers, W., & Ryan, R. M. (2018). How to solve the conundrum of adolescent autonomy? On the importance of distinguishing between independence and volitional functioning. In B. Soenens, M. Vansteenkiste, & S. Van Petegem (Eds.), *Autonomy in adolescent development: Towards conceptual clarity* (pp. 1–32). Routledge.

Stenling, A., Henning, G., Bjälkebring, P., Tafvelin, S., Kivi, M., Johansson, B., & Lindwall, M. (2021). Basic psychological need satisfaction across the retirement transition: Changes and longitudinal associations with depressive symptoms. *Motivation and Emotion*, *45*(1), 75–90.

Sznitman, A. G., Van Petegem, S., & Zimmermann, G. (2019). Exposing the role of coparenting and parenting for adolescent personal identity processes. *Journal of Social and Personal Relationships*, *36*(4), 1233–1255.

Unanue, W., Dittmar, H., Vignoles, V. L., & Vansteenkiste, M. (2014). Materialism and well-being in the UK and Chile: Basic need satisfaction and basic need frustration as underlying psychological processes. *European Journal of Personality*, *28*(6), 569–585.

Vallerand, R. J., O'Connor, B. P., & Blais, M. R. (1989). Life satisfaction of elderly individuals in regular community housing, in low-cost community housing, and high and low self-determination nursing homes. *International Journal of Aging and Human Development*, *28*, 277–283.

van der Kaap-Deeder, J., Soenens, B., Mabbe, E., Dieleman, L., Mouratidis, A., Campbell, R., & Vansteenkiste, M. (2019). From daily need experiences to autonomy-supportive and psychologically controlling parenting via psychological availability and stress. *Parenting*, *19*(3), 177–202.

van der Kaap-Deeder, J., Soenens, B., Mouratidis, A., De Pauw, S., Krøjgaard, P., & Vansteenkiste, M. (2020). Towards a detailed understanding of preschool children's memory-related functioning and emotion regulation: The role of parents' observed reminiscence style, memory valence, and parental gender. *Developmental Psychology*, *56*(9), 1696–1708.

van der Kaap-Deeder, J., Soenens, B., Van Petegem, S., Neyrinck, B., De Pauw, S., Raemdonck, E., & Vansteenkiste, M. (2020). Live well and die with inner peace: The importance of retrospective need-based experiences, ego integrity and despair for late adults' death attitudes. *Archives of Gerontology and Geriatrics*, *91*, 104184.

van der Kaap-Deeder, J., Vansteenkiste, M., Soenens, B., Loeys, T., Mabbe, E., & Gargurevich, R. (2015). Autonomy-supportive parenting and autonomy-supportive sibling interactions: The role of mothers' and siblings' psychological need satisfaction. *Personality and Social Psychology Bulletin*, *41*(11), 1590–1604.

van der Kaap-Deeder, J., Vansteenkiste, M., Van Petegem, S., Raes, F., & Soenens, B. (2016). On the integration of need-related autobiographical memories among late adolescents and late adults: The role of depressive symptoms and self-congruence. *European Journal of Personality*, *30*(6), 580–593.

van der Kaap-Deeder, J., Vermote, B., Waterschoot, J., Soenens, B., Morbée, S., & Vansteenkiste, M. (2022). The role of ego integrity and despair in older adults' well-being during the COVID-19 crisis: The mediating role of need-based experiences. *European Journal of Ageing*, *19*(1), 117–129.

Van Hiel, A., & Vansteenkiste, M. (2009). Ambitions fulfilled? The effects of intrinsic and extrinsic goal attainment on older adults' ego-integrity and death attitudes. *International Journal of Aging and Human Development*, *68*, 27–51.

van Hoof, A. (1999). The identity status field re-reviewed: An update of unresolved and neglected issues with a view on some alternative approaches. *Developmental Review*, *19*(4), 497–556.

van Ijzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, *117*(3), 387–403.

van Schie, S., Gautier, A., Pache, A. C., & Güntert, S. T. (2019). What keeps corporate volunteers engaged: Extending the volunteer work design model with self-determination theory insights. *Journal of Business Ethics*, *160*(3), 693–712.

Vansteenkiste, M., Aelterman, N., Haerens, L., & Soenens, B. (2019). Seeking stability in stormy educational times: A need-based perspective on (de)motivating teaching grounded in self-determination theory. In E. N. Gonida & M. S. Lemos (Eds.), *Advances in motivation and achievement, Vol. 20*: *Motivation in education at a time of global change: Theory, research, and implications for practice* (pp. 53–80). Emerald.

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, *44*, 1–31.

Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., Dochy, F., Mouratidis, A., Aelterman, N., Haerens, L., & Beyers, W. (2012). Identifying configurations of perceived teacher autonomy support and structure: Associations with self-regulated learning, motivation and problem behavior. *Learning and Instruction*, *22*(6), 431–439.

Vansteenkiste, M., Simons, J., Lens, W., Soenens, B., & Matos, L. (2005). Examining the motivational impact of intrinsic versus extrinsic goal framing and autonomy-supportive versus internally controlling communication style on early adolescents' academic achievement. *Child Development*, *76*(2), 483–501.

Vansteenkiste, M., & Soenens, B. (2015). *Vitamines voor groei: Ontwikkeling voeden vanuit de Zelf-Determinatie Theorie [Psychological nutrients for growth: Supporting development based on self-determination theory]*. Acco.

Vansteenkiste, M., Soenens, B., & Duriez, B. (2008). Presenting a positive alternative to strivings for material success and the thin-ideal: Understanding the effects of extrinsic relative to intrinsic goal pursuits. In S. L. Lopez (Ed.), *Positive psychology: Exploring the best in people, Vol. 4: Pursuing human flourishing* (pp. 57–86). Greenwood.

Vansteenkiste, M., Soenens, B., Van Petegem, S., & Duriez, B. (2014). Longitudinal associations between adolescent perceived degree and style of parental prohibition and internalization and defiance. *Developmental Psychology*, *50*(1), 229–236.

Vasquez, A. C., Patall, E. A., Fong, C. J., Corrigan, A. S., & Pine, L. (2016). Parent autonomy support, academic achievement, and psychosocial functioning: A meta-analysis of research. *Educational Psychology Review*, *28*(3), 605–644.

Verhoeven, M., van Baar, A. L., & Dekovic, M. (2019). Parenting toddlers. In M. H. Bornstein (Ed.), *Handbook of parenting: Parenting across the lifespan* (Vol. 1, 3rd ed., pp. 56–80). Routledge.

Waterschoot, J., Vansteenkiste, M., & Soenens, B. (2019). The effects of experimentally induced choice on elementary school children's intrinsic motivation: The moderating role of indecisiveness and teacher-student relatedness. *Journal of Experimental Child Psychology*, *188*, 104692.

Weinstein, N., Legate, N., Kumashiro, M., & Ryan, R. M. (2016). Autonomy support and diastolic blood pressure: Long term effects and conflict navigation in romantic relationships. *Motivation and Emotion*, *40*(2), 212–225.

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2013). The integrative process: New research and future directions. *Current Directions in Psychological Science*, *22*(1), 69–74.

Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, *98*(2), 222–244.

Weinstein, N., & Ryan, R. M. (2011). A self-determination theory approach to understanding stress incursion and responses. *Stress and Health*, *27*(1), 4–17.

Weinstein, N., Ryan, W. S., DeHaan, C. R., Przybylski, A. K., Legate, N., & Ryan, R. M. (2012). Parental autonomy support and discrepancies between implicit and explicit sexual identities: Dynamics of self-acceptance and defense. *Journal of Personality and Social Psychology*, *102*(4), 815–832.

Whipple, N., Bernier, A., & Mageau, G. A. (2011a). Broadening the study of infant security of attachment: Maternal autonomy-support in the context of infant exploration. *Social Development*, *20*(1), 17–32.

Whipple, N., Bernier, A., & Mageau, G. A. (2011b). A dimensional approach to maternal attachment state of mind: Relations to maternal sensitivity and maternal autonomy support. *Developmental Psychology*, *47*(2), 396–403.

Williams, G. C., Hedberg, V. A., Cox, E. M., & Deci, E. L. (2000). Extrinsic life goals and health-risk behaviors in adolescents. *Journal of Applied Social Psychology*, *30*(8), 1756–1771.

Wray-Lake, L., DeHaan, C. R., Shubert, J., & Ryan, R. M. (2019). Examining links from civic engagement to daily well-being from a self-determination theory perspective. *Journal of Positive Psychology*, *14*(2), 166–177.

Wuttke, A. (2020). Political engagement's non-political roots: examining the role of basic psychological needs in the political domain. *Motivation and Emotion*, *44*(1), 135–150.

Wuyts, D., Vansteenkiste, M., Mabbe, E., & Soenens, B. (2017). Effects of social pressure and child failure on parents' use of control: An experimental investigation. *Contemporary Educational Psychology*, *51*, 378–390.

Yu, S., Assor, A., & Liu, X. (2015). Perception of parents as demonstrating the inherent merit of their values: Relations with self-congruence and subjective well-being. *International Journal of Psychology*, *50*(1), 70–74.

Zhou, L. H., Ntoumanis, N., & Thøgersen-Ntoumani, C. (2019). Effects of perceived autonomy support from social agents on motivation and engagement of Chinese primary school students: Psychological need satisfaction as mediator. *Contemporary Educational Psychology*, *58*, 323–330.

Zong, X., Cheah, C. S., Yu, J., Lim, H. J., Vu, K. T., & Opara, N. (2019). Identity synthesis as a pathway linking parenting and emerging adults' internalizing problems. *Journal of Child and Family Studies*, *28*(4), 1029–1041.

# How Parental Autonomy Support, Structure, and Involvement Help Children Flourish: Considering Interactions, Context, and Diversity

Wendy S. Grolnick *and* Rachel E. Lerner

## Abstract

Self-determination theory is an optimal backdrop for researching parenting as it provides a framework for understanding why certain parenting behaviors and strategies facilitate or undermine children's motivation and adjustment. Three parenting dimensions identified within this theory, autonomy support, structure, and involvement, have been found to be associated with a broad array of positive outcomes in children and adolescents. Beyond studying parenting dimensions individually, research highlights the interactive effects of the dimensions and the importance of considering the context within which behaviors are enacted. In addition, while there is support for the importance of the three dimensions across context and culture, how specific parenting dimensions are experienced may vary by culture and context, thereby supporting a "universalism without uniformity" perspective. Research on parenting has begun to consider issues in parenting in diverse populations, again highlighting the importance of the three dimensions. Longitudinal studies are needed to address reciprocal effects between parenting and child behavior. While some work has focused on the factors that facilitate or undermine parents' ability to provide facilitative parenting (e.g., stress), more work in this area is needed so that findings can be incorporated into parenting interventions.

**Key Words:** parenting, child motivation, autonomy support, culture/context and parenting, diverse parent populations

Given parents' crucial role in children's development, it is not surprising that research on how parenting facilitates children's motivation and adjustment continues to increase. From identifying dimensions of parenting that are crucial (e.g., responsiveness) to specifying types of facilitative parenting (e.g., authoritative), information about parenting is more available than ever. While there is an abundance of research on parenting, many studies are atheoretical—they do not stem from a theory of human development. Such research may recommend strategies that parents can use with their children, such as provide choices or dole out rewards for good behavior, but this approach is problematic because it does not specify *why* these strategies are facilitative.

Without an understanding of why parenting is beneficial, parents are at a loss when new situations or developmental challenges arise for which particular strategies are not applicable. Further, such an approach does not generate new ideas to test to expand our knowledge of parenting. A developmental theory that goes beyond parenting is necessary to understand what is helpful for children, to generate new ideas, and to provide guiding recommendations.

Self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2017) is an optimal lens through which to view parenting. Because it focuses on the needs that must be satisfied in order for people to thrive and flourish, it can clarify why certain practices and strategies are facilitative of development and guide caregivers in uncharted territory. SDT specifies that people have three basic needs: for autonomy, competence, and relatedness. It also delineates three dimensions of the environment that are tied to these needs and facilitate adaptive development. In particular, autonomy support, structure, and involvement satisfy the needs for autonomy, competence, and relatedness, respectively. With regard to parenting, supporting autonomy means parents setting the conditions within which children feel choiceful or volitional. At the heart of autonomy-supportive parenting is parents taking children's perspectives—understanding their viewpoints and goals and reacting and acting with them in mind (Grolnick, Deci, & Ryan, 1997). While this does not necessarily mean doing everything a child wants, in supporting autonomy parents consider children's perspectives and provide empathy when their children's desires cannot be directly accommodated. In addition, autonomy support involves supporting children's initiations, providing choices, allowing children input into decisions that affect them, and jointly solving problems with children. By contrast, controlling parenting involves pressuring children toward specific outcomes, ignoring their perspectives, directing their behavior, and solving problems for them.

Involvement is defined as parents providing resources to children (Grolnick & Slowiaczek, 1994). These resources can be tangible, as in materials children need to succeed in school, such as books, or less tangible, such as spending time interacting with and learning about children and providing warmth and affection. Structure involves parents providing clear and consistent guidelines and expectations that help children orient their behavior and understand how to be successful (Farkas & Grolnick, 2010). It also involves providing feedback that helps children develop competencies. Strategies associated with each parenting dimension can be seen in Figure 24.1.

Together, these three social contextual dimensions help explain how children develop the motivational resources to thrive in various contexts. In particular, when parents provide these nutrients, children should feel more volitional in what they do, feel more in control of and competent in tasks, and feel more connected to and valued by important others. Further, when these conditions are met, children will be more likely to take on or internalize the value of important activities and move toward greater autonomous regulation for them (Grolnick et al., 1997).

WENDY S. GROLNICK AND RACHEL E. LERNER

*Parent autonomy support, structure, and involvement strategies*

| Autonomy Support | Structure | Involvement |
|---|---|---|
| Take children's perspectives | Give clear and consistent guidelines and expectations | Dedicate time, attention, and energy |
| Express empathy | Provide explanations for rules and expectations | Listen, paraphrase, and ask open ended questions |
| Encourage open discussion and joint problem-solving | Provide predictable and consistent consequences | Provide needed resources |
| Provide choices | Offer feedback | Convey warmth and affection |
| Support children's initiations | | |

**Figure 24.1**  Parent autonomy support, structure, and involvement strategies

A wealth of data supports the importance of each of the three parenting dimensions for children's motivation and adjustment. Autonomy support has been associated with positive outcomes for children across the age spectrum in studies using a variety of study methods and designs. For example, an observational study of parent-child interactions examined the degree to which mothers of one-year-olds supported their children's autonomy during problem-solving tasks (Grolnick, Frodi, & Bridges, 1984). Supporting autonomy involved allowing children to lead and providing help when needed, while controlling interactions involved directing children and solving problems for them. Children of mothers who were more autonomy-supportive during the interactions were more persistent in solving problems on their own than children whose mothers were more controlling. In a study of elementary school children (Grolnick & Ryan, 1989), parents were interviewed about how they responded to their children in areas such as school and chores. Parents who were rated as more autonomy-supportive had children who were more autonomous in their motivation for school activities, who felt more competent in school, and who performed better academically than those rated as more controlling. Studies using questionnaire measures of parenting, completed by both parents and children, support these results. For example, Soenens and Vansteenkiste (2005) found that adolescents' perceptions of their parents as more autonomy-supportive were associated with more autonomous motivation in school, friendships, and job-seeking behaviors. Autonomous motivation was, in turn, associated with indices of competence in each of these domains.

The positive effects of autonomy support have also been demonstrated longitudinally, including in a study by Joussemet et al. (2005) which coded mothers' autonomy support from interviews and found that higher autonomy support was associated with children's social and academic adjustment and achievement three years later. Bindman, Pomerantz, and Roisman (2015), in perhaps the longest study, showed that higher parental autonomy

support in the first three years of life was related to children's better executive functioning (i.e., memory, attention, and problem-solving) two years later. It also predicted children's achievement in both elementary and high school.

By contrast, research shows the detrimental effects of controlling parenting. Much of this work focuses on psychological control, defined as parents intruding on children's thoughts and feelings (Barber, 1996). Psychologically controlling parenting involves using techniques such as guilt induction, shaming, and love withdrawal. Such techniques have been associated with a number of indices of maladjustment, including internalizing (depression, anxiety) and externalizing (conduct problems, aggression) symptoms (Barber, 1996; Soenens et al., 2005).

Involvement has mainly been examined in the area of schooling. A wealth of data shows that the more parents are involved, the higher are their children's academic motivation (Gonzalez-DeHass, Willems, & Holbein, 2005), school performance (Fan & Chen, 2001), and well-being (Kenney-Benson & Pomerantz, 2005). The positive effects of involvement have been shown with different types of involvement behaviors at home and school. Grolnick and Slowiaczek (1994), for example, developed a three-pronged conceptualization of parent involvement in children's schooling, which included involvement at school (e.g., talking with the teacher, going to school events) and in cognitive/intellectual activities (e.g., going to the library, talking about current events), as well as personal involvement, which included interest in and knowledge about children's school experience. Higher parent involvement on these indices was associated with children's higher perceived competence, autonomous self-regulation, and grades.

Of the three dimensions, there has been the least research on structure. Farkas and Grolnick (2010) identified six components of structure in the academic domain: clear and consistent rules and expectations, predictable consequences, information feedback, opportunities to meet expectations, and authority. When these components were combined, they positively predicted children's perceptions of control, school engagement, and grades. Ratelle et al. (2018) also combined structure components and found that higher parental provision of structure was associated with adolescents' higher school adjustment and vocational self-efficacy and identity.

The above research supports the importance of the three dimensions of parenting for children's motivation and adjustment. However, researchers have been tackling even more complex questions about how parenting dimensions facilitate children's development to provide a more thorough and nuanced understanding. Several key questions have been addressed. The first concerns complexity within and across the dimensions. In particular, researchers have begun to ask whether each of the dimensions is more complex than one overall dimension. For example, should we consider types of autonomy support and control separately? And relevant to the issue of complexity is whether the three dimensions can be considered separately or whether we can best understand their unique and potentially interacting influences on development by considering them together. Second,

do the effects of parenting dimensions depend on the context or culture in which families reside? This has been a somewhat controversial question given that SDT posits universal needs and social contextual dimensions. Third, are the effects of parenting the same in diverse populations of children and families, or are there unique relations? And relatedly, what can work with special populations tell us about the importance of the parenting dimensions more generally? Each of these questions is addressed in the rest of the chapter.

## Complexity in Studying Parenting Dimensions

### Further Differentiation of Parenting Dimensions

New work has suggested the usefulness of further differentiating the parenting dimensions in meaningful ways. For controllingness, Soenens and Vansteenkiste (2010) suggested that controlling interventions could be expressed in two different ways: in an externally controlling way, which attempts to coerce or pressure people to behave through demands, threats, and contingencies, and in an internally controlling way, which involves getting people to pressure themselves by inducing them to feel shame or guilt or to fear withdrawal of love if they do not behave as requested. These two types of control might have different effects on children. In a study of physical education teachers, De Meyer et al. (2016) found that the two types of strategies could be differentiated and that both were associated with students' low intrinsic and identified motivation and high external and amotivation to engage in PE activities. When examined in a cluster analysis, it was found that the group of students who experienced their PE teachers as highly internally controlling displayed the poorest quality motivation.

Building on this work, Levitt, Grolnick, Caruso et al. (2020) examined two types of internally controlling parenting, guilt induction and love withdrawal, and two types of externally controlling parenting, yelling/demanding and punishment/removal of privileges. All types of controlling parenting were associated with children's higher levels of internalizing (depression, anxiety) and externalizing (conduct problems, aggression) symptoms as well as lower self-worth and attachment. Cluster analyses showed that children of parents high in only punishment/removal of privileges were low in autonomous self-regulation but did not necessarily show negative symptoms. By contrast, internal control was particularly detrimental for self-worth, attachment, anxiety, and depression. It is possible that the internally controlling type of controllingness is perceived as particularly rejecting and that, when faced with high internal control, children may internalize emotions and express them through worrying, sadness, or hopelessness. These studies suggest the importance of differentiating types of control for understanding children's patterns of adjustment and distress.

With regard to autonomy support, most parenting measures combine strategies such as providing choice, taking children's perspectives, and solving problems together to form an overall autonomy support score (Mageau et al., 2015). Yet it is also important to determine whether different ways of expressing autonomy support have varying effects.

Marbell and Grolnick (2013) identified two parental autonomy support factors, perspective taking/open exchange and allowance of decision-making/choice, in their work in Ghana. These authors provided evidence, discussed in the section on culture, that the decision-making/choice strategies were perceived differently by children in Ghana, and thus had different effects than those displayed in the United States (Marbell-Pierre et al., 2019). Further research on types of autonomy support typically measured in assessment inventories is required.

There may be additional facets of autonomy support that apply to children at particular ages. For example, Assor et al. (2020) suggested that it is necessary for adolescents to clarify their values and try to form commitments in key life domains such as education, career, and romantic relationships. They use the concept of the authentic inner compass (AIC) to describe people having an autonomous or authentic sense of how they should direct their lives. In addition to parents providing basic autonomy support, including taking adolescents' perspectives and providing choice, to facilitate their adolescents' AIC, parents must provide reflective authentic inner compass facilitation (RAICF). RAICF includes helping adolescents make authentic decisions in difficult situations and encouraging them to examine and reflect upon their values and to search for goals and values they can fully endorse. Supporting the importance of RAICF, in a study of high school students Assor et al. found that the higher adolescents perceived their mothers to be in RAICF, the more they reported feeling they had an AIC foundation, the higher was their autonomous commitment to their future plans and goals, and the higher was their well-being. These effects were found even after taking into account mothers' basic autonomy support.

On the other end of the developmental spectrum, researchers have identified autonomy-supportive practices that parents use with their toddlers. In one study (Andreadakis, Joussemet, & Mageau, 2019), parents reported on what they do when they ask a toddler to do something they don't enjoy doing. The authors identified autonomy-supportive practices that fell into categories of providing empathy, providing reasons behind requests and communicating their value, conveying information about what needs to be done in a noncontrolling style, and modeling behavior. Supporting the SDT view of internalization, the more parents reported using these practices, the more their toddlers were reported to display committed compliance (Kochanska & Aksan, 1995), which is an early indicator of rule internalization that reflects toddlers actively and willingly carrying out required tasks (e.g., spontaneously picking up toys).

We hope that researchers will continue to identify and explore multiple facets of the parenting dimensions. It is through such work that we will be able to provide parents with specific, empirically supported advice and interventions.

*Considering Dimensions Together*

How might the parenting dimensions work together to facilitate children's adjustment? One possibility is that there are interactions between the dimensions and, particularly,

that autonomy support may moderate the effects of the other dimensions. For example, it may be that involvement is facilitative only in the context of an autonomy-supportive environment. This model has been tested by, among others, Steinberg et al. (1992), who found that there were stronger relations between parents' involvement in their children's schooling and children's achievement when the parents' overall styles were more authoritative. Lerner and Grolnick (2020), in a study of elementary school children, measured parents' levels of involvement at school and in cognitive activities, as well as their personal involvement, which included asking about and being knowledgeable about their children's school experience. Higher levels of involvement at school were associated with higher grades, and higher levels of cognitive/intellectual involvement were associated with more autonomous motivation in school. There was an interaction for personal involvement such that personal involvement was positively related to autonomous regulation only in the context of high levels of autonomy support. This study suggests that when parents ask their children about school and are involved in this personal way in a controlling manner, it is not associated with children taking on the regulation of their school behaviors. Without considering the potential interactions between parenting dimensions, the importance of the context of involvement behaviors would be underestimated.

Beyond involvement, it may also be that the effects of structure depend on an autonomy-supportive context. Although not in the context of parenting, Sierens et al. (2009) explored the relation between teacher autonomy support and provision of structure and students' self-regulated learning. Using a sample of Belgian students ranging in age from 15 to 27, they found that provision of structure was positively associated with self-regulated learning in average and high autonomy-supportive contexts, but not in low autonomy-supportive contexts. Although this study did not measure the degree to which teachers provide a controlling context, it shows that teachers' feedback, instructions, and expectations are most facilitative of students' self-regulated learning when provided in a context that includes at least a moderate amount of autonomy support.

While studies examining interactions between parenting dimensions are informative, they do not address how specific behaviors are enacted within a domain. In particular, an interaction between domain-specific behaviors (e.g., asking about school) and parents' overall style does not address how parents act within a particular domain and how this may be facilitative or undermining of children's motivation. To address this, researchers would need to measure how autonomy-supportive parents are in enacting particular behaviors. Lerner et al. (2022) took this approach in a study measuring how autonomy-supportive or controlling parents were in engaging in home (e.g., helping with homework), cognitive/ intellectual, and personal involvement activities. Children were presented with prompts, for example, "When my parent helps me with my homework and helps me prepare for tests . . ." and asked to endorse such items as "He/she makes me do my homework or test preparation his/her way" (controlling) and "He/she gives me choice on how to do my

homework or test preparation" (autonomy-supportive). For each type of involvement, more autonomy-supportive involvement was related to higher perceived competence and autonomous motivation and lower school worry.

Further, researchers have considered how autonomy-supportive or controlling parents are in implementing structure in their homes. Grolnick et al. (2014), in a study of sixth-grade children and their parents, conducted interviews with children to assess how much structure parents provided and whether it was implemented in an autonomy-supportive versus controlling manner in areas of homework and studying, unsupervised time, and responsibilities. Structure implemented in an autonomy-supportive manner included parents establishing rules and expectations with their child, having an open discussion and exchange about rules and expectations, providing empathy for children's views of the rules and expectations, and providing choices and alternatives about how to follow guidelines. Results suggested that when parents implemented structure in an autonomy-supportive manner within the academic domain, children were more engaged in school, felt more competent, and performed better. Interestingly, parents providing structure was more important for unsupervised time than was the manner in which structure was conveyed. The authors interpreted this as indicating that children may be more accepting of rules and guidelines, no matter how they are conveyed, in areas in which safety is an issue, such as unsupervised time. By contrast, in familiar areas or those which children believe are more within their personal purview (Smetana & Asquith, 1994), how structure is conveyed is more crucial for acceptance and internalization.

Grolnick et al. (2015) also examined structure and its implementation (autonomy-supportive versus controlling) at the transition to middle school. There were effects of both of these variables for children's motivation; in particular, the more structure parents provided in sixth grade, the higher were children's perceived competence, school engagement, and grades in seventh grade, controlling for these variables in sixth grade. Above and beyond the level of structure, the more structure was provided in an autonomy-supportive manner, the lower was children's external motivation and the higher were their autonomous motivation and grades in seventh grade, controlling for these variables in sixth grade. The findings suggested that both structure and its autonomy-supportive provision protected children from the motivational declines often experienced when children transition to middle school. It highlights that both provision of nutrients and how they are implemented make a difference to children's adjustment.

Robichaud and Mageau (2020) presented 9- to 12-year-old children with hypothetical rule-breaking scenarios in which parents were depicted as using logical consequences (structure) or mild punishments implemented in an autonomy-supportive (with empathy and rationales) or controlling (inducing guilt, making threats) manner. Children were asked how acceptable they thought the intervention was and what emotions they would experience in this situation. Children's ratings of acceptability were higher and anticipated anger lower in the autonomy-supportive compared to the controlling condition and in

the logical consequences relative to the minor punishment condition, though there were no interactions between type and style of response.

Further research is needed addressing how parents enact involvement or structuring behaviors (i.e., in an autonomy-supportive manner). Such studies address the complexity of parenting behaviors and help to generate nuanced recommendations for facilitating children's motivation.

## Parenting in Context

Parenting occurs within a context, such as the cultural or socioeconomic circumstances and the neighborhood within which families live. It is important to determine whether the context makes a difference for the effects of parenting dimensions. This has been a somewhat controversial area, especially in relation to parental control. In particular, some theorists have argued that parents need to exert more control in certain contexts.

The general idea that need satisfaction might be dependent on people's circumstances was addressed by Chen et al. (2015). In particular, these authors asked whether psychological needs for autonomy, competence, and relatedness might not be important when basic needs for physical and financial safety were not met. In this study, conducted in both China and South Africa, adults were asked whether their needs for environmental and financial safety, as well as their psychological needs, were met. The study also assessed their well-being. Findings suggested that, while safety was predictive of well-being, psychological need satisfaction contributed to well-being above and beyond safety. Further, there was no evidence that psychological need satisfaction contributed to well-being differentially for individuals at various levels of safety satisfaction. This study supported the SDT contention that the three psychological needs are universal and must be met for people to experience well-being. Might this also be the case for social contextual dimensions that facilitate children's development and adjustment?

This question about differential effects of parenting has been posited in the area of neighborhood safety. For example, Furstenberg et al. (1993) argued that in less safe neighborhoods, parental control would be adaptive because it would protect children from danger and engaging in risky behaviors. By contrast, parents in safer neighborhoods could relax control, allowing children to venture out more since the consequences of exploration would be less dire. However, this "dangerous neighborhood hypothesis" for parental control did not differentiate between controlling parenting and structure. Could it be that controlling parenting is associated with more adaptive outcomes in children who live in risky contexts?

Levitt, Grolnick, and Raftery-Helmer (2020) tested the dangerous neighborhood hypothesis in a study of 213 mothers and their sixth-grade children. Mothers reported on the safety of their neighborhoods and on children's symptomatology. Children reported on their mothers' controllingness and provision of structure and their own symptomatology. As would be predicted from SDT, controllingness was associated with higher levels

of symptoms and structure with lower levels across neighborhood context. Neighborhood safety moderated one parenting effect, and it was in the direction opposite that predicted by the dangerous neighborhood hypothesis: controllingness was more detrimental for children's depression in unsafe relative to safer neighborhoods. The authors suggested that having controlling parents and living in an unsafe neighborhood might represent a double stress for children. In contrast to the dangerous neighborhood model, the data supported a neighborhood stress model in which unsafe neighborhoods were associated with more controlling parenting, which then led to more child symptoms. Thus, difficult circumstances can lead parents to engage in less adaptive parenting, particularly less autonomy support, which requires time and psychological availability, readily undermined by stress (Gurland & Grolnick, 2005). However, this is very different from saying that controlling parenting is beneficial in some contexts. Clearly, helping parents to provide motivational nutrients in difficult circumstances is a priority in intervention work.

Beyond neighborhood safety, the effects of parenting may also depend on the culture in which families reside. Some theorists suggest that autonomy-supportive parenting is less beneficial in collectivistic cultures (i.e., cultures where people value interdependent relationships and prioritize the goals of the in-group over their own) in comparison to individualistic cultures (i.e., cultures where people value independence and prioritize their own goals over those of their in-group; Shavitt, Torelli, & Riemer, 2011). Similarly, they argue that parental autonomy support may be less effective in vertical cultures that emphasize hierarchy in comparison to horizontal societies that emphasize equality. Could supporting children's autonomy be at odds with the respect, social hierarchy, and interdependence required in more collectivist and vertical cultures?

Research across cultures shows that parental autonomy support is positively related to children's motivation, well-being, and adjustment, while parental control is negatively related to such outcomes. For instance, Chirkov and Ryan (2001) explored parent and teacher autonomy support versus control in the United States and Russia, which is considered to be a relatively authoritarian culture that values loyalty, obedience, and conformity. In both countries, the more students perceived parents and teachers as supporting their autonomy, the more autonomously motivated they were in school and the higher their well-being. The negative relation between parental autonomy support and depression was stronger in Russia than in the United States. Similarly in a study of American and Chinese seventh-graders, Wang, Pomerantz, and Chen (2007) found that in both cultures, parent psychological control, as measured by guilt induction, love withdrawal, and authority assertion, was negatively related and parental autonomy support was positively related to emotional and academic functioning. Although there was a similar pattern of results in the two cultures, the effects of autonomy support were stronger in the United States than in China.

Another study explored the role of perceived maternal psychological control in adolescents in Jordan, which is considered to be a vertical-collectivistic culture (Ahmad,

Vansteenkiste, & Soenens, 2013). The more psychologically controlling adolescents perceived their mothers to be, the more they reported behavior problems (e.g., acting out, learning problems) and the lower their social and emotional functioning in the classroom (e.g., frustration tolerance, engagement with others). While there is some evidence that children in other vertical-collectivist cultures, such as China, may see psychologically controlling parenting as less harmful, psychological control still has negative effects in those cultures (Helwig et al., 2014).

These studies support the perspective of "universalism without uniformity," such that autonomy support is universally beneficial to children's developmental outcomes, while control is universally detrimental (Soenens, Vansteenkiste, & Van Petegem, 2015). However, there are nuances in the strength of effects across cultures, with some studies suggesting that autonomy support may have stronger effects in individualistic cultures.

Additionally, studies have explored autonomy support in vertical-collectivistic cultures that value authority. Marbell and Grolnick (2013) administered measures of parental autonomy support to Ghanaian sixth-graders. They found that some of the autonomy support items, which had been found to be valid in U.S. studies, were unreliable. Thus, they conducted another study in which they considered various types of autonomy support, including parental allowance of opinion exchange and choice, parents' acknowledgment of their children's feelings and uniqueness, and encouragement of children's own decision-making. Item analyses suggested that children saw perspective taking and information exchange as autonomy-supportive but decision-making and choice as neglectful, with some stating that parents should decide for children because they had more experience and should therefore help. Thus children in collectivistic cultures may interpret some aspects of autonomy support differently from those in individualistic societies.

Marbell and Grolnick (2013) also examined whether parental autonomy support was positively related to Ghanaian children's adjustment. The more children perceived parents as autonomy-supportive (as measured by opinion exchange, choice, and acknowledgment), the less children reported depressive symptoms and the higher were their reports of autonomous motivation, academic engagement, and collectivist cultural values. By contrast, the more children perceived parents as controlling, the higher their reports of controlled academic motivation and the lower their engagement in school. These findings highlight that even in collectivist cultures, autonomy support is still linked to positive child outcomes.

To understand more about how autonomy support functions in a collectivist society, Marbell-Pierre et al. (2019) examined various types of parental autonomy support in adolescents in the United States and Ghana. To determine what mechanisms may explain how autonomy support is experienced, researchers also considered adolescents' self-construals (i.e., whether adolescents view themselves as interdependent with or independent from others). When children have more interdependent self-construals and their parents choose or decide for them, they may feel that their autonomy is supported because

their parents are viewed as part of the self. However, when children have more independent self-construals, this may not be the case. A confirmatory factor analysis of autonomy support items revealed two factors: perspective taking and open exchange cohered as one factor, and decision-making and choice as another. Although perspective taking/open exchange was positively related to intrinsic motivation, engagement, and self-worth, and negatively related to depression in both the United States and Ghana, decision-making/choice showed positive effects only in the United States. Results also showed that the more independent were adolescents' self-construals, the more negatively related were decision-making/choice and parental controllingness. Thus, how individuals construe themselves may explain how some aspects of autonomy support are interpreted in different cultures.

Overall, across cultures, parental autonomy support is beneficial to children's development, while parental control is detrimental. This holds true even in vertical and collectivist cultures where parental control may be more common. However, the strength of the effects of parental autonomy support and control, how aspects of these parenting dimensions are perceived and experienced, and which outcomes are affected may depend on the culture. Thus, a "universalism without uniformity" perspective is supported, such that the effects of parenting on children's outcomes are neither completely dependent on nor independent of context.

## Parenting: Diverse Populations

From 2009 to 2017, approximately 17% of children were diagnosed with a developmental disability, which included autism spectrum disorder (ASD), attention-deficit hyperactivity disorder (ADHD), learning disability (LD), and intellectual disability (Zablotsky et al., 2019). Given the large number of children with developmental disabilities, it is important to determine how parental autonomy support and control function within these special and understudied populations. For instance, do the parents provide higher levels of control to help manage children's behaviors? How do parenting dimensions relate to outcomes? Also, do the behaviors children display account for parents' use of autonomy-supportive and controlling strategies? Research on the universality of these dimensions can provide information on how to best support diverse populations.

There is some evidence that children with developmental disabilities, such as LD, ASD, and ADHD, are more external in their motivation and feel less in control of success and failure outcomes than their neurotypical counterparts (e.g., Grolnick & Ryan, 1990; Skalski, Pochwatko, & Balas, 2021; Smith et al., 2020). This could be because of the higher amounts of failure they experience (DuPaul & Langberg, 2014), their own behavior that pulls for control, or the views and behaviors of others. What do we know about how parents interact with children with these disabilities?

Studies suggest that parents of children with developmental disabilities exhibit more controlling behavior. For example, Green, Caplan, and Baker (2014) found that during free play, mothers of children with developmental delays used more interfering behaviors

WENDY S. GROLNICK AND RACHEL E. LERNER

(i.e., behaviors used to constrain or redirect the child away from ongoing activity or goals) than mothers of typically developing children. Interestingly, several studies have linked severity of symptoms to greater use of control. For instance, Dieleman et al. (2018) found that the more severe parents perceived their adolescent and emerging adult children with ASD symptoms to be, the less autonomy support they reported providing. Similarly, Rogers et al. (2009) found that parents' reports of ADHD severity were associated with their reports of more controlling parenting.

Given the higher levels of parental control used with these populations, it is important to determine the effects of these parenting behaviors. Importantly, interventions for children with ADHD typically advise parents to use controlling strategies such as immediate rewards and incentives (Mies et al., 2019). Is it possible that children benefit from these controlling strategies?

One study found that parent autonomy support moderated the relation between ADHD severity and task perseverance (Thomassin & Suveg, 2012). Specifically, in the context of high parental autonomy support, the negative relation between ADHD symptoms and perseverance became nonsignificant, and in the context of low parental autonomy support, the relationship was strengthened. This highlights the beneficial role of parental autonomy support with an ADHD population and is consistent with studies showing that parental autonomy support is important within other areas and special populations, such as helping children cope with chronic headaches (Caruso et al., 2019). Further, in the Green et al. (2014) study mentioned above, parent interfering behaviors were negatively related to adaptive behaviors and social skills in children with developmental delays but not in typically developing children. Thus, parental controlling behaviors may be *more* detrimental for children with developmental delays in comparison to typically developing children.

Though not with parents, an experimental study showed the importance of autonomy support for motivation in individuals with mild intellectual disabilities (Pelletier & Joussemet, 2017). Participants engaged in a problem-solving task in either a condition that contained autonomy support (choice, rationale, noncontrolling language) or one that did not. Those who worked on the task in the autonomy-supportive condition tended to perceive more value in the task and were rated as more engaged than those in the condition without autonomy support. The results of this study provide some causal evidence for the importance of autonomy support in diverse populations.

Additional research is being conducted to explore the effects of parental autonomy support and control on the motivation and achievement of children with ADHD (Lerner, 2020). It is also crucial that researchers conduct longitudinal studies to test for reciprocal relations between parenting dimensions and children's behaviors. In a study of youth with ASD (Dieleman et al., 2017) cross-lagged analyses showed that children's externalizing problems predicted parents' controlling behaviors six years later, which in turn predicted children's externalizing behaviors three years later. Thus there appear to be reciprocal relations between

parental behaviors and children's outcomes; however, it is important that further longitudinal studies are conducted with other special populations in order to confirm these findings.

Parental autonomy support and control may play a greater role in special populations in comparison to neurotypical populations, such that these children may especially benefit from autonomy support. Although more parental autonomy support and less control is important for children with developmental disabilities, these children may pull for more control from parents. It is important that interventions help parents to provide autonomy support, even when children's behaviors pull for control, and that future research continue to study these populations.

## Conclusions and Future Directions

The copious body of research on parenting from an SDT perspective provides clear evidence of the positive effects of autonomy support, structure, and involvement for children's development and adjustment. Further, these effects are in evidence across child age, contexts, cultures, and populations, though the nuances of how autonomy support and control are enacted and experienced may differ. Given the strong body of evidence, it is timely that interventions to help parents provide these nutrients are being developed and tested. Froiland (2011) showed positive effects of an intervention to increase parents' autonomy support during homework time. The SDT-consistent How-to Parenting Program, developed by Faber and Mazlish (2012), has been found to increase autonomy support and decrease child symptomatology (Joussemet, Mageau, & Koestner, 2014). Within our lab, a pilot study (Allen, Grolnick, & Cordova, 2019) and a larger randomized controlled trial (Grolnick et al., 2021) of the Parent Check-in, a brief, individualized intervention for parents of 8- to 12-year-olds, have shown increases in parents' perceptions of efficacy, decreased use of controlling strategies, and decreased child symptomatology.

While there are studies that examine factors that undermine parents' abilities to provide facilitative parenting, such as personal and contextual stress (e.g., Gurland & Grolnick, 2005; Levitt, Grolnick, & Raftery-Helmer, 2020), more research in this area is warranted. Also needed are longitudinal studies that assess reciprocal effects between parenting and child behavior to help us understand the negative cycles within which parents and children may get stuck. Finally, more empirically supported interventions based in SDT are needed. The promise of SDT parenting research is clear, and we hope researchers will continue to conduct innovative studies to reach the goal of assisting parents to help children thrive.

## References

Ahmad, I., Vansteenkiste, M., & Soenens, B. (2013). The relations of Arab Jordanian adolescents' perceived maternal parenting to teacher-rated adjustment and problems: The intervening role of perceived need satisfaction. *Developmental Psychology*, *49*(1), 177–183. https://doi.org/10.1037/a0027837

Allen, E. A., Grolnick, W. S., & Cordova, J. V. (2019). Evaluating a self-determination theory-based preventive parenting consultation: The Parent Check-in. *Journal of Child and Family Studies*, *28*(3), 732–743. https://doi.org/10.1007/S10826-018-01309-0

Andreadakis, E., Joussemet, M., & Mageau, G. A. (2019). How to support toddlers' autonomy: Socialization practices reported by parents. *Early Education and Development*, *30*(3), 297–314. https://doi.org/10.1080/10409289.2018.1548811

Assor, A., Soenens, B., Yitshaki, N., Ezra, O., Geifman, Y., & Olshtein, G. (2020). Towards a wider conception of autonomy support in adolescence: The contribution of reflective inner-compass facilitation to the formation of an authentic inner compass and well-being. *Motivation and Emotion*, *44*(2), 159–174. https://doi.org/10.1007/s11031-019-09809-2

Barber, B. K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, *67*(6), 3296–3319.

Bindman, S. W., Pomerantz, E. M., & Roisman, G. I. (2015). Do children's executive functions account for associations between early autonomy-supportive parenting and achievement through high school? *Journal of Educational Psychology*, *107*(3), 756–770. https://doi.org/10.1037/edu0000017

Caruso, A., Grolnick, W., Rabner, J., & Lebel, A. (2019). Parenting, self-regulation, and treatment adherence in pediatric chronic headache: A self-determination theory perspective. *Journal of Health Psychology, 26,* 1637–1650. https://doi.org/10.1177/1359105319884596

Chen, B., Van Assche, J., Vansteenkiste, M., Soenens, B., & Beyers, W. (2015). Does psychological need satisfaction matter when environmental or financial safety are at risk? *Journal of Happiness Studies*, *16*(3), 745–766. https://doi.org/10.1007/s10902-014-9532-5

Chirkov, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy-support in Russian and U.S. adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology*, *32*(5), 618–635. https://doi.org/10.1177/0022022101032005006

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.

De Meyer, J., Soenens, B., Vansteenkiste, M., Aelterman, N., Van Petegem, S., & Haerens, L. (2016). Do students with different motives for physical education respond differently to autonomy-supportive and controlling teaching? *Psychology of Sport and Exercise*, *22*, 72–82. https://doi.org/10.1016/j.psychsport.2015.06.001

Dieleman, L. M., De Pauw, S. S., Soenens, B., Beyers, W., & Prinzie, P. (2017). Examining bidirectional relationships between parenting and child maladjustment in youth with autism spectrum disorder: A 9-year longitudinal study. *Development and Psychopathology*, *29*(4), 1513–1514. https://doi.org/10.1017/S0954579417001031

Dieleman, L. M., De Pauw, S. S. W., Soenens, B., Mabbe, E., Campbell, R., & Prinzie, P. (2018). Relations between problem behaviors, perceived symptom severity and parenting in adolescents and emerging adults with ASD: The mediating role of parental psychological need frustration. *Research in Developmental Disabilities*, *73*, 21–30. https://doi.org/10.1016/j.ridd.2017.12.012

DuPaul, G. J., & Langberg, J. M. (2014). Educational impairments in children with ADHD. In R. A. Barkley (Ed.), *Attention-deficit/hyperactivity disorder: A handbook for diagnosis and treatment* (4th ed., pp. 169–190). Guilford.

Faber, A., & Mazlish, E. (2012). *How to talk so kids will listen and listen so kids will talk*. Rawson.

Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review*, *13*(1), 1–22. https://doi.org/10.1023/A:1009048817385

Farkas, M. S., & Grolnick, W. S. (2010). Examining the components and concomitants of parental structure in the academic domain. *Motivation and Emotion*, *34*(3), 266–279. https://doi.org/10.1007/s11031-010-9176-7

Froiland, J. M. (2011). Parental autonomy support and student learning goals: A preliminary examination of an intrinsic motivation intervention. *Child and Youth Care Forum*, *40*(*2*), 135–149. https://doi.org/10.1007/s10566-010-9126-2

Furstenberg, F. F., Belzer, A., Davis, C., Levine, J. A., Morrow, K., & Washington, M. (1993). How families manage risk and opportunity in dangerous neighborhoods. In W.J. Wilson (Ed.), *Sociology and the Public Agenda* (pp. 231–258). Sage. https://doi.org/10.4135/9781483325484.n12

Gonzalez-DeHass, A. R., Willems, P. P., & Holbein, M. F. D. (2005). Examining the relationship between parental involvement and student motivation. *Educational Psychology Review*, *17*(2), 99–123. https://doi.org/10.1007/s10648-005-3949-7

Green, S., Caplan, B., & Baker, B. (2014). Maternal supportive and interfering control as predictors of adaptive and social development in children with and without developmental delays: Maternal supportive and interfering control. *Journal of Intellectual Disability Research*, *58*(8), 691–703. https://doi.org/10.1111/jir.12064

Grolnick, W. S., Caruso, A. J., Levitt, M. R., & Lerner, R. E. (2021). Effectiveness of a brief preventive parenting intervention based in self-determination theory. *Journal of Child and Family Studies*, 30, 905–920. https://doi.org/10.1007/s10826-021-01908-4

Grolnick, W. S., Deci, E. L., & Ryan, R. M. (1997). Internalization within the family: The self-determination theory perspective. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 135–161). Wiley.

Grolnick, W., Frodi, A., & Bridges, L. (1984). Maternal control style and the mastery motivation of one-year-olds. *Infant Mental Health Journal*, 5(2), 72–82. https://doi.org/10.1002/1097-0355(198422)5:2<72::AID-IMHJ2280050203>3.0.CO;2-O

Grolnick, W. S., Raftery-Helmer, J. N., Flamm, E. S., Marbell, K. N., & Cardemil, E. V. (2015). Parental provision of academic structure and the transition to middle school. *Journal of Research on Adolescence*, 25(4), 668–684. https://doi.org/10.1111/jora.12161

Grolnick, W. S., Raftery-Helmer, J. N., Marbell, K. N., Flamm, E. S., Cardemil, E. V., & Sanchez, M. (2014). Parental provision of structure: Implementation and correlates in three domains. *Merrill-Palmer Quarterly*, 60(3), 355–384. https://doi.org/10.13110/merrpalmquar1982.60.3.0355.

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, 81, 143–154. https://doi.org/10.1037/0022-0663.81.2.143.

Grolnick, W. S., & Ryan, R. M. (1990). Self-perceptions, motivation, and adjustment in children with learning disabilities: A multiple group comparison study. *Journal of Learning Disabilities*, 23(3), 177–184. https://doi.org/10.1177/002221949002300308

Grolnick, W. S., & Slowiaczek, M. L. (1994). Parents' involvement in children's schooling: A multidimensional conceptualization and motivational model. *Child Development*, 65(1), 237–252. https://doi.org/10.1111/j.1467-8624.1994.tb00747.x.

Gurland, S. T., & Grolnick, W. S. (2005). Perceived threat, controlling parenting, and children's achievement orientations. *Motivation and Emotion*, 29(2), 103–121. https://doi.org/10.1007/s11031–005-7956–2.

Helwig, C. C., To, S., Wang, Q., Liu, C., & Yang, S. (2014). Judgments and reasoning about parental discipline involving induction and psychological control in China and Canada. *Child Development*, 85(3), 1150–1167. https://doi.org/10.1111/cdev.12183

Joussemet, M., Koestner, R., Lekes, N., & Landry, R. (2005). A longitudinal study of the relationship of maternal autonomy support to children's adjustment and achievement in school. *Journal of Personality*, 73(5), 1215–1236. https://doi.org/10.111 1/j.1467-6494.2005.00347.x

Joussemet, M., Mageau, G. A., & Koestner, R. (2014). Promoting optimal parenting and children's mental health: A preliminary evaluation of the how-to parenting program. *Journal of Child and Family Studies*, 23(6), 949–964. https://doi.org/10.1007/s10826-013-9751-0

Kenney-Benson, G. A., & Pomerantz, E. M. (2005). The role of mothers' use of control in children's perfectionism: Implications for the development of children's depressive symptoms. *Journal of Personality*, 73(1), 23–46. https://doi.org/10.1111/j.1467-6494.2004.00303.x

Kochanska, G. & Aksan, N. (1995). Mother-child mutually positive affect, the quality of child compliance to requests and prohibitions, and maternal control as correlates of early internalization. *Child Development*, 66(1), 235–254. https://doi.org/10.2307/1131203

Lerner, R. E., & Grolnick, W. S. (2020a). Maternal involvement and children's academic motivation and achievement: The roles of maternal autonomy support and children's affect. *Motivation and Emotion*, 44(3), 373–388. https://doi.org/10.1007/s11031-019-09813-6

Lerner, R. E. (2020). *Motivation and mindset in children with ADHD: Considering antecedents and academic outcomes.* Doctoral dissertation proposal. Clark University.

Lerner, R. E., Grolnick, W. S., Caruso, A. J., & Levitt, M. R. (2022). Parental involvement and children's academics: The roles of autonomy support and parents' motivation for involvement. *Contemporary Educational Psychology*, 68, 1-23.

Levitt, M. R., Grolnick, W. S., Caruso, A. J., & Lerner, R. E. (2020). Internally and externally controlling parenting: Relations with children's symptomatology and adjustment. *Journal of Child and Family Studies*, 29(11), 3044–3058. https://doi.org/10.1007/s10826-020-01797-z

Levitt, M. R., Grolnick, W. S., & Raftery-Helmer, J. N. (2020). Maternal control and children's internalizing and externalizing symptoms in the context of neighbourhood safety: Moderating and mediating models. *Journal of Family Studies*. https://doi.org/10.1080/13229400.2020.1845779

Mageau, G. A., Ranger, F., Joussemet, M., Koestner, R., Moreau, E., & Forest, J. (2015). Validation of the Perceived Parental Autonomy Support Scale (P-PASS). *Canadian Journal of Behavioural Science*, *47*(3), 251–262. https://doi.org/10.1037/a0039325

Marbell, K. N., & Grolnick, W. S. (2013). Correlates of parental control and autonomy support in an inter-dependent culture: A look at Ghana. *Motivation and Emotion*, *37*(1), 79–92. https://doi.org/10.1007/s11031-012-92892

Marbell-Pierre, K. N., Grolnick, W. S., Stewart, A. L., & Raftery-Helmer, J. N. (2019). Parental autonomy support in two cultures: The moderating effects of adolescents' self-construals. *Child Development*, *90*(3), 825–845. https://doi.org/10.1111/cdev.12947

Mies, G. W., Water, E. D., Wiersema, J. R., & Scheres, A. P. J. (2019). Delay discounting of monetary gains and losses in adolescents with ADHD: Contribution of delay aversion to choice. *Child Neuropsychology*, *25*(4), 528–547. https://doi.org/10.1080/09297049.2018.1508563

Pelletier, J. E., & Joussemet, M. (2017). The benefits of supporting the autonomy of individuals with mild intellectual disabilities: An experimental study. *Journal of Applied Research in Intellectual Disabilities*, *30*, 830–846. https://doi.org/10.1111/jar.12274

Ratelle, C. F., Duchesne, S., Guay, F., & Chateauvert, G. B. (2018). Comparing the contribution of overall structure and its specific dimensions for competence-related constructs: A bifactor model. *Contemporary Educational Psychology*, *54*, 89–98. https://doi.org/10.1016/j.cedpsych.2018.05.005

Robichaud, J., & Mageau, G. A. (2020). The socializing role of logical consequences, mild punishments, and reasoning in rule-breaking contexts involving multifaceted issues. *Social Development*, *29*(1), 356–372. https://doi.org/10.1111/sode.12395

Rogers, M. A., Wiener, J., Marton, I., & Tannock, R. (2009). Parental involvement in children's learning: Comparing parents of children with and without ADHD. *Journal of School Psychology*, *47*(3), 167–185. https://doi.org/10.1016/j.jsp.2009.02.001

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Shavitt, S., Torelli, C., & Riemer, H. (2011). Horizontal and vertical individualism and collectivism: Implications for understanding psychological processes. In M. J. Gelfand, C. Chiu, & Y. Hong (Eds.), *Advances in culture and psychology* (pp. 309–350). Oxford University Press.

Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B., & Dochy, F. (2009). The synergistic relationship of perceived autonomy-support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology*, *79*, 57–68. https://doi.org/10.1348/000709908X304398.

Skalski, S., Pochwatko, G., & Balas, R. (2021). Impact of motivation on selected aspects of attention in children with ADHD. *Child Psychiatry and Human Development, 52*, 586–595. https://doi.org/10.1007/s10578-020-01042-0

Smetana, J. G., & Asquith, P. (1994). Adolescents' and parents' conceptions of parental authority and adolescent autonomy. *Child Development*, *65*, 1147–1162. https://doi.org/10.1111/j.1467-8624.1994.tb00809.x

Smith, Z. R., Langberg, J. M., Cusick, C. N., Green, C. D., & Becker, S. P. (2020). Academic motivation deficits in adolescents with ADHD and associations with academic functioning. *Journal of Abnormal Child Psychology*, *48*(2), 237–249. https://doi.org/10.1007/s10802-019-00601-x

Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence*, *34*(6), 589–604. https://doi.org/10.1007/s10964-005-8948-y

Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review*, *30*(1), 74–99. https://doi.org/10.1016/j.dr.2009.11.001

Soenens, B., Vansteenkiste, M., Luyten, P., Duriez, B., & Goossens, L. (2005). Maladaptive perfectionistic self-representations: The mediational link between psychological control and adjustment. *Personality and Individual Differences*, *38*(2), 487–498. https://doi.org/10.1016/j.paid.2004.05.008

Soenens, B., Vansteenkiste, M., & Van Petegem, S. (2015). Let us not throw out the baby with the bathwater: Applying the principle of universalism without uniformity to autonomy-supportive and controlling parenting. *Child Development Perspectives*, *9*(1), 44–49. https://doi.org/10.1111/cdep.12103

Steinberg, L., Lamborn, S. D., Dornbusch, S. M., & Darling, N. (1992). Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed. *Child Development*, *63*(5), 1266–1281. https://doi.org/10.1111/j.1467-8624.1992.tb01694.x.

Thomassin, K., & Suveg, C. (2012). Parental autonomy support moderates the link between ADHD symptomatology and task perseverance. *Child Psychiatry and Human Development*, *43*(6), 958–967. https://doi.org/10.1007/s10578-012-0306-1

Wang, Q., Pomerantz, E. M., & Chen, H. (2007). The role of parents' control in early adolescents' psychological functioning: A longitudinal investigation in the United States and China. *Child Development*, *78*(5), 1592–1610. https://doi.org/10.1111/j.1467-8624.2007.01085.x

Zablotsky, B., Black, L., Maenner, M. J., Schieve, L. A., Danielson, M. L., Bitsko, R. H., Blumberg, S. J., Kogan, M. D., & Boyle, C. A. (2019). Prevalence and trends of developmental disabilities among children in the United States: 2009–2017. *Pediatrics*, *144*(4), e20190811. https://doi.org/10.1542/peds.2019-0811

# Autonomy-Supportive Behaviors: Common Features and Variability across Socialization Domains

Geneviève A. Mageau *and* Mireille Joussemet

### Abstract

Autonomy support (AS), or autonomy-supportive behavior (AS behavior), is a key ingredient of high-quality hierarchical relationships. Yet how parents and other authority figures can support children's autonomy—that is, their volitional functioning—in various daily situations remains unclear as AS operationalizations have differed across studies. In an effort to further our understanding of AS behaviors, this chapter highlights their common features (i.e., empathic, informational, and supportive of active participation) as well as their variability. It proposes that AS behaviors may have varied across studies because volition is derived from two different processes (i.e., intrinsic motivation and internalization) and that different AS behaviors may be needed to effectively support volitional functioning originating from each of these processes. Guided by Grusec and Davidov's domains-of-socialization framework, the chapter argues that intrinsic motivation and internalization are likely to operate differently across domains of socialization, which could account for the variability of AS behaviors. Adopting a domain-specific approach to socialization may thus prove useful to clarify how parents can support their children's volitional functioning across daily socialization challenges.

**Key Words:** autonomy support, intrinsic motivation, internalization, parenting, domains of socialization, self-determination theory

Autonomy support (AS), or autonomy-supportive behavior (AS behavior), is central to self-determination theory (SDT) as it characterizes social environments that promote basic psychological need satisfaction, intrinsic motivation, and autonomous regulations (Ryan & Deci, 2017). In parenting research, AS is also a key dimension of the authoritative style of parenting (Aunola & Nurmi, 2005; Grolnick & Ryan, 1989), shown to be a primary factor in predicting child development and mental health (Maccoby, 1992). Despite its central role in these literatures, AS remains an elusive construct, as evidenced by its different definitions and operationalizations (e.g., Black & Deci, 2000; Grolnick & Ryan, 1989).

One possible reason AS behaviors have varied across studies is that past research efforts have been more invested in defining *what* exactly parents need to support (i.e., volition vs.

independence; Soenens et al., 2007) than in investigating *how* to do so. Another reason for the variability of AS behaviors is that volition can be derived from two different processes: intrinsic motivation and internalization (Ryan & Deci, 2017). One pivotal contribution of SDT is indeed to establish that people can experience volition when they are intrinsically motivated but also when they have internalized and concur with behaviors that are not inherently enjoyable but nonetheless are valued. It could thus be that different AS behaviors are needed to effectively support volitional functioning that originates from each of these processes.

In this chapter, we aim to further our understanding of AS behaviors by highlighting their common features as well as their variability across studies. Guided by Grusec and Davidov's (2010) domains-of-socialization framework,[1] we propose that intrinsic motivation and internalization are likely to operate differently across socialization domains, which in turn could call for different AS behaviors. Adopting a domain-specific approach to socialization may thus prove useful to explain part of AS behavior variability and clarify how parents can support child volitional functioning across daily socialization challenges.

## AS: Definition, Multidimensionality, Common Features, and Variability

SDT greatly contributed to parenting research by offering a definition of autonomy that targeted volitional, rather than independent, functioning. Volitional functioning is *to behave based on self-endorsed interests or values* (Soenens et al., 2007). Stated differently, autonomy refers to the feelings of agency, volition, and authenticity that arise when (1) children are intrinsically motivated or (2) fully concur with socially encouraged behaviors (Ryan, Kuhl, & Deci, 1997). Volitional functioning thus stands in contrast to pressured, conflicted, or alienated functioning (Ryan & Deci, 2017).

In turn, AS is defined as *behaviors that promote volitional functioning* (Soenens et al., 2007). This definition, although useful to identify which type of child functioning parents need to promote, provides no information about what behaviors to adopt. When researchers have proposed further clarifications of the AS construct, AS behaviors have greatly varied across studies. In addition, these operationalizations often include descriptions of controlling behaviors that should be avoided (e.g., criticisms) as saliently as positive behaviors that could be implemented. For example, being AS means:

> An individual in a position of authority takes the other's perspective, acknowledges the other's feelings, and provides the other with pertinent information and opportunities for choice, while minimizing the use of pressures and demands. (Black & Deci, 2000, p. 742)

---

[1] We adopted Grusec and Davidov's (2010) domains-of-socialization framework because, compared to social domain theory (Smetana, 2011), which focuses on categorizing types of social knowledge (i.e., moral, conventional, prudential, and personal issues), it is wider in scope, describing different types of parent-child interactions and their respective socialization pathways. Social domain theory will nevertheless be discussed when we address discipline-related parent-child interactions.

> Parents value and use techniques which encourage independent problem solving, choice, and participation in decisions versus externally dictating outcomes, and motivating achievement through punitive disciplinary techniques, pressure, or controlling rewards. (Grolnick & Ryan, 1989, p. 144)

> Parents are empathic to their children's perspective, provide choices to their children whenever it is possible, minimize the use of control and power assertion, and help their offspring to explore and act upon their true personal values and interests. (Soenens et al., 2007, p. 635)

These pioneering definitions paved the way for the emergence of a new and extensive body of research that proved crucial in showing the key role that volitional functioning plays in children's development and mental health (Joussemet et al., 2008; Vasquez et al., 2016). Yet their multiplicity also contributed to making AS an intangible construct. Accordingly, authors have deemed it useful to review the different behaviors used to operationalize AS (e.g., Mageau & Vallerand, 2003; Reeve, 2009). From this literature, we can make the following observations, which will be addressed in turn: (1) AS is a multidimensional construct, (2) AS behaviors may be characterized by at least one of three features: they are empathic, informational, and/or supportive of active participation, and (3) the exact nature of AS in parent-child interactions varies across studies.

*Multidimensionality*

AS is likely to be a multidimensional construct that includes a large array of behaviors. In the same way that controlling parenting can take numerous forms (e.g., threats, shaming, performance pressures, criticisms, overprotection, invalidation of feelings, conditional regard) and still share common features (i.e., pressuring, intrusive, and dominating; Grolnick & Pomerantz, 2009), a great variety of behaviors can be used to support child volitional functioning in a given situation (e.g., acknowledging child feelings, providing rationales, making a task more interesting, allowing time for self-paced learning; Reeve, 2009). Research supports the idea that AS is multidimensional by showing that seemingly different behaviors (i.e., offering choices, providing rationales, and acknowledging child feelings) form a single factor (Mageau et al., 2015) and that benefits of AS are stronger when multiple rather than single AS behaviors are present (Deci et al., 1994; Su & Reeve, 2011).

Differences in the impact of AS as a multidimensional construct and as a single behavior have been most obvious when researchers have focused on the provision of choice as a proxy for AS. For example, in Vasquez et al.'s (2016) meta-analysis on parental AS, negative associations with positive child outcomes were mostly observed when AS was equated with the provision of choices or support of independent functioning. Relatedly, cross-cultural research shows that *independent* decision-making is less predictive of positive child outcomes in collectivist than in individualist cultures (Marbell-Pierre et al., 2019; Qin, Pomerantz,

& Wang, 2009; Wang, Pomerantz, & Chen, 2007). Experimental studies also reveal that choices made by significant others may be as beneficial as choices made independently when children feel emotionally close to the person who has made the choice for them, presumably because children can fully concur with trusted sources of influence (e.g., Bao & Lam, 2008). These findings suggest that it is not the provision of choice per se that is AS. Rather, decision-making can be an opportunity for children to be agentic and orient their behaviors toward self-endorsed interests and values. It is this opportunity that in turn confers AS value—the functional significance of supporting child volition (Deci & Ryan, 1987)—on the provision of choice. For this to occur, however, choices need to be given in a context where children feel competent (or supported) to make the suggested choices and willing to take on this responsibility. When children would rather not choose, either because they doubt their abilities or because it would be at odds with their cultural practices, provision of choice could thwart volitional functioning by making them behave in a way that is contrary to their preferences or values (Soenens et al., 2007). It thus seems that single AS behaviors such as the provision of choice may not be sufficient or effective to support child volitional functioning in some contexts. In contrast, multidimensional AS measures have yielded more consistent associations with positive child outcomes (Vasquez et al., 2016).

### Common Features

The AS literature also suggests that all AS behaviors may be characterized by at least one of three features: they are (1) empathic, (2) informational, and/or (3) supportive of children's active participation in decision-making or problem-solving. *Empathic* behaviors show consideration and respect for children's internal frame of reference by (1) acknowledging children's unique perspective and subjective experiences and (2) tailoring parental behaviors to children's characteristics (e.g., developmental level, temperament, abilities, emotions, and preferences). Such perspective-taking supports children's volitional functioning by making parental interventions (e.g., choices, suggestions, rationales, requests) better fitted to children's propensities, which in turn makes them easier to endorse and internalize. Directly acknowledging children's feelings also helps children express and reflect on potential conflicts between parental behaviors and their subjective experiences, thereby allowing for initial incongruences to be integrated. When conflicts are not easily resolved, acknowledgment of feelings further allows for the harmonious coexistence of unpleasant emotions and the enactment of unpleasant behaviors, thereby facilitating the internalization of socially encouraged behaviors (Deci et al., 1994; Koestner et al., 1984; Ryan, 2005). Finally, empathic behaviors that consider children's interests and preferences in particular (Reeve, 2009) are likely to facilitate volitional functioning by increasing intrinsic motivation in addition to internalization.

Another feature of many AS behaviors is that they are informational in nature, as opposed to being judgmental and/or directive. *Informational* behaviors provide the information that children need to (1) choose their next course of action when they feel lost or stuck, (2) sustain agentic behaviors during challenging tasks, and (3) understand the value

GENEVIÈVE A. MAGEAU AND MIREILLE JOUSSEMET

of socially encouraged behaviors for their own and others' welfare. Indeed, when children lack information to make choices or move forward, providing this information supports volitional functioning by enabling and affirming their agentic thinking and behaviors. Information that is meaningfully tied to requests and limits also supports volitional functioning by clarifying the logical connections between socially encouraged behaviors and values that children can endorse, thereby facilitating information processing and internalization (Koestner et al., 1984).

As a third and last common feature, AS behaviors *support active participation* during activities, decision-making, and problem-solving. Such behaviors support children's volitional functioning by providing children with actual opportunities to be active participants in their lives and adopt behaviors that best fit self-endorsed interests and values (Deci et al., 1994; Grolnick & Ryan, 1989).

In sum, these features suggest that AS is to (1) consider and recognize children's internal frame of reference, (2) provide them with the information they need so that they may autonomously orient their behaviors, and (3) leave them room to be active and agentic participants in activities, discussions, decisions, and problem-solving.

Typically, AS has been operationalized with three exemplars of these distinctive features: acknowledging child feelings (e.g., "It's true, teeth brushing is not much fun"), providing a meaningful rationale for limits and requests (e.g., "Teeth need brushing each day to avoid cavities"), and giving choices and opportunities for initiative taking within certain limits (e.g., "Do you want to brush your teeth before or after your bath?"; Cordova & Lepper, 1996; Deci et al., 1994; Grolnick & Ryan, 1989; Koestner et al., 1984; Mageau et al., 2015; Su & Reeve, 2011). Together, these prototypical AS behaviors have been shown to support children's volitional functioning within parent-child relationships (Joussemet et al., 2008) but also across hierarchical relationships in education (Reeve, 2009), sport (Mageau & Vallerand, 2003), work (Gagné & Deci, 2005), and health (Williams et al., 1996; Zuroff et al., 2007) settings, as well as throughout developmental stages (McCurdy et al., 2020). For example, these behaviors (or subsets) have been linked to rule internalization and task persistence in samples of toddlers (Andreadakis, Joussemet, & Mageau, 2019; Grolnick, Frodi, & Bridges, 1984; Laurin & Joussemet, 2017), to improvements in children's social and academic adjustment from kindergarten to grade 3 (Joussemet et al., 2005), and to academic and general adjustment of adolescents (Ratelle, Duchesne, & Guay, 2017).

In line with a multidimensional perspective on AS, however, prototypical AS behaviors should have higher AS value when they are characterized by more than one AS feature. For example, both choices and rationales should support child volitional functioning to a greater extent when they are anchored in perspective taking (empathic component), that is, tailored to child competence and developmental levels, cultural practices, and other characteristics (Deci et al., 1994; Nucci, 1984).

Moreover, AS should not be limited to these prototypical AS behaviors, as many other behaviors that may be characterized by AS features have been proposed. For example,

in the education domain, Reeve and Jang (2006) showed that inquiring about student preferences (empathic component), offering solicited hints (informational component), and allowing time for independent work (support of active participation component) are all positively related to student perceptions of autonomy. *Supporting value, interest, and commitment examination* and *fostering inner valuing* are additional behaviors that support adolescents' active participation when they explore and choose commitments (Assor et al., 2020). These behaviors were shown to predict improvements in autonomous endorsement of commitments over a seven-month period. It thus seems that a large variety of behaviors may support child volitional functioning, but all may be characterized by at least one AS feature.

### AS Variability

This brings us to our third observation: AS operationalizations have greatly varied across studies. Although this multiplicity of AS behaviors is likely to create confusion as to what precisely AS stands for, it may be premature to conclude that AS should be reduced to a small set of behaviors. Indeed, it may very well be the case that socializing agents need numerous AS behaviors to support child volitional functioning across different contexts, as the AS value of AS behaviors is likely to vary from one context to another. This proposition echoes the "universality without uniformity" principle (Soenens et al., 2015), which posits that child perceptions of AS vary according to personal and contextual factors, such as age, culture, legitimacy of parental authority, or temperament.

One reason the AS value of AS behaviors could vary across contexts is that the volitional functioning they aim to support is derived from the processes of intrinsic motivation and/or internalization (Ryan & Deci, 2017), which probably operate differently across contexts. Specifically, children experience volition when they are intrinsically motivated, that is, when they act out of self-endorsed interests. To support volitional functioning derived from *intrinsic motivation*, researchers have typically emphasized AS behaviors that are empathic to children's interests and supportive of their active pursuits (Cordova & Lepper, 1996; Grolnick et al., 1984). Yet volitional functioning can also occur when children engage in extrinsically motivated and possibly unpleasant behaviors as long as they have internalized and fully endorsed their value, either for themselves or for others (referred to as autonomous regulation or committed compliance; Joussemet et al., 2008; Kochanska, Coy, & Murray, 2001). Volitional functioning in this context thus greatly depends on the successful integration of social norms and values to child schemas (Ryan & Deci, 2017). To support volitional functioning derived from *internalization*, researchers have emphasized AS behaviors that are empathic and informational (e.g., rationales, acknowledgment of feelings; Andreadakis et al., 2019; Koestner et al., 1984; Laurin & Joussemet, 2017), although supporting children's active participation in problem-solving has also been proposed (Grolnick & Ryan, 1989; Robichaud, Mageau, & Soenens, 2020).

If the AS value of AS behaviors does vary depending on whether volition is derived from intrinsic motivation or internalization, a key challenge for socializing agents would then be to identify which of these processes is likely to be operating in any given situation. Integrating Grusec and Davidov's (2010) framework, we propose that adopting a domain-specific approach to socialization can help determine when intrinsic motivation and internalization are likely to be operating at the forefront, thereby shedding some light on why AS behaviors might vary from one context to the next.

## AS across Domains of Socialization

The domains-of-socialization framework (Grusec & Davidov, 2010) defines socialization as the process through which children acquire the necessary socioemotional and cognitive skills to integrate into social groups and become active members of their society. According to this framework, social interactions in which socialization occurs can be partitioned into distinct types, or domains, based on the nature of parent-child interactions (in terms of power differentials), the particular challenges that children are facing, and the regulatory and socialization mechanisms that are operating. Five domains are proposed—reciprocity, guided learning, discipline,[2] protection, and group participation—and each one is proposed to play a unique role in children's socialization and development (see Grusec & Davidov, 2010, for a description of child outcomes in each domain). Neither exhaustive nor mutually exclusive, each domain is said to be activated by distinctive cues and determines, at least partly, the functional significance and impact of parenting behaviors. Thus, depending on its functional significance, a parental behavior could have positive impacts on children's socialization in one domain but not in another. Although this framework does not fully account for the overlap among domains (Dunn, 2010) or how domains alternate within single parent-child interactions, it has proven useful to integrate seemingly inconsistent findings (Grusec & Davidov, 2010).

Adopting a socialization domain approach could thus help account for some of the variability of AS behaviors. Specifically, we propose that the exact behaviors that are most likely to be empathic, informational, and supportive of children's active participation vary across domains of socialization and that this variability is partially due to the fact that intrinsic motivation and internalization may operate differently across domains. After briefly defining each domain of socialization (see Grusec & Davidov, 2010 for detailed descriptions), we address how intrinsic motivation and internalization may operate, as well as present behaviors likely to support children's volitional functioning, within each of them (see Table 25.1 for an overview of potential AS behaviors in each domain).

---

[2] The domain that we refer to as the "discipline domain" is called the "control domain" in the domains-of-socialization framework. However, because within SDT the word "control" can refer to pressuring, intrusive, or domineering behaviors (Grolnick & Pomerantz, 2009), we prefer the term "discipline" to clarify that this domain includes discipline-related behaviors that can be more or less autonomy-supportive or autonomy-thwarting.

**Table 25.1** Potential Autonomy-Supportive Behaviors across Socialization Domains Categorized by AS Features

| Reciprocity | Guided learning | Discipline[1] | Protection | Group participation |
|---|---|---|---|---|
| **Empathic** | | | | |
| Convey unconditional regard[2]<br>Consider & acknowledge child perspective[2]<br>Demonstrate flexibility[2]<br>Consider child interests | Convey unconditional regard<br>Consider & acknowledge child perspective<br>Demonstrate flexibility<br>Consider child interests | Convey unconditional regard[2]<br>Consider & acknowledge child perspective<br>Demonstrate flexibility[2]<br>Consider child interests | Convey unconditional regard<br>Consider & acknowledge child perspective<br>Demonstrate flexibility[2] | Convey unconditional regard[2]<br>Consider & acknowledge child perspective[2]<br>Demonstrate flexibility[2]<br>Consider child interests[2] |
| **Informational** | | | | |
| Modeling[2] | Modeling[2]<br>Solicited suggestions, hints or answers<br>Provide rationales<br>Informational feedback<br>Describe problem | Modeling<br>Solicited suggestions<br>Provide rationales<br>Informational feedback[2]<br>Describe problem | Modeling[2] | Modeling[2] |
| **Supportive of active participation** | | | | |
| Give choices<br>Follow child pace<br>Intervene to allow agency (e.g., holding an object still) | Give choices<br>Follow child pace<br>Intervene to allow agency<br>Solicited encouragements<br>Give time for independent work | Give choices between acceptable behaviors<br>Include child in problem-solving | Promote self-initiation | Promote self-initiation[2] |

*Notes:* [1]Called "control domain" in the domains-of-socialization framework (Grusec & Davidov, 2010; see n2). [2]This potential AS behavior has never been tested in this particular domain.

*AS and the Reciprocity Domain*

One of the first domains in which AS behaviors have been investigated is the reciprocity domain (Frodi, Bridges, & Grolnick, 1985). The reciprocity domain refers to social interactions where power differentials are minimized (e.g., play, exploration); parent and child are interacting as relatively equal-status partners and engaging in mutually coordinated and cooperative exchanges. This domain is activated when children are task-focused, experiencing neither distress nor mastery- or discipline-related difficulties. In this domain, parents encourage socialization by nurturing children's innate tendency to reciprocate (Grusec & Davidov, 2010).

The reciprocity domain describes the conditions that are most conducive to intrinsic motivation as children demonstrate sufficient mastery to explore and engage in their activities. There is also no pressing learning, distressing feeling, or external demand to be internalized, such that the internalization process should be less salient. Yet internalization should nevertheless be naturally occurring, as children are taking in the reciprocal behaviors that parents are modeling. Accordingly, it seems reasonable to suggest that in this domain, intrinsic motivation is the main source of volition and thus should be the process supported by parental behaviors.

Empirical evidence suggests that behaviors found to be associated with autonomy-related outcomes in the reciprocity domain are behaviors that may be characterized as empathic and supportive of children's active participation. In a pioneering study, Grolnick et al. (1984) asked mothers to demonstrate toys to their one-year-olds and to sit next to them while they played. In this play context, mothers who allowed for their infant to be agentic in their ongoing activity (e.g., holding the toy still so the infant could manipulate it) and refrained from interfering (e.g., avoiding guiding the child's hand) had infants who were more persistent when asked to play with these same toys independently. In a study teaching math to grade school children using computer games, providing choices (supportive of active participation component) and showing consideration for children's interests and frame of reference through contextualization and personalization features (empathic component) successfully increased children's intrinsic motivation (Cordova & Lepper, 1996). These studies suggest that AS behaviors in the reciprocity domain support child volitional functioning mostly by considering children's agency and interests and supporting the active pursuit of these interests.

In contrast to the reciprocity domain, where children experience no distress or difficulties, there is a need for parental guidance when children could benefit from gaining knowledge or developing skills. The AS behaviors proposed in the reciprocity domain may thus not be sufficient to support volitional functioning when children face a challenge and/or require parental guidance.

*AS and the Guided Learning Domain*

The guided learning domain refers to social interactions where parents actively support child learning and skill aquisition. This domain is activated by opportunities for child

growth and the presence of actual or foreseen child difficulties. In this domain, parents encourage socialization by facilitating children's internalization of new knowledge (including values) and skills (Grusec & Davidov, 2010).

The guided learning domain thus describes situations where intrinsic motivation may still be operating at the forefront, but where the internalization process will also be activated as children need to internalize parental guidance. Accordingly, volition in this domain could be derived from both intrinsic motivation and internalization. The AS value of behaviors that support both of these processes should thus increase in this domain.

Empirical evidence suggests that behaviors found to be associated with autonomy-related outcomes in the guided learning domain are behaviors that make parental guidance more empathic, informational, and supportive of children's active participation. For example, based on Grolnick et al.'s (1984, 2002) work, Whipple, Bernier, and Mageau (2011) proposed that to be AS during a guided-learning task with toddlers, mothers can (1) take children's perspective and demonstrate flexibility in their attempts to keep them on task (empathic component), (2) give hints, suggestions, and informational feedback when prompted by child-expressed difficulties (informational component), and (3) intervene according to children's competence to enable agentic behavior (e.g., holding the toy still so the infant can manipulate it), provide choices, follow children's pace, give encouragement when agentic behavior is interrupted, and ensure that children play an active role in task completion (supportive of active participation component). As was observed with the three prototypical behaviors of AS (Mageau et al., 2015), these behaviors load on a single latent factor of AS (Hughes, Lindberg, & Devine, 2018). Results also showed that these maternal behaviors are positively associated with child self-regulation (Meuwissen & Carlson, 2019).

Similarly, when the guided learning domain was activated during a play task by children requesting assistance, mothers who were empathic and provided information when prompted by their six- and seven-year-old children expressing difficulties (e.g., clarifications of the child's wants or needs; solicited answers, suggestions, and hints; informational feedback), but who otherwise refrained from interfering or directing play, had children who displayed more intrinsic motivation (Deci et al., 1993). Grolnick et al. (2002) further showed that in a third-grade sample, ratings of AS versus controlling verbal and nonverbal behaviors (e.g., solicited encouragements, hints, suggestions, and informational feedback vs. unsolicited interventions [verbal]; waiting for the child to require assistance vs. leading behaviors [nonverbal]) were positively related to children's creativity in a poem-writing task, even when partialing child grades. Yet when different AS behaviors were examined separately, the pattern of associations suggested that nonverbal maternal behaviors that support active participation (i.e., waiting for the child to require assistance) could play a predominant role in fostering child creativity.

Research conducted in education and sport contexts provide similar descriptions of AS. Reeve and Jang (2006) showed that (1) listening to students, acknowledging

their perspective, asking about their preferences (empathic component), (2) answering their questions, providing rationales, informational feedback, and solicited hints (informational component), and (3) allowing time for independent work, providing solicited encouragements, and giving choices (supportive of active participation component) were independently and positively linked to student perceptions of autonomy. Similarly, Carpentier and Mageau (2013) showed that coaches who provided change-oriented feedback by (1) acknowledging athletes' difficulties and using a considerate tone of voice (empathic component), (2) describing the problematic behavior and/or the expected change, sharing the underlying objective of this expected change, suggesting potential solutions (informational component), and (3) giving a choice among these solutions (supportive of active participation component) had athletes who reported higher autonomy perceptions. Coaches who engaged in prototypical AS behaviors to a greater extent also tended to give the type of feedback recommended by Carpentier and Mageau.

In contrast to the reciprocity domain, the guided learning domain thus seems to require informational behaviors that (1) enable agency when children's capacity to choose their next course of action is disrupted by their difficulties, (2) affirm children's agentic behaviors when challenges arise, and (3) facilitate the internalization of parental guidance. To be AS, however, informational behaviors need to be solicited, that is, cued by child-expressed difficulties or by child incapacity to move forward. AS informational behaviors thus aim at restoring or affirming child agency during challenging tasks and clarifying the potential value of parental guidance to facilitate internalization. For example, in the studies cited above, only *solicited* hints, suggestions, and scaffolding were considered AS, and the coded feedback *enabled or affirmed* children's agentic behavior without being pressuring or manipulative. In contrast, when children are already agentic, informational behaviors tend to modify the course of their agentic behaviors (e.g., to increase competence) and thus are unlikely to further increase child volitional functioning. Such unsolicited informational behaviors are best described as structuring behaviors (Grolnick & Pomerantz, 2009). Given that both solicited and unsolicited informational behaviors and other AS behaviors may have differential associations with child volition and competence, efforts to investigate these behaviors separately may prove fruitful to ascertain the unique impact of AS and structuring behaviors.

It is perhaps in the guided learning domain that intrinsic motivation and internalization are most complementary, with the internalization process facilitating the acquisition of skills conducive to intrinsic motivation, and intrinsic motivation facilitating internalization of additional information. Contrary to the guided learning domain, intrinsic motivation is not likely to be solicited in the third domain of socialization, the discipline domain, as children are required to internalize unpleasant behaviors. Parenting behaviors most likely to be AS in this domain are thus expected to differ.

*AS and the Discipline Domain*

The discipline domain refers to social interactions where parents require children to modify their actions to make them more socially acceptable. This domain is activated when children's and parents' immediate goals are in conflict with one another and the children need to inhibit some personal desires for the benefit of social harmony and/or skill acquisition that will facilitate their future social integration. In this domain, parents encourage socialization by increasing children's awareness of societal norms and rules as well as others' welfare and by helping them develop self-regulation (Grusec & Davidov, 2010).

Given that children are required to engage in behaviors that conflict with their current preferences and wishes, intrinsic motivation may not be relevant as a source of volitional functioning in this domain. Rather, volitional functioning must be derived almost exclusively from the successful internalization of socially encouraged behaviors. AS behaviors that support the internalization process should thus have greater AS value.

Empirical evidence suggests that behaviors found to be associated with autonomy-related outcomes in the discipline domain are behaviors that make parental structuring behaviors more empathic, informational, and supportive of children's active participation: socializing agents adjust their requests to children's propensities, share information about socially encouraged behaviors and others' welfare (or the child's), and include children in active problem-solving. For example, Koestner et al. (1984) showed that children demonstrated more intrinsic motivation in a painting task when its limits (e.g., washing paintbrush between colors) were set while (1) acknowledging children's preference for noncompliant behaviors (empathic component) and (2) providing rationales for task rules (informational component). Similarly, when parents ask for their toddlers' cooperation, (1) considering and acknowledging feelings (empathic component) and (2) providing short rationales, describing the problem, and modeling (informational component) are positively associated with rule internalization (Andreadakis et al., 2019). In a cleanup task where children were required to put toys away, Laurin and Joussemet (2017) found that toddlers whose mothers (1) showed consideration for their toddlers' interests (empathic component), (2) provided rationales or suggestions, described the problem (informational component), and (3) provided choices between acceptable behaviors (supportive of active participation component) demonstrated greater improvements in rule internalization over time. Based on parent interviews, Grolnick and Ryan (1989) also showed that parents of grade school children who rely more on autonomy-oriented limit setting or motivating techniques for home- and school-related issues (e.g., reasoning [informational], acknowledgment of child feelings [empathic], and encouragements [supportive of active participation]) also tend to value children's volition and include them in decisions and problem-solving to a greater extent (also supportive of active participation), suggesting that these behaviors form a single factor of AS in the discipline domain. These AS behaviors, paired with the absence of controlling behaviors, predicted autonomous regulation in the academic domain. Also based on parent interviews that focused on how parents

motivate their children to engage in desirable behaviors and follow house rules (e.g., table manners, interpersonal relations), Joussemet et al. (2005) coded the three prototypical AS behaviors. Coded as such, AS predicted improvements in child social and academic adjustment over a three-year period.

Robichaud et al. (2020) recently showed that even behavioral constraints could be more conducive to internalization when they are more empathic, informational, and supportive of child active participation in problem-solving (i.e., logical consequences). Specifically, findings suggest that logical consequences (i.e., nonintrusive, noncoercive parental behaviors that directly address the transgression-induced problem and require children to take responsibility; Mageau et al., 2018) may compromise autonomous regulation to a lesser extent than punishments (i.e., noncoercive but unpleasant arbitrary sanctions). However, both types of behavioral constraints increased children's controlled regulation compared to prototypical AS behaviors. The advantages of logical consequences over punishments were also limited to transgressions pertaining to nonpersonal issues (Robichaud & Mageau, 2020), suggesting that logical consequences may have some AS value but only in certain conditions (i.e., last resort; discipline domain clearly activated for both dyad members; high legitimacy of parental authority; noncontrolling constraints).

In sum, AS behaviors in the discipline domain mostly aim at promoting children's internalization of socially encouraged behaviors through empathic and informational behaviors but also by engaging children's active participation in problem-solving. As such, the AS value of parental behaviors should greatly depend on other factors that influence child internalization, such as the ease with which informational parental behaviors can be internalized (Nucci, 1984). Another factor that seems key is the type of social issue that activates the discipline domain. Social domain theory, an influential domain-based approach to social knowledge (Smetana, 2011), posits that child transgressions can be categorized according to their impact on children and their environment. Whereas some behaviors are neither right nor wrong and do not impact children's health or safety (i.e., personal issues; e.g., adolescents choosing music for earphones), some child transgressions affect others' welfare or rights (i.e., moral issues; e.g., hitting siblings) or jeopardize their physical integrity (i.e., prudential issues; e.g., toddlers playing with knifes), while still others simply breach social norms (i.e., conventional issues; e.g., leaving the table after a meal). Research shows that perceived parental legitimacy is lower when parents exert authority over personal issues, compared to the other three nonpersonal issues, which in turn is likely to impact child internalization. Accordingly, we expect that the AS value of parental behaviors will be greater when they target nonpersonal rather than personal issues.

Robichaud and Mageau (2020) offered some preliminary support for this proposition by showing that adolescents who perceived a transgression as personal rated rationales and behavioral constraints as generally more autonomy-thwarting than adolescents who perceived the same transgression as nonpersonal. Similarly, Grolnick et al. (2014) found that

structuring behaviors (including rationales) were more strongly related to positive child outcomes when they concerned prudential issues compared to conventional ones. It thus seems that AS behaviors may have different AS value even within the discipline domain (e.g., rationales prompted by moral or prudential issues may have more AS value).

These findings also suggest that the same transgression could activate different domains of socialization for parents and children (e.g., discipline domain for parent, but reciprocity domain for children), as transgressions may pertain to more than one social issue (i.e., multifaceted issues; e.g., choosing friends). If parents and children are not always operating within the same socialization domain, an additional challenge for parents is thus to understand the domain in which children are operating (e.g., reciprocity or discipline domain), as it may be wise to rely more heavily on the AS behaviors that apply to this particular domain. Future research will help shed light on how different social issues (i.e., moral, prudential, conventional, or personal) activate different socialization domains for parents and children (reciprocity or discipline domain) and how these contexts influence the AS value of parental behaviors for children.

The next domain of socialization, the protection domain, is another domain where intrinsic motivation is not likely to be operating and where the internalization process should be at the forefront. As was the case for the discipline domain, volitional functioning should thus be largely derived from the internalization process.

### AS and the Protection Domain
The protection domain refers to social interactions where parents offer protection and emotional support. This domain is activated by cues indicating that children are experiencing distress or threats. Parents encourage socialization by building children's trust that they can rely on them when needed.

Because in this domain children are experiencing unpleasant feelings, intrinsic motivation is not likely. Behaviors most likely to support child volitional functioning should thus be those best suited to support the internalization of distressing experiences. To our knowledge, no parental AS studies have been conducted in the protection domain. However, research on maternal sensitivity (Atkinson et al., 2000) and theoretical writings (Ginott, 1965) suggest that empathic behaviors (e.g., acknowledging child feelings, being attuned and responsive to children's needs) should be key in this domain. Studies on goal support between romantic partners (Koestner et al., 2012) also provide clues to the behaviors that should be related to autonomy-related outcomes in the protection domain. Indeed, although the domains-of-socialization framework (Grusec & Davidov, 2010) has never been adapted in egalitarian relationships, romantic partners frequently ask for each other's support when pursuing important personal goals, which yields interactions that resemble the protection domain. This line of work suggests that empathic behaviors, paired with full support of partners' active participation, facilitate volitional functioning in this context. Specifically, only behaviors that (1) encourage open exchanges and

self-disclosure, convey understanding and unconditional regard (empathic component), and (2) promote self-initiation (supportive of active participation component) were positively related to more autonomous goal pursuit. In contrast, providing rationale-related information (e.g., "My partner emphasizes the importance of reaching my goals"; "My partner makes sure that I really understand the importance of reaching my goals without pressuring me to do so") was positively correlated with directive behaviors (e.g., "My partner repeatedly reminds me of my goals"), and together such directive behaviors were not associated with autonomous goal pursuit.

These findings suggest that when people experience distressing emotions, the AS value of informational behaviors may be lessened, presumably because distressing emotions are highly personal experiences and the legitimacy of external information is low (Smetana, 2011). These hypotheses could be tested in parent-child relationships.

*AS and Group Participation Domain*

The final domain in Grusec and Davidov's (2010) framework is group participation. This domain refers to social interactions where parent and child interact as members of a common social group with their respective roles and responsibilities. It is activated by parents serving as representative members of the social group and children observing and participating in social customs and cultural practices. In this domain, parents encourage socialization by nurturing children's social identity through modeling.

The group participation domain is similar to the reciprocity domain in that no formal instruction is involved. Intrinsic motivation should thus be operating at the forefront, with children being exposed to the activities of their social group and actively participating in them. Yet the internalization process should also be naturally occurring as children are taking in the social customs and cultural practices that group members of all ages are modeling. Accordingly, we would expect that the same behaviors that were observed to support child volitional functioning in the reciprocity domain should have high AS value in the group participation domain. For example, socializing agents that acknowledge children's experiences (empathic component) and support their initiatives (supportive of active participation component) are likely to contribute to their volitional functioning. Modeling (e.g., Laurin & Joussemet, 2017) could also be an additional AS behavior in the group participation domain as this behavior is highly informative without interfering in children's active participation. Future studies could test these hypotheses and clarify how to support volitional functioning in this domain of socialization.

## Concluding Remarks

Overall, this brief overview of Grusec and Davidov's (2010) domains of socialization highlights the diversity of socialization challenges that arise from daily interactions with children but also the multiplicity of AS behaviors that have been proposed to meet these challenges. It may be that numerous AS behaviors are necessary to remain empathic,

informational, and supportive of children's active participation—to support volitional functioning—across a variety of situations. What exactly these AS behaviors may be in each domain of socialization is, however, in dire need of clarification (see Table 25.1 for a summary of potential AS behaviors in each domain).

To clarify the definition of AS, future research efforts could document and compare the AS value of putative AS behaviors (and AS features) in different domains of socialization, using gold standards of autonomy-related outcomes (e.g., intrinsic motivation, committed compliance, autonomous motivation, sense of autonomy satisfaction). For example, the AS value of each of the prototypical AS behaviors could be directly compared across domains of socialization. In line with the "universality without uniformity" principle (Soenens et al., 2015), we propose that the domain of socialization in which parental behaviors are enacted is a central determinant of their AS value. Comparing the AS value of different parental behaviors across domains of socialization would thus help identify which behaviors are most likely to be perceived as AS in different daily situations.

To further foster conceptual clarity, AS behaviors should also be differentiated from structuring behaviors in each domain of socialization. In this endeavor, it would be crucial to choose an analytic approach that can model behaviors that simultaneously include AS and structuring features (e.g., circumplex approach to measurement; Aelterman et al., 2019), as more complex behaviors typically yield high cross-loadings and unfortunately are often deleted with standard factor analyses. Adopting a circumplex approach could, for example, better distinguish complex behaviors—AS behaviors that are likely to also foster child competence, although to a lesser extent (e.g., informational component of AS such as solicited hints)—from behaviors that should foster *either* child volition (e.g., empathic component of AS) or child competence (e.g., structuring behaviors that do not necessarily facilitate children's agency, such as expectations). Considering more complex behaviors would in turn ensure that AS operationalizations are neither oversimplified (e.g., reduced to the provision of choice) nor confounded with structuring behaviors that are unrelated to child volitional functioning.

Clarifying AS (and structuring) behaviors within each domain is crucial to investigate the specificity of the benefits associated with domain-specific AS and its underlying psychological processes. For example, while experiencing AS in the reciprocity domain could help children experience intrinsic motivation in that domain, it could also transcend socialization domains and facilitate, for example, guided learning (e.g., by developing coping skills).

Another important research direction is to investigate whether parents vary in their ability to support child volitional functioning across domains of socialization. Given that each domain of socialization comes with its unique set of parental cognitions and challenges, some parents may experience difficulties in supporting their children's volition in one domain but not in another. Research supports this proposition in showing noteworthy fluctuations of child perceptions of autonomy-thwarting and AS behaviors across a

five-day period (van der Kaap-Deeder et al., 2017), suggesting that some socialization challenges may be harder to meet with AS behaviors than others. Understanding the personal factors that promote or interfere with AS in each domain of socialization could help tailor future AS interventions by building on parents' strengths and addressing domain-specific difficulties.

Parents' ability to differentiate between domains of socialization and adapt their behaviors accordingly could also be investigated. While some parents may readily perceive the different cues that activate each domain of socialization (e.g., child distress vs. requests for support), other parents may not. Identifying parenting abilities (e.g., cognitive flexibility, perspective taking) that facilitate the identification of socialization domains could help parents support their children's volitional functioning across domains of socialization.

In conclusion, we argued that AS is best conceptualized as a multidimensional construct, grouping behaviors that foster children's volitional functioning by being empathic, informational, and supportive of child active participation. Relying on Grusec and Davidov's (2010) domains-of-socialization framework, we also proposed that the exact behaviors that are most likely to support child volitional functioning vary across domains of socialization, presumably because intrinsic motivation and internalization processes operate differently across domains. Adopting a domain-specific approach to AS could thus shed some light on the variability of AS behaviors, as well as empower parents to support their children's volitional functioning more consistently across daily socialization challenges. Future research will determine the value of investigating AS in different domains of socialization.

## References

Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J., & Reeve, J. (2019). Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. *Journal of Educational Psychology*, *111*(3), 497–521. https://doi.org/10.1037/edu0000293

Andreadakis, E., Joussemet, M., & Mageau, G. A. (2019). How to support toddlers' autonomy: Socialization practices reported by parents. *Early Education and Development*, *30*(3), 297–314. https://doi.org/10.1080/10409289.2018.1548811

Assor, A., Soenens, B., Yitshaki, N., Ezra, O., Geifman, Y., & Olshtein, G. (2020). Towards a wider conception of autonomy support in adolescence: The contribution of reflective inner-compass facilitation to the formation of an authentic inner compass and well-being. *Motivation and Emotion*, *44*(2), 159–174. https://doi.org/10.1007/s11031-019-09809-2

Atkinson, L., Niccols, A., Paglia, A., Coolbear, J., H. Parker, K. C., Poulton, L., Guger, S., & Sitarenios, G. (2000). A meta-analysis of time between maternal sensitivity and attachment assessments: Implications for internal working models in infancy/toddlerhood. *Journal of Social and Personal Relationships*, *17*(6), 791–810. https://doi.org/10.1177/0265407500176005

Aunola, K., & Nurmi, J.-E. (2005). The role of parenting styles in children's problem behavior. *Child Development*, *76*(6), 1144–1159. https://doi.org/10.1111/j.1467-8624.2005.00841.x

Bao, X. H., & Lam, S. F. (2008). Who makes the choice? Rethinking the role of autonomy and relatedness in Chinese children's motivation. *Child Development*, *79*(2), 269–283. https://doi.org/10.1111/j.1467-8624.2007.01125.x

Black, A. E., & Deci, E. L. (2000). The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective. *Science Education*, *84*(6), 740–756. https://doi.org/10.1002/1098-237X(200011)84:6

Carpentier, J., & Mageau, G. A. (2013). When change-oriented feedback enhances motivation, well-being and performance: A look at autonomy-supportive feedback in sport. *Psychology of Sport and Exercise*, *14*(3), 422–435. https://doi.org/10.1016/j.psychsport.2013.01.003

Cordova, D. I., & Lepper, M. R. (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Educational Psychology*, *88*(4), 715–730. https://doi.org/10.1037/0022-0663.88.4.715

Deci, E. L., Driver, R. E., Hotchkiss, L., Robbins, R. J., & Wilson, I. M. (1993). The relation of mothers' controlling vocalizations to children's intrinsic motivation. *Journal of Experimental Child Psychology*, *55*(2), 151–162. https://doi.org/10.1006/jecp.1993.1008

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, *62*(1), 119–142. https://doi.org/10.1111/j.1467-6494.1994.tb00797.x

Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, *53*(6), 1024–1037. https://doi.org/10.1037/0022-3514.53.6.1024

Dunn, J. (2010). Commentary and challenges to Grusec and Davidov's domain-specific approach. *Child Development*, *81*(3), 710–714. https://doi.org/10.1111/j.1467-8624.2010.01427.x

Frodi, A., Bridges, L., & Grolnick, W. (1985). Correlates of mastery-related behavior: A short-term longitudinal study of infants in their second year. *Child Development*, *56*(5), 1291–1298. https://doi.org/10.2307/1130244

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, *26*(4), 331–362. https://doi.org/10.1002/job.322

Ginott, H. G. (1965). *Between parent and child: New solutions to old problems*. Macmillan.

Grolnick, W. S., Frodi, A., & Bridges, L. (1984). Maternal control style and the mastery motivation of one-year-olds. *Infant Mental Health Journal*, *5*(2), 72–82. https://doi.org/10.1002/1097-0355(198422)5:2

Grolnick, W. S., Gurland, S. T., DeCourcey, W., & Jacob, K. (2002). Antecedents and consequences of mothers' autonomy support: An experimental investigation. *Developmental Psychology*, *38*(1), 143–155. https://doi.org/10.1037//0012-1649.38.1.143

Grolnick, W. S., & Pomerantz, E. M. (2009). Issues and challenges in studying parental control: Toward a new conceptualization. *Child Development Perspectives*, *3*(3), 165–170. https://doi.org/10.1111/j.1750-8606.2009.00099.x

Grolnick, W. S., Raftery-Helmer, J. N., Marbell, K. N., Flamm, E. S., Cardemil, E. V., & Sanchez, M. (2014). Parental provision of structure: Implementation and correlates in three domains. *Merrill-Palmer Quarterly*, *60*(3), 355–384. https://doi.org/10.13110/merrpalmquar1982.60.3.0355

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, *81*(2), 143–154. https://doi.org/10.1037/0022-0663.81.2.143

Grusec, J. E., & Davidov, M. (2010). Integrating different perspectives on socialization theory and research: A domain-specific approach. *Child Development*, *81*(3), 687–709. https://doi.org/10.1111/j.1467-8624.2010.01426.x

Hughes, C., Lindberg, A., & Devine, R. T. (2018). Autonomy support in toddlerhood: Similarities and contrasts between mothers and fathers. *Journal of Family Psychology*, *32*(7), 915–925. https://doi.org/10.1037/fam0000450

Joussemet, M., Koestner, R., Lekes, N., & Landry, R. (2005). A longitudinal study of the relationship of maternal autonomy support to children's adjustment and achievement in school. *Journal of Personality*, *73*(5), 1215–1235. https://doi.org/10.1111/j.1467-6494.2005.00347.x

Joussemet, M., Landry, R., & Koestner, R. (2008). A self-determination theory perspective on parenting. *Canadian Psychology*, *49*(3), 194–200. https://doi.org/10.1037/a0012754

Kochanska, G., Coy, K. C., & Murray, K. T. (2001). The development of self-regulation in the first four years of life. *Child Development*, *72*(4), 1091–1111. https://doi.org/10.1111/1467-8624.00336

Koestner, R., Powers, T. A., Carbonneau, N., Milyavskaya, M., & Chua, S. N. (2012). Distinguishing autonomous and directive forms of goal support: Their effects on goal progress, relationship quality, and subjective well-being. *Personality and Social Psychology Bulletin*, *38*(12), 1609–1620. https://doi.org/10.1177/0146167212457075

Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling vs. informational styles on intrinsic motivation and creativity. *Journal of Personality*, *52*(3), 233–248. https://doi.org/10.1111/j.1467-6494.1984.tb00879.x

Laurin, J. C., & Joussemet, M. (2017). Parental autonomy-supportive practices and toddlers' rule internalization: A prospective observational study. *Motivation and Emotion*, *41*(5), 562–575. https://doi.org/10.1007/s11031-017-9627-5

Maccoby, E. E. (1992). The role of parents in the socialization of children: An historical overview. *Developmental Psychology*, *28*(6), 1006–1017. https://doi.org/10.1037/0012-1649.28.6.1006

Mageau, G. A., Lessard, J., Carpentier, J., Robichaud, J.-M., Joussemet, M., & Koestner, R. (2018). Effectiveness and acceptability beliefs regarding logical consequences and mild punishments. *Journal of Applied Developmental Psychology*, *54*, 12–22. https://doi.org/10.1016/j.appdev.2017.11.001

Mageau, G. A., Ranger, F., Joussemet, M., Koestner, R., Moreau, E., & Forest, J. (2015). Validation of the Perceived Parental Autonomy Support Scale (P-PASS). *Canadian Journal of Behavioural Science*, *47*(3), 251–262. https://doi.org/10.1037/a0039325

Mageau, G. A., & Vallerand, R. J. (2003). The coach-athlete relationship: A motivational model. *Journal of Sports Sciences*, *21*(11), 883–904. https://doi.org/10.1080/0264041031000140374

Marbell-Pierre, K. N., Grolnick, W. S., Stewart, A. L., & Raftery-Helmer, J. N. (2019). Parental autonomy support in two cultures: The moderating effects of adolescents' self-construals. *Child Development*, *90*(3), 825–845. https://doi.org/10.1111/cdev.12947

McCurdy, A. L., Williams, K. N., Lee, G. Y., Benito-Gomez, M., & Fletcher, A. C. (2020). Measurement of parental autonomy support: A review of theoretical concerns and developmental considerations. *Journal of Family Theory & Review*, *12*(3), 382–397. https://doi.org/10.1111/jftr.12389

Meuwissen, A. S., & Carlson, S. M. (2019). An experimental study of the effects of autonomy support on preschoolers' self-regulation. *Journal of Applied Developmental Psychology*, *60*, 11–23. https://doi.org/10.1016/j.appdev.2018.10.001

Nucci, L. P. (1984). Evaluating teachers as social agents: Students' ratings of domain appropriate and domain inappropriate teacher responses to transgressions. *American Educational Research Journal*, *21*(2), 367–378. https://doi.org/10.2307/1162449

Qin, L., Pomerantz, E. M., & Wang, Q. (2009). Are gains in decision-making autonomy during early adolescence beneficial for emotional functioning? The case of the United States and China. *Child Development*, *80*(6), 1705–1721. https://doi.org/10.1111/j.1467-8624.2009.01363.x

Ratelle, C. F., Duchesne, S., & Guay, F. (2017). Predicting school adjustment from multiple perspectives on parental behaviors. *Journal of Adolescence*, *54*, 60–72. https://doi.org/10.1016/j.adolescence.2016.11.008

Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, *44*(3), 159–175. https://doi.org/10.1080/00461520903028990

Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology*, *98*(1), 209–218. https://doi.org/10.1037/0022-0663.98.1.209

Robichaud, J.-M., & Mageau, G. A. (2020). The socializing role of logical consequences, mild punishments, and reasoning in rule-breaking contexts involving multifaceted issues. *Social Development*, *29*(1), 356–372. https://doi.org/10.1111/sode.12395

Robichaud, J.-M., Mageau, G. A., & Soenens, B. (2020). The role of logical consequences in adolescents' cognitive precursors of compliance and internalization. *Journal of Experimental Child Psychology*, *192*, 104777. https://doi.org/10.1016/j.jecp.2019.104777

Ryan, R. M. (2005). The developmental line of autonomy in the etiology, dynamics, and treatment of borderline personality disorders. *Development and Psychopathology*, *17*(4), 987–1006. https://doi.org/10.10170S0954579405050467

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., Kuhl, J., & Deci, E. L. (1997). Nature and autonomy: An organizational view of social and neurobiological aspects of self-regulation in behavior and development. *Development and Psychopathology*, *9*(04), 701–728. https://doi.org/10.1017/s0954579497001405

Smetana, J. G. (2011). *Adolescents, families, and social development: How teens construct their worlds*. Wiley-Blackwell.

Soenens, B., Vansteenkiste, M., Lens, W., Luyckx, K., Goossens, L., Beyers, W., & Ryan, R. M. (2007). Conceptualizing parental autonomy support: Adolescent perceptions of promotion of independence versus promotion of volitional functioning. *Developmental Psychology*, *43*(3), 633–646. https://doi.org/10.1037/0012-1649.43.3.633

Soenens, B., Vansteenkiste, M., & Van Petegem, S. (2015). Let us not throw out the baby with the bathwater: Applying the principle of universalism without uniformity to autonomy-supportive and controlling parenting. *Child Development Perspectives*, *9*(1), 44–49. https://doi.org/10.1111/cdep.12103

Su, Y.-L., & Reeve, J. (2011). A meta-analysis of the effectiveness of intervention programs designed to support autonomy. *Educational Psychology Review*, *23*(1), 159–188. https://doi.org/10.1007/s10648-010-9142-7

van der Kaap-Deeder, J., Vansteenkiste, M., Soenens, B., & Mabbe, E. (2017). Children's daily well-being: The role of mothers', teachers', and siblings' autonomy support and psychological control. *Developmental Psychology*, *53*(2), 237–251. https://doi.org/10.1037/dev0000218

Vasquez, A. C., Patall, E. A., Fong, C. J., Corrigan, A. S., & Pine, L. (2016). Parent autonomy support, academic achievement, and psychosocial functioning: A meta-analysis of research. *Educational Psychology Review*, *28*(3), 605–644. https://doi.org/10.1007/s10648-015-9329-z

Wang, Q., Pomerantz, E. M., & Chen, H. (2007). The role of parents' control in early adolescents' psychological functioning: A longitudinal investigation in the United States and China. *Child Development*, *78*(5), 1592–1610. https://doi.org/10.1111/j.1467-8624.2007.01085.x

Whipple, N., Bernier, A., & Mageau, G. A. (2011). Broadening the study of infant security of attachment: Maternal autonomy-support in the context of infant exploration. *Social Development*, *20*(1), 17–32. https://doi.org/10.1111/j.1467-9507.2010.00574.x

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology*, *70*(1), 115–126. https://doi.org/10.1037/0022-3514.70.1.115

Zuroff, D. C., Koestner, R., Moskowitz, D. S., McBride, C., Marshall, M., & Bagby, M. R. (2007). Autonomous motivation for therapy: A new common factor in brief treatments for depression. *Psychotherapy Research*, *17*(2), 137–147. https://doi.org/10.1080/10503300600919380

# Supporting Children's Autonomy Early On: A Review of Studies Examining Parental Autonomy Support toward Infants, Toddlers, and Preschoolers

Mireille Joussemet *and* Geneviève A. Mageau

## Abstract

There is a growing scientific interest regarding the importance of parental autonomy support (AS) in early childhood. The purpose of this chapter is to review studies on this topic, describe how parental AS toward young children (i.e., infants, toddlers, and preschoolers) has been measured, and document what child characteristics and outcomes have been associated with it. The chapter reviews studies whose AS measure was consistent with self-determination theory's conceptualization and organizes them by the social context in which it was assessed: play, conversation, help provision, and socialization. After describing each study's procedure, AS operationalization, and main results, the chapter addresses conceptual issues that should be considered in future studies.

**Key Words:** parenting, autonomy support, early childhood, systematic review, self-determination theory

Autonomy is the most unique of self-determination theory's (SDT) posited three basic psychological needs. Since SDT also emphasizes the impact of social contexts, research has examined the extent to which individuals' autonomy is supported or thwarted within their social environments and interpersonal interactions. This research area was first mainly conducted with adults, but soon researchers showed interest in the support of adolescents' and children's need for self-determination.

Developmental science has highlighted the centrality of social environments for child development and health (Collins et al., 2003; Garner et al., 2012), and among environmental factors, the most widely accepted predictor of child mental health is parenting quality (Masten & Shaffer, 2006; Yap & Jorm, 2015). Within SDT, autonomy support (AS) is argued to be a central feature of optimal parenting, along with structure and involvement (Grolnick et al., 1997; Grolnick & Ryan, 1989; Ryan & Deci, 2017; Ryan et al., 2006). A meta-analysis (Vasquez et al., 2016) suggests it is also a robust predictor,

showing associations with a host of positive educational and psychosocial variables (e.g., academic achievement, motivation, mental health). These child benefits have been studied at different ages, but primarily in middle childhood and adolescence. Yet infants, toddlers, and preschoolers are especially sensitive to socialization experiences because of the remarkable plasticity in their brain organization (Shonkoff & Phillips, 2000). All environmental influences on children's developing skills, including parenting quality, are thus seen as amplified in early childhood (Britto et al., 2017; Landry et al., 2003).

Considering that (1) parenting quality is a major determinant of child development, (2) AS is a main component of parenting quality, and (3) early parental influences are of particular significance, studying parental AS toward infants, toddlers, and preschoolers is timely and important. Indeed, it can offer vital insights into how to best satisfy young children's need for autonomy and, ultimately, support their development and wellness. The goal of the present chapter is thus to highlight the ways in which early parental AS has been conceptualized and measured in past studies and to identify what child characteristics and outcomes have been associated with it.

## Autonomy Support Definitions

AS has typically been defined within hierarchical relationships (e.g., instructor-student; Black & Deci, 2000). In an early study concerning limit setting during a painting activity with first- and second-graders, Koestner et al. (1984) outlined some elements of AS. These included (1) acknowledging the child's feelings and perspective, (2) explaining the rationale for actions, and (3) minimizing controlling language (e.g., "should," "must"). Other experimental studies aiming to foster autonomous internalization of behaviors also included the provision of choice (Deci et al., 1994; Joussemet et al., 2004).

Within the parent-child relationship, AS definitions similarly include empathic responses and considerate behaviors based on perspective taking, the avoidance of controlling language or tactics, and the provision of choice (Black & Deci, 2000; Grolnick & Ryan, 1989; Soenens et al., 2007). SDT experts have also underlined that pertinent facts or feedback are better shared in an informational rather than a personal or evaluative way (e.g., "walls are not for painting"; Black & Deci, 2000; Koestner et al., 1984; Ryan, 1982). Moreover, promoting children's active and agentic participation (e.g., taking part in decisions and problem-solving; exploring and acting according to one's own interests) is posited as a key component of AS since it fosters children's sense of volition (Grolnick & Ryan, 1989; Soenens et al., 2007). The goal of AS is thus to foster children's sense of agency and volitional functioning, not their self-reliance or independence (McCurdy et al., 2020; Ryan et al., 2006; Soenens et al., 2007).

Similar to the teacher-student relationship (Jang et al., 2010), the parent-child relationship involves the provision of structure—behaviors that organize children's environment to facilitate their sense of competence (Grolnick & Pomerantz, 2009). Structuring practices include providing clear expectations, guidelines, and feedback that help children

anticipate outcomes and interact successfully with their environment (Grolnick et al., 2014). Young children need a great amount of such competence support since they are constantly learning new skills, information, and socially encouraged values and behaviors. Given that both competence and autonomy are essential psychological needs—satisfying one need does not compensate for an unmet one (Hornstra et al., 2021)—it is not a matter of selecting between providing structure or AS but knowing how to provide structure and AS simultaneously. Indeed, often the key is to provide structure within the context of an autonomy-supportive relationship so that the guidelines can be better accepted and internalized (Ginott, 1959, 1965). Past research supports this proposition in showing the benefits of combining structure with AS for promoting positive child outcomes (Grolnick et al., 2014; Sierens et al., 2009). Permissive, "laissez-faire" parenting (i.e., letting children do as they please without parental guidance or structure) is thus *not* considered autonomy-supportive.

## Parental AS Studies Conducted in Early Childhood

For this review, we searched for studies examining links between parental AS in early childhood and concurrent or prospective child concomitants. The terms employed in the PsycINFO database were (child* or infant* or preschooler*), (parent* or parenting or discipline or child-rearing), ("autonomy support" or autonomy support*), and age group: infancy (2-23 months) or preschool age (2-5 years). Our final search was conducted on December 9, 2020. Among the 44 studies retrieved, 27 studies used an AS definition that, in our view, corresponded to SDT's conceptualization. The 17 studies we excluded pertained to distinct constructs such as independence promotion, structure, scaffolding, persuasion or negotiation, or reinforcement, or they conflated AS with other constructs such as warmth or structure.

Most of the retained studies were observational, and the contexts in which parental AS was assessed were play, conversation, help provision, or socialization. We organized the reviewed studies based on these contexts and we present them in order of increasing levels of required parental structure. Prior to reporting obtained findings, we highlight how parental AS was assessed by reporting each measure (in italics). Operationalizations deserve attention because supporting the autonomy of younger children may require different behaviors to make parental AS developmentally appropriate. Moreover, parental AS may be manifested differently from one situation to the next.

### Play

The first parental AS study was conducted with mothers playing with their 1-year-olds (Grolnick et al., 1984). The 6-minute play session was semi-structured: three new toys were provided one at a time by the experimenter, who asked mothers to demonstrate them to their infant sitting next to them while playing with each of them. Three aspects of mothers' communications were rated, from 1 (controlling) to 5 (autonomy-oriented):

their vocalizations, their task-oriented behaviors, and their affect. *Autonomy-oriented communications were used to help maintain the infant's ongoing activity (e.g., verbal information or feedback, holding the toy still so the infant could manipulate it, or positive encouraging affect).* In contrast, *communications aiming to change the infants' ongoing activity (e.g., verbal prohibitions and directions, guiding the child's hand away from one part of a toy, or stern disapproving affect) were rated as controlling.* The three AS scores were obtained by averaging across 10-second intervals and toys. Infant persistence, affect, and competence were later coded during their independent play with the same toys presented by an experimenter one at a time, asking the infant to "make it work." Results showed that greater child persistence (i.e., duration of task-related behaviors) was related to autonomy orientation in mothers' task-directed behaviors (e.g., holding the toy still vs. guiding the child's hand), while more positive child affect was associated with autonomy orientation in mothers' affect (e.g., positive encouraging vs. stern disapproving affect). Child competence (number of solutions or appropriate attempts) was positively but weakly correlated to a maternal AS composite, computed across the three ratings (Frodi et al., 1985). Eight months later, Frodi et al. re-observed these dyads, using the same coding schemes but adding a child attachment measure. Maternal AS was coded in the same structured play context with their 20-month-old, but only the composite AS across task-oriented behaviors, vocalizations, and affect was used. This global AS toward 20-month-olds was positively associated with concurrent child persistence and competence during independent play, and weakly related to more positive child affect. However, none of the 12-month AS ratings was found to be related to infants' play, and child attachment was unrelated to prior or concurrent AS.

Using data from a large longitudinal study, Bindman et al. (2015) examined whether early maternal AS during play predicted school achievement by facilitating child executive functioning (EF). Play was semi-structured, as mothers were provided toys and activities but could interact as little or as much as they wanted. Play sessions of 15 minutes were coded at 6, 15, 24, and 36 months of age. Maternal intrusiveness was coded in the first three sessions, while AS was coded at 36 months only. A global "AS vs. controlling" index was computed to capture AS from infancy to toddlerhood by averaging *reversed intrusiveness (hurrying child, promoting own goal, redirecting child's play, punishment)* and *AS (flexibility, following child's pace and interests, allowing child to take the lead when appropriate).* When children were 4.5 years old, their EF was assessed with four tasks tapping inhibition, delay of gratification, and sustained attention, later combined into a single latent EF construct. Finally, their academic achievements in grade school and in high school were derived from math and reading assessments conducted in first, third, and fifth grade and when youths were 15 years old, respectively. Structural equation modeling showed that maternal AS was positively associated with EF, over and above mothers' cognitive stimulation and warmth, as well as a host of child and socio-demographic

factors (e.g., temperament, income-to-needs ratio). Furthermore, school achievement was positively linked to AS, and this AS-achievement link was partially mediated by EF.

Long-term associations between early AS during play and later academic achievement were also examined by Sorariutta et al. (2017). In a first study, mothers were observed playing with their 1-year-old for a 10-minute semi-structured play session. Toys were provided by the experimenter, who asked them to play as they would normally do. Their coding scheme rated AS and scaffolding separately. AS was assessed with three items, rated on a 5-point scale: *(1) goals are set mainly by the child, (2) allows the child's independent activities, and (3) controls and restricts the child's cognitive processes and occasionally even interrupts the child's activities to reach own goal (reversed).* Varied spatial and number concepts were assessed at 3 and 4 years old with size, shape, location, and number tasks. At age 16, children reported their grades in math and in other subjects. Path analyses controlling for scaffolding revealed that maternal AS was unrelated to location skills, but it was positively related to size and shape skills at 3 and 4 years of age, as well as to numerical skills at age 3. Moreover, maternal AS was positively linked to grades in math, sciences, and literacy at age 16. When studying the contribution of both parents on these children's pre-mathematical development, Sorariutta and Silvén (2018) coded both mothers' and fathers' AS during play sessions (one week apart) when children were 2 years old. Results of structural equation modeling suggested that paternal AS was positively related to better developed spatial and numerical skills at 4 years of age, while maternal AS was associated with stronger numerical skills at age 3.

### Conversation

In an early study integrating parental AS into the field of children's relational competence, Clark and Ladd (2000) coded conversations mothers had with their 5-year-old. There were five narrative episodes about good and bad past events, some shared, others not. Following Ryan and Solky (1996), their AS definition focused on the validation of children's opinions, feelings, and perspective. Maternal AS was thus coded as the extent to which mothers' responses were *(1) contingent upon their child's input, (2) closely related to it, and (3) validating it.* Maternal AS was positively correlated with child social adjustment, measured by kindergarten teachers (interactional harmony with friends) and classmates (peer acceptance). However, when regression analyses also included child gender, socioeconomic status, and a dyadic measure of mother-child connectedness (positive engagement, positive affect, warmth, intimacy, and intensity [all mutual]), links with AS were no longer present. This may be due to the important overlap ($r$ = .48) between AS and this potent relational factor.

In a first child autobiographical memory study integrating SDT, Cleveland and Reese (2005) coded mothers' style of conversing and child memory when they had a reminiscing conversation about four past events (three shared, one unshared). Child memory, operationalized as the provision of new information, was coded during these conversations,

which took place when children were 40 months old, and later at 65 months of age. The AS coding scheme was adapted from Grolnick et al.'s (1984) measure. Each maternal conversational turn was coded on a 5-point scale ranging from *controlling (negating children's provided information and promoting mother's memories and agenda)* to *autonomy-supportive (validating children's input and following their lead)*. A global AS (vs. controlling) score was averaged across all mothers' conversation turns. The degree to which mothers used elaborative questions (open-ended *wh-* questions with some new information about the discussed event) was also coded, since such structure was shown to foster children's memory (Reese & Newcombe, 2007). After dichotomizing both variables and forming four groups, one-way ANCOVAs (controlling for expressive language) suggested that children receiving high levels of both AS and structure at 40 months of age showed greater memory about shared events concurrently as well as later, at 65 months of age.

Leyva et al. (2008) used Cleveland and Reese's (2005) coding scheme to assess mothers' AS when conversing with their 3- to 5-year-old about three past events (a shared event, an unshared one, and a child misbehavior). In addition to memory, children's engagement (i.e., their eagerness and spontaneity) was coded during these joint conversations, as well as during an independent, researcher-led interview. When shared and unshared events were discussed, maternal AS was related to greater child engagement with their mother. AS during unshared event conversations was also positively related to child engagement with the interviewer. However, AS during the shared event and misbehavior conversations was (surprisingly) negatively related to children's provision of new information during the independent interview.

Similar results were obtained by Larkina and Bauer (2010) despite using a different but conceptually similar coding scheme. Indeed, the focus was on acknowledging the validity of children's perspective and individuality, from 1 *(denying the child's point of view, insisting on own agenda, showing no interest in the child's opinion, interrupting often, and negating the child's contributions)* to 6 *(giving the child opportunities to talk, following themes introduced by the child, focusing on the child's memories, and showing an interest in the child's opinion and version)*. Four-year-old children whose mothers displayed greater AS when discussing shared events were more involved during these conversations. Moreover, AS was linked to greater involvement and greater memory in a separate, researcher-led interview. These links were present even when controlling for the rated quality of mothers' instructions (akin to structure).

Also interested in child memory, Kulkofsky (2011) explored how maternal AS can contribute to it. After a first reminiscing conversation about a shared, typical event, mothers had two other conversations with their 4-year-olds, each with a different goal in mind: trying to bond with their child and trying to teach them a lesson. For each maternal conversational turn, the extent to which mothers supported the child's contributions to the conversation was coded on a 3-point, AS versus controlling scale, inspired by the Cleveland and Reese's (2005) coding scheme. *"Confirming and expanding"* was considered

autonomy-supportive, *"continuing but taking a specific direction"* was coded as neutral, and *"negating or changing topics"* was scored as controlling. Results showed that maternal AS was related to better child memory, but only within the bonding conversational context.

In a recent study, van der Kaap-Deeder et al. (2020) coded both mothers' and fathers' styles during reminiscing conversations, based on the Cleveland and Reese (2005) scheme and a challenging task scheme (Wuyts et al., 2017). Parents were invited to talk about two shared memories with their 3- to 6-year-olds: a positive one and a mildly negative one. Controlling and autonomy-supportive codes were rated separately, but a single composite score was created (controlling codes reversed). AS was based on the following ratings: *(1) responding to children's input, (2) acknowledging children's feelings, and (3) attentively listening to child;* controlling codes reflected the extent to which parents *(1) determined the conversations' content, (2) neglected/minimized the child's experiences, and (3) interrupted the child.* The extent to which parents used elaborations and positive feedback (affirming child content) or negative feedback (negating child content) was also coded. Since each child conversed twice with each parent, multilevel analyses were conducted. Controlling for conversations' emotional valence, elaborations, and feedback, results revealed that children were more engaged when parental AS was greater. However, AS was unrelated to children's memory or their general emotional functioning.

Two experimental studies examined parental AS in the conversation domain. After a shared visit to a pretend zoo, Cleveland et al. (2007) manipulated the goal of parents' conversations (i.e., to see what the child's perspective is vs. to get the child ready for a memory test). Irrespective of the experimental condition, preschoolers whose mothers showed greater AS in the zoo conversation were found to be more engaged during an experimenter-led interview two weeks later, but there was no relation with children's memory or narrative coherence.

In their parental training study, Cleveland and Morris (2014) examined the recall, narrative coherence, and engagement of 4-year-olds whose parents received either an AS or an elaboration training. During an experimenter-led memory interview two weeks later, recall and coherence were greater among children of elaboration-trained parents, whereas children of AS-trained parents showed greater engagement. Interestingly, the latter were still more engaged when interviewed at an 8-month follow-up and showed greater recall during its directed phase.

*Help Provision*

To measure parents' AS while working on a challenging task with their child, Whipple et al. (2011) developed a coding scheme to assess mothers helping their 15-month-olds to complete two puzzles, designed to be slightly too difficult for these infants. This coding scheme was based on Grolnick et al.'s (1984) rating system, Grolnick and Ryan's (1989) study examining parents' motivating style for school-related behaviors, and Grolnick et al.'s (2002) study examining mothers' behaviors during homework-like tasks. In this

helping context, four 5-point ratings (from not at all to extremely autonomy-supportive) assessed the extent to which a mother *(1) intervenes according to her infant's needs and adapts the task to create an optimal challenge for the child; (2) encourages her child in the pursuit of the task, gives useful hints and suggestions, and uses a tone of voice that communicates to the child that she is there to help; (3) takes her child's perspective and demonstrates flexibility in her attempts to keep the child on task; and (4) follows her child's pace, provides the child with the opportunity to make choices, and ensures that the child plays an active role in the completion of the task.* Thus, the operationalization of AS included behaviors that qualified parental support when working with young children on problem-solving tasks (e.g., informational vs. controlling feedback; useful hints and suggestions vs. intrusive help). AS was positively correlated with infants' attachment security, also measured at 15 months of age. Regression analyses also showed that AS was still predictive of attachment security even when controlling for the contribution of maternal sensitivity.

In their longitudinal study exploring whether such AS could facilitate children's EF, Bernier et al. (2010) followed up these dyads and tested children at 18 and 26 months of age on a variety of EF tasks. Maternal AS at 15 months of age correlated positively with location memory and categorization at 18 months. At 26 months of age, delay of gratification was unrelated to prior AS, but conflict EF (i.e., working memory, inhibition, and set shifting; allowing an appropriate response in the face of a salient conflicting response option) was positively related to it. Regression analyses also showed that AS was uniquely predictive of some EF indicators even when other parenting variables were considered.

Similar patterns of results were replicated when Matte-Gagné and Bernier (2011) reassessed these children's EF at 3 years old: 15-month AS was correlated positively with EF (delay of gratification and conflict EF). Interestingly, children's more developed expressive vocabulary, assessed at 26 months of age, was also related to AS. Further analyses revealed that the positive link between AS and delay of gratification was mediated by expressive vocabulary. When children were 3 years old, Matte-Gagné et al. (2015) reassessed mothers' AS when helping their child in a challenging block-sorting task. Correlations showed that a global EF composite (combining delay of gratification and conflict EF) at age 3 was positively related to AS averaged across the 15-month and 3-year time points. Surprisingly, the concurrent AS-EF association was absent at 3 years of age.

Maternal AS observed at 15 months has also been related to later child mental health indicators. In 2018, Sirois and Bernier examined these children's levels of aggression and internalized symptoms (i.e., anxiety and depression), rated by their kindergarten and first grade teachers (averaged across both time points). In a regression analysis controlling for maternal sensitivity and attachment security, maternal AS was found to predict lower internalized symptoms during the early school years, but no link was found between AS and aggression.

As the quality of the parent-child relationship can affect child sleep, Bordeleau et al. (2012) followed this sample to test whether AS is associated with subsequent sleep quality.

Using sleep diaries on three consecutive days at both 3 and 4 years of age, they found that although AS was unrelated to concurrent sleep quality, prior AS at 15 months old was related to a greater proportion of nighttime to total sleep during the preschool period.

Parental AS during a challenging task for children has also been examined by other teams of researchers. Using Whipple et al.'s (2011) coding scheme, Distefano et al. (2018) observed 3- to 5-year-olds working on a challenging 12-piece cube puzzle with their parent (mostly mothers), and their control EF was evaluated with two tasks requiring working memory, inhibition, and cognitive flexibility. Parental AS was found to be associated with these preschoolers' control EF.

Fathers' AS was also coded in a challenging puzzle context. In their study, Meuwissen and Carlson (2015) used the Whipple et al. (2011) coding scheme to assess fathers while helping their 3-year-olds. Children's EF was assessed via four tasks, and paternal AS was positively correlated with their child's global EF (composite of delay of gratification and control EF). When Meuwissen and Carlson (2018) followed these dyads two years later, paternal AS was reassessed during a 12-piece cube puzzle task, made challenging for 5-year-olds. Children's school readiness, a composite score based on EF and literacy skills, was used as a dependent variable. Whereas it was unrelated to concurrent AS, school readiness was associated with prior AS, assessed at 3 years of age, and expressive vocabulary was found to mediate this association.

Parental AS has also been coded in a word-teaching task. Parents were videotaped while teaching their 18- to 24-month-old toddler a new word ("Wug") for a novel object (Wei et al., 2019). Toddlers' engagement during this task was coded, and their subsequent word recognition was measured (i.e., accuracy proportion in a Looking-While-Listening lexical processing task). Parental cognitive support and AS were coded separately in this study. Cognitive support consisted of information provided about the Wug, labeling it, or acting on it, either by the parent or the child. The AS coding included *(1) providing positive evaluation to child's contributions; (2) following the child's interest, attention, or pace; and (3) redirecting child's attention or interest to follow own agenda (reversed).* Using cluster analyses, subgroups of parents were created: high versus low in cognitive support, high versus moderate in AS. Results suggest that AS predicted greater child engagement during the word-learning task, above and beyond parental cognitive support.

*Socialization*

Using an archival data set, Joussemet et al. (2005) rated maternal AS from interviews about childrearing when children were 5 years old. Following Grolnick and Ryan (1989), who interviewed grade-school children's parents about the way they motivate and respond to their child, the rated material pertained to the socialization role. The archival data they used also included children's standardized math and reading scores and teacher ratings of their social and academic adjustment at age 8. The selected interview sections focused on motivating children to engage in desirable behaviors and follow house rules (e.g., table

manners, interpersonal relations, household chores, general obedience). For each of these socialization issues, four behavioral components of AS were rated on a 5-point scale: the extent to which mothers *(1) provided rationales and explanations for behavioral requests, (2) recognized the feelings and perspective of the child, (3) offered choices and encouraged initiative, and (4) minimized the use of controlling techniques.* A global index of maternal AS was created by averaging the global score for each of these four AS components. Results indicated that maternal AS was unrelated to math achievement but positively related to reading achievement as well as teacher-rated social and academic adjustment at 8 years old, while controlling for mothers' use of rewards and praise and their investment in child's educational performance.

Originally designed for parents of adolescents, the Parent as Social Context Questionnaire (Skinner et al., 2005) measures AS and its opposite, coercion, as well as both poles of the other two parenting quality dimensions (i.e., structure and chaos; warmth and rejection). Though not specifically designed to study the request or discipline aspect of parenting, it is relevant to the general parenting style and may influence socialization situations. Zimmer-Gembeck et al. (2015) adapted this self-report scale for parents of toddlers. Its AS subscale includes four items, rated from 1 (not true at all) to 4 (very true): *I always encourage my child to express his/her feelings, I support my child's efforts to try new things on his/her own, I support my child to be himself/herself,* and *I allow my child to explore things by himself/herself.* Recruited mothers, referred to or interested in a parenting program due to parenting difficulties, were invited to complete this questionnaire about their 1- to 3-year-old, and toddlers' attachment security was assessed. In this study, maternal AS was not associated with toddlers' attachment style.

Inspired by education studies investigating concrete behaviors that characterize an autonomy-supportive approach (Côté-Lecaldare et al., 2016; Reeve et al., 1999), Andreadakis et al. (2019) explored how parents manifest AS in a request situation. Parents of toddlers completed a classical AS questionnaire, the Parent Attitude Scale (PAS; Gurland & Grolnick, 2005), and rated the extent to which they used 26 potentially autonomy-supportive ways to ask a toddler to engage in important yet uninteresting activities (e.g., pick up toys, brush teeth). Eight practices loaded on an AS factor and related positively with the PAS: *various ways to communicate empathy, providing developmentally appropriate rationales, describing the problem in an informational way, and modeling the requested behavior.* The more parents reported using these practices, the more their toddlers were reported to display committed compliance (CC; Kochanska, 1995), an early indicator of rule internalization as it reflects toddlers endorsing parental demands and embracing tasks wholeheartedly (e.g., spontaneously picking up toys).

Autonomy-supportive and controlling practices were also coded during a request situation by Laurin and Joussemet (2017). Following each of two free-play sessions (one to two weeks apart), mothers were invited to ask their 2-year-old to clean up toys and try to make the task more the child's responsibility than theirs. Coding of the two play

sessions (total of 14 minutes of cleanup in 30-second segments) was done for controlling practices (physical force, threat/punishment, criticism, bribe) and for AS. The following practices were coded to represent AS in this request context: *(1) giving meaningful reasons for cleaning up; (2) encouraging choices or taking the child's input into account regarding the way to clean up; (3) suggesting (vs. giving orders, as a form of noncontrolling language); (4) describing (e.g., a perceived problem, without suggesting its solution;* e.g., *"Oh, there are some blocks left in that corner"); and (5) singing a cleanup song.* The first three codes were based on the classical definition of AS (Grolnick & Ryan, 1989; Koestner et al., 1984), and the latter two were coded to explore the ways in which parents communicate in an informational way. Toddlers' CC was coded during this request context as well as during a prohibition context (i.e., not touching attractive toys; total of 62 minutes) at 2 years of age and subsequently, when they were 3.5 years old. Results revealed that maternal AS at 2 years old was associated with greater CC 1.5 years later, controlling for baseline CC and mothers' controlling practices.

## Discussion

Together, these 27 studies reflect the growing scientific interest in parental AS in early childhood. Apart from two early studies conducted in the 1980s, the reviewed studies were all conducted in the past two decades, and nine of them were published during the past five years. The present review highlights the richness of this emerging literature and suggests converging evidence of positive associations with a range of infant, toddler, and preschooler characteristics and outcomes. Indeed, young children's motivation (e.g., engagement), emotions (e.g., positive affect), social relations (e.g., attachment security), cognition (e.g., executive functioning), language (e.g., vocabulary), and academic achievement (e.g., grades) were all found to relate positively to parental AS, which was assessed mostly via observations.

Similar patterns were reported repeatedly and across different contexts. This suggests that these links are robust, but a meta-analytic strategy will be needed to quantify their size. Importantly, as most studies were correlational, child effects should not be ignored. Yet experimental studies also suggest a positive effect of parental AS on child outcomes (e.g., Cleveland & Morris, 2014). Finally, studies that include fathers are needed to investigate the unique role of paternal AS since the vast majority of studies focused exclusively on maternal AS (see Sorariutta & Silvén, 2018; van der Kaap-Deeder et al., 2020, for exceptions).

## Some Conceptual Challenges

### Controlling Practices

Some of the reviewed studies measured AS on a continuum from controlling to autonomy-supportive practices. Although early AS definitions did include a "lack of controlling language and tactics" component, autonomy-supportive behaviors are distinct from

controlling ones (Soenens et al., 2009). We recommend examining parent AS separately from controlling parenting to rule out the possibility that findings are uniquely due to variations in the latter. Examining the benefits of AS over and above the damaging impact of controlling parenting would indeed further knowledge on their independent contribution. This would be particularly helpful for knowledge transfer, as parents could learn practices they may want to favor, in addition to knowing what practices to avoid.

*Structuring Practices*

A number of studies on parental AS during play and word-teaching contexts coded and controlled for cognitive stimulation and still found that AS was beneficial for young children. Similarly, a few conversation studies controlled for elaborative questions, since such structure promotes reminiscing. We view this stringent approach favorably, as it promotes conceptual clarity and diminishes the possibility that the predictive significance of parental AS is solely due to such competence support.

Since competence support is at the heart of help provision, scaffolding was included in the measure of parental AS in challenging task contexts. Scaffolding is based on a "contingent shift approach" in which adults *adjust* the level of help they provide according to children's abilities (Wood et al., 1976). It promotes children's active participation, which contributes to skill development—documented mostly in cognitive and academic domains (Mermelshtine, 2017). In our view, scaffolding is autonomy-supportive when children are facing a task that is too challenging for them to be agentic by themselves. However, we posit that AS should not be equated with scaffolding nor reduced to it, as it is unfortunately suggested in some studies. Indeed, scaffolding aimed at promoting child performance (vs. agency) or manifested in a pressuring way could be experienced as controlling. We thus stress that to be considered autonomy-supportive, the goal of scaffolding or other parenting practices should not be child's immediate success, but child agency.

Likewise, as many studies were conducted within contexts involving parental structure, there is some competence support inherent in some of the coded autonomy-supportive behaviors (e.g., providing solicited hints, informational positive feedback, describing problems). However, it is unfortunate that AS has been described as "facilitating child success" in some studies, as orienting AS's foci toward competence and away from volition begets conceptual confusion. Autonomy-supportive behaviors are not enacted so that children "get it right" but rather to make sure nothing prevents them from trying and exploring (i.e., so that children can be agentic and volitional). For instance, "providing useful hints" is probably not autonomy-supportive when such help is not needed or solicited, whereas doing so when a child is stuck (Grolnick, 2003) is promotive of agency. Likewise, informational, positive feedback may be autonomy-supportive when used to *affirm* child actions, but not when used to reward children's success or compliance (Reeve & Jang, 2006).

*Agency versus Activity*

There can be some ambiguity about encouraging children's activity and engagement when providing help. We believe that the essence of initial ratings such as "maintaining *vs. changing* children's ongoing activity" (Grolnick et al., 1984) taps children's volitional functioning and agency. We highlight "vs. changing" because the goal is not to prolong children's sustained attention but rather to let them choose the object of their attention. We believe that solely using the term "maintain" could be misinterpreted as aiming to keep children on task, with the possibility of doing so in a controlling way (e.g., pressuring a disinterested child to persist on a task). Avoiding "changing topic" and letting young children decide (what to look at, do, talk or think about, etc.) is a key feature of AS. It is similar to the "conceptual contingency" component of a responsive behavior (Landry et al., 2006; Tamis-LeMonda et al., 2001). In the responsiveness literature, rather than "redirecting" their baby's focus, responsive parents respond in a way that is *related* to their baby's behavior, utterance, or object of attention (e.g., affirmation, expansion, imitation). Consequently, although we agree that informational encouragements (Reeve & Jang, 2006) offered to discouraged children can help them regain their sense of agency, we note that factors such as fatigue, attention span, and affect should also be taken into account.

In sum, to further our knowledge about parental AS and its effects, it would be valuable to avoid conflating constructs when possible (e.g., studying SA while controlling for cognitive stimulation or warmth). In addition, assessing structure and AS separately is key to ascertain their relative contribution and interaction. We suggest doing so without excluding complex behaviors that may support more than one basic psychological need, but by studying them separately from those supporting either autonomy or competence (based on factor analyses or their correlations with psychological needs). Finally, efforts should be made to specify the features that make coded behaviors autonomy-supportive.

*Common and Context-Specific AS Features*

Overall, this review highlighted many common conceptual elements across measures of parental AS, although they were adapted to different contexts. Young children's active and agentic participation was present in many AS measures, taking various forms (e.g., child choosing a topic, able to try a task, selecting a goal, suggesting a strategy). Considering children's internal frame of reference was also a key AS behavior. Many aspects of their experiences (e.g., ideas, emotions, memories, goals) can be recognized, validated, and taken into consideration by parents when they interact with their children, even very young ones. Children were also provided with needed information (e.g., expectations, rationales, explanations, feedback) in a considerate, nondominating way. These common features have also been observed with other age groups and in other types of hierarchical relationships (see Mageau & Joussemet, this volume, for more on these central AS features).

Beyond coded behaviors, several parental qualities were also made salient by reviewing these studies. In line with research conducted with older children, autonomy-supportive parents are described as displaying perspective taking and seem to have a child-centered approach rather than a performance-driven one. Parental flexibility was part of many AS measures, highlighting that when parents aim to support their children's autonomy, it involves a degree of openness to follow children's ideas, capacities, and pace, and to take their emotions and preferences into account. Finally, although parents should not relinquish their authority, providing structure and AS simultaneously involves some power sharing or, at least, a less domineering attitude. For instance, modeling may convey that parents are not above the principles and rules they wish to teach (e.g., "I, too, am wearing a bike helmet"), and sharing good reasons for following them is opposite to enforcing blind obedience.

Regarding what is unique to the manifestation of early parental AS in each context, following young children's lead seems central for play interactions, and providing validating and related responses was underscored for conversations. When children engage in a challenging activity, tailoring parental help to promote child agency seems key, whereas providing rationales and empathy is particularly important to be autonomy-supportive when making requests (see Mageau & Joussemet, this volume, for further discussion on context-specificity).

*Knowledge Transfer*

There are now many interventions designed to foster AS within different hierarchical relationships, mostly teacher-student ones (see Su & Reeve, 2011, for a meta-analysis). With regard to parenting, AS is central in some recently evaluated interventions, such as the Parent Check-in, a two-session individualized intervention (Allen et al., 2019), and How to Talk So Kids Will Listen & Listen So Kids Will Talk (Faber & Mazlish, 1980, 2010), a seven-session parenting group. Compared to waitlist controls, parents of grade school children assigned to these interventions increased in AS (Grolnick et al., 2021; Mageau et al., 2022). Other promising AS interventions focus on specific goals such as homework (Froiland, 2011) and oral health (Weber-Gasparoni et al., 2013), the latter targeting parents of 1- to 4-year-olds. Although research assessing AS programs for parents is still embryonic, especially for families with young children, empirical evidence shows that parents can learn how to be autonomy-supportive.

## Conclusion

In conclusion, research conducted in early childhood supports SDT's proposition that all human beings should benefit from having their autonomy supported, even very young ones. Although babies' and preschoolers' language, cognitive, and socioemotional skills are not fully developed, their motivation, progress, and well-being can be fostered when their parents support their autonomy. Children's young age (and its associated characteristics,

such as limited verbal communication and limited emotional self-regulation) is no excuse for depriving them of AS. At the same time, this life period can make it challenging for parents to exercise AS, as it requires extra perspective taking, and perhaps extra patience. Supportive environments and relationships for parents can certainly help them satisfy their children's needs, especially during this sensitive developmental period. Pursuing research on parental AS early in children's lives is a valuable endeavor, as it will advance knowledge about how to satisfy young children's need for autonomy in various contexts, paving the way for their healthy and flourishing life trajectories.

## References

Allen, E. S., Grolnick, W. S., & Córdova, J. V. (2019). Evaluating a self-determination theory-based preventive parenting consultation: The Parent Check-In. *Journal of Child and Family Studies, 28*(3), 732–743. https://doi.org/hsmj

Andreadakis, E., Joussemet, M., & Mageau, G. A. (2019). How to support toddlers' autonomy: Socialization practices reported by parents. *Early Education and Development, 30*(3), 297–314. https://doi.org/10.1080/10409289.2018.1548811

Bernier, A., Carlson, S. M., & Whipple, N. (2010). From external regulation to self-regulation: Early parenting precursors of young children's executive functioning. *Child Development, 81*(1), 326–339. https://doi.org/10.1111/j.1467-8624.2009.01397.x

Bindman, S. W., Pomerantz, E. M., & Roisman, G. I. (2015). Do children's executive functions account for associations between early autonomy-supportive parenting and achievement through high school? *Journal of Educational Psychology, 107*(3), 756-770. https://doi.org//fvhx

Black, A. E., & Deci, E. L. (2000). The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective. *Science Education, 84*(6), 740–756. https://doi.org//brq8jq

Bordeleau, S., Bernier, A., & Carrier, J. (2012). Longitudinal associations between the quality of parent–child interactions and children's sleep at preschool age. *Journal of Family Psychology, 26*(2), 254–262. https://doi.org/10.1037/a0027366

Britto, P. R., Lye, S. J., Proulx, K., Yousafzai, A. K., Matthews, S. G., Vaivada, T., Perez-Escamilla, R., Rao, N., Ip, P., Fernald, L. C. H., MacMillan, H., Hanson, M., Wachs, T. D., Yao, H., Yoshikawa, H., Cerezo, A., Leckman, J. F., & Bhutta, Z. A. (2017). Nurturing care: promoting early childhood development. *The Lancet, 389*(10064), 91–102. https://doi.org//10.1016/S0140-6736(16)31390-3

Clark, K. E., & Ladd, G. W. (2000). Connectedness and autonomy support in parent–child relationships: Links to children's socioemotional orientation and peer relationships. *Developmental Psychology, 36*(4), 485–498. https://doi.org/10.1037/0012-1649.36.4.485

Cleveland, E. S., & Morris, A. (2014). Autonomy support and structure enhance children's memory and motivation to reminisce: A parental training study. *Journal of Cognition and Development, 15*(3), 414–436. https://doi.org/hsmh

Cleveland, E. S., & Reese, E. (2005). Maternal structure and autonomy support in conversations about the past: Contributions to children's autobiographical memory. *Developmental Psychology, 41*(2), 376–388. https://doi.org/10.1037/0012-1649.41.2.376

Cleveland, E. S., Reese, E., & Grolnick, W. S. (2007). Children's engagement and competence in personal recollection: Effects of parents' reminiscing goals. *Journal of Experimental Child Psychology, 96*(2), 131–149. https://doi.org/10.1016/j.jecp.2006.09.003

Collins, W. A., Maccoby, E. E., Steinberg, L., Hetherington, E. M., & Bornstein, M. H. (2003). Contemporary research on parenting: The case for nature and nurture. In *Annual progress in child psychiatry and child development: 2000-2001* (pp. 125–153). Brunner-Routledge; US.

Côté-Lecaldare, M., Joussemet, M., & Dufour, S. (2016). How to support toddlers' autonomy: A qualitative study with child care educators. *Early Education and Development, 27*(6), 822–840. https://doi.org/10.1080/10409289.2016.1148482

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality, 62*(1), 119–142. https://doi.org/10.1111/j.1467-6494.1994.tb00797.x

Distefano, R., Galinsky, E., McClelland, M. M., Zelazo, P. D., & Carlson, S. M. (2018). Autonomy-supportive parenting and associations with child and parent executive function. *Journal of Applied Developmental Psychology, 58*, 77–85. https://doi.org//gfjj9h

Faber, A., & Mazlish, E. (1980). *How to talk so kids will listen & listen so kids will talk*. Rawson.

Faber, A., & Mazlish, E. (2010). *How to Talk So Kids Will Listen; Group Workshop Kit*. Faber/Mazlish Workshops, LLC.

Frodi, A., Bridges, L., & Grolnick, W. S. (1985). Correlates of mastery-related behavior: A short-term longitudinal study of infants in their second year. *Child Development, 56*(5), 1291–1298. https://doi.org/10.2307/1130244

Froiland, J. M. (2011). Parental autonomy support and student learning goals: A preliminary examination of an intrinsic motivation intervention. *Child & Youth Care Forum, 40*(2), 135–149. https://doi.org/10.1007/s10566-010-9126-2

Garner, A. S., Shonkoff, J. P., Siegel, B. S., Dobbins, M. I., Earls, M. F., Garner, A. S., McGuinn, L., Pascoe, J., & Wood, D. L. (2012). Early childhood adversity, toxic stress, and the role of the pediatrician: Translating developmental science into lifelong health. *Pediatrics, 129*(1), e224. https://doi.org/10.1542/peds.2011-2662

Ginott, H. G. (1959). The theory and practice of "therapeutic intervention" in child treatment. *Journal of Consulting Psychology, 23*(2), 160–166. https://doi.org/b6hgb4

Ginott, H. G. (1965). *Between parent and child: New solutions to old problems*. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=psyc1&AN=1965-14749-000

Grolnick, W. S. (2003). *The psychology of parental control: How well-meant parenting backfires*. Lawrence Erlbaum Associates Publishers; US. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=psyc4&AN=2002-18105-000

Grolnick, W. S., Deci, E. L., & Ryan, R. M. (1997). Internalization within the family: The self-determination theory perspective. In *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 135–161). John Wiley & Sons Inc; US. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=psyc3&AN=1997-36410-005

Grolnick, W. S., Frodi, & Bridges. (1984). Maternal control style and the mastery motivation of one-year-olds. *Infant Mental Health Journal, 5*(2), 72–82. https://doi.org/bkspzc

Grolnick, W. S., Gurland, S. T., DeCourcey, W., & Jacob, K. (2002). Antecedents and consequences of mothers' autonomy support: An experimental investigation. *Developmental Psychology, 38*(1), 143–155. https://doi.org/10.1037/0012-1649.38.1.143

Grolnick, W. S., Levitt, M. R., Caruso, A. J., & Lerner, R. E. (2021). Effectiveness of a brief preventive parenting intervention based in Self-Determination Theory. *Journal of Child and Family Studies*. https://doi.org/10.1007/s10826-021-01908-4

Grolnick, W. S., & Pomerantz, E. M. (2009). Issues and challenges in studying parental control: Toward a new conceptualization. *Child Development Perspectives, 3*, 165–170. https://doi.org/10.1111/j.1750-8606.2009.00099.x

Grolnick, W. S., Raftery-Helmer, J. N., Marbell, K. N., Flamm, E. S., Cardemil, E. V., & Sanchez, M. (2014). Parental provision of structure: Implementation and correlates in three domains. *Merrill-Palmer Quarterly, 60*(3), 355–384. https://doi.org//fvhz

Grolnick, W. S., & Ryan. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology, 81*(2), 143–154. https://doi.org/bwbrvw

Gurland, S. T., & Grolnick, W. S. (2005). Perceived threat, controlling parenting, and children's achievement orientations. *Motivation and Emotion, 29*(2), 103–121. https://doi.org/cvjw47

Hornstra, L., Stroet, K., & Weijers, D. (2021). Profiles of teachers' need-support: How do autonomy support, structure, and involvement cohere and predict motivation and learning outcomes? *Teaching and Teacher Education, 99*, 103257. https://doi.org/gqxk

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology, 102*(3), 588–600. https://doi.org/10.1037/a0019682

Joussemet, M., Koestner, R., Lekes, N., & Houlfort, N. (2004). Introducing uninteresting tasks to children: A comparison of the effects of rewards and autonomy support. *Journal of Personality, 72*(1), 139–166. https://doi.org//fqzb2f

Joussemet, M., Koestner, R., Lekes, N., & Landry, R. (2005). A longitudinal study of the relationship of maternal autonomy support to children's adjustment and achievement in school. *Journal of Personality, 73*(5), 1215–1235. https://doi.org/d5jg85

Kochanska, G. (1995). Children's temperament, mothers' discipline, and security of attachment: Multiple pathways to emerging internalization. *Child Development, 66*(3), 597–615. https://doi.org/10.1111/j.1467-8624.1995.tb00892.x

Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling versus informational styles on children's intrinsic motivation and creativity. *Journal of Personality, 54*, 233–248. https://doi.org/bn7kn6

Kulkofsky, S. (2011). Characteristics of functional joint reminiscence in early childhood. *Memory, 19*(1), 45–55. https://doi.org/10.1080/09658211.2010.535542

Landry, S. H., Smith, K. E., & Swank, P. R. (2003). The importance of parenting during early childhood for school-age development. *Developmental Neuropsychology, 24*(2–3), 559–591. https://doi.org/10.1080/87565641.2003.9651911

Landry, S. H., Smith, K. E., & Swank, P. R. (2006). Responsive parenting: establishing early foundations for social, communication, and independent problem-solving skills. *Developmental Psychology, 42*(4), 627. https://doi.org/10.1037/0012-1649.42.4.627

Larkina, M., & Bauer, P. J. (2010). The role of maternal verbal, affective, and behavioral support in preschool children's independent and collaborative autobiographical memory reports. *Cognitive development, 25*(4), 309–324. https://doi.org/10.1016/j.cogdev.2010.08.008

Laurin, J. C., & Joussemet, M. (2017). Parental autonomy-supportive practices and toddlers' rule internalization: A prospective observational study. *Motivation and Emotion, 41*(5), 562–575. https://doi.org/10.1007/s11031-017-9627-5

Leyva, D., Reese, E., Grolnick, W., & Price, C. (2008). Elaboration and autonomy support in low-income mothers' reminiscing: Links to children's autobiographical narratives. *Journal of Cognition and Development, 9*(4), 363–389. https://doi.org//cgvj4k

Mageau, G. A., Joussemet, M., Robichaud, J.-M., Larose, M.-P., & Grenier, F. (2022). How-to parenting program: A randomized controlled trial evaluating its impact on parenting. *Journal of Applied Developmental Psychology, 79*, 101383. https://doi.org/10.1016/j.appdev.2021.101383

Masten, A. S., & Shaffer, A. (2006). How Families Matter in Child Development: Reflections from Research on Risk and Resilience. In A. Clarke-Stewart & J. Dunn (Eds.), *Families count: Effects on child and adolescent development* (pp. 5-25). Cambridge University Press; US. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=psyc5&AN=2006-03603-001

Matte-Gagné, C., & Bernier, A. (2011). Prospective relations between maternal autonomy support and child executive functioning: Investigating the mediating role of child language ability. *Journal of Experimental Child Psychology, 110*(4), 611–625. https://doi.org/10.1016/j.jecp.2011.06.006

Matte-Gagné, C., Bernier, A., & Lalonde, G. (2015). Stability in maternal autonomy support and child executive functioning. *Journal of Child and Family Studies, 24*(9), 2610–2619. https://doi.org/10.1007/s10826-014-0063-9

McCurdy, A. L., Williams, K. N., Lee, G. Y., Benito-Gomez, M., & Fletcher, A. C. (2020). Measurement of parental autonomy support: A review of theoretical concerns and developmental considerations. *Journal of Family Theory & Review, 12*(3), 382–397. https://doi.org//fvh6

Mermelshtine, R. (2017). Parent–child learning interactions: A review of the literature on scaffolding. *British Journal of Educational Psychology, 87*(2), 241–254. https://doi.org//bjep.12147

Meuwissen, A. S., & Carlson, S. M. (2015). Fathers matter: The role of father parenting in preschoolers' executive function development. *Journal of Experimental Child Psychology, 140*, 1–15. https://doi.org/10.1016/j.jecp.2015.06.010

Meuwissen, A. S., & Carlson, S. M. (2018). The role of father parenting in children's school readiness: A longitudinal follow-up. *Journal of Family Psychology, 32*(5), 588–598. https://doi.org/10.1037/fam0000418

Reese, E., & Newcombe, R. (2007). Training mothers in elaborative reminiscing enhances children's autobiographical memory and narrative. *Child Development, 78*(4), 1153–1170. https://doi.org//10.1111/j.1467-8624.2007.01058.x

Reeve, J., Bolt, E., & Cai, Y. (1999). Autonomy-supportive teachers: How they teach and motivate students. *Journal of Educational Psychology, 91*(3), 537–548. https://doi.org/10.1037/0022-0663.91.3.537

Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology, 98*(1), 209–218. https://doi.org/ftwz8m

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology, 43*(3), 450–461. https://doi.org/10.1037/0022-3514.43.3.450

Ryan, R. M., & Deci, E. L. (2017). Parenting and the facilitation of autonomy and wellbeing in development. In *Self-determination theory: Basic psychological needs in motivation, development, and wellness* (pp. 319–350). The Guilford Press.

Ryan, R. M., Deci, E. L., Grolnick, W. S., & La Guardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Theory and method, Vol. 1, 2nd ed* (pp. 795–849). John Wiley & Sons Inc. http://psycnet.apa.org/index.cfm?fa=search.displayRecord&id=753CC726-A52A-063D-C72B-1E64143A0C2F&resultID=1&page=1&dbTab=all&search=true

Ryan, R. M., & Solky, J. A. (1996). What is supportive about social support? In G. R. Pierce, B. R. Sarason, & I. G. Sarason (Eds.), *Handbook of Social Support and the Family*. Springer. https://doi.org/10.1007/978-1-4899-1388-3_11

Shonkoff, J. P., & Phillips, D. A. (2000). *From neurons to neighborhoods: The science of early childhood development*. National Academies Press. https://doi.org/10.17226/9824

Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B., & Dochy, F. (2009). The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology, 79*(1), 57–68. https://doi.org/cwft6v

Sirois, M.-S., & Bernier, A. (2018). Mother–child relationships and children's psychosocial functioning: The specific roles of attachment security and maternal behavior. *Parenting: Science and Practice, 18*(3), 172–189. https://doi.org/10.1080/15295192.2018.1465305

Skinner, E., Johnson, S., & Snyder, T. (2005). Six dimensions of parenting: A motivational model. *Parenting: Science and Practice, 5*(2), 175–235. https://doi.org/fjg97q

Soenens, B., Vansteenkiste, M., Lens, W., Luyckx, K., Goossens, L., Beyers, W., & Ryan, R. M. (2007). Conceptualizing parental autonomy support: adolescent perceptions of promotion of independence versus promotion of volitional functioning. *Developmental Psychology, 43*(3), 633–646. https://doi.org/10.1037/0012-1649.43.3.633

Soenens, B., Vansteenkiste, M., & Sierens, E. (2009). How are parental psychological control and autonomy-support related? A cluster-analytic approach. *Journal of Marriage and Family 71*(1), 187–202.

Sorariutta, A., Hannula-Sormunen, M. M., & Silvén, M. (2017). Maternal sensitivity in responding during play and children's pre-mathematical skills: A longitudinal study from infancy to preschool age. *European Journal of Developmental Psychology, 14*(1), 1–15. https://doi.org/10.1080/17405629.2016.1140641

Sorariutta, A., & Silvén, M. (2018). Quality of both parents' cognitive guidance and quantity of early childhood education: Influences on pre-mathematical development. *British Journal of Educational Psychology, 88*(2), 192–215. https://doi.org/10.1111/bjep.12217

Su, Y.-L., & Reeve, J. (2011). A meta-analysis of the effectiveness of intervention programs designed to support autonomy. *Educational Psychology Review, 23*(1), 159–188. https://doi.org/fwkhw

Tamis-LeMonda, C. S., Bornstein, M. H., & Baumwell, L. (2001). Maternal responsiveness and children's achievement of language milestones. *Child Development, 72*(3), 748–767. https://doi.org/bjwfhm

van der Kaap-Deeder, J., Soenens, B., Mouratidis, A., De Pauw, S., Krøjgaard, P., & Vansteenkiste, M. (2020). Towards a detailed understanding of preschool children's memory-related functioning and emotion regulation: The role of parents' observed reminiscence style, memory valence, and parental gender. *Developmental Psychology, 56*(9), 1696–1708. https://doi.org/10.1037/dev0001048

Vasquez, A. C., Patall, E. A., Fong, C. J., Corrigan, A. S., & Pine, L. (2016). Parent autonomy support, academic achievement, and psychosocial functioning: A meta-analysis of research. *Educational Psychology Review, 28*(3), 605–644. https://doi.org/dxmd

Weber-Gasparoni, K., Warren, J. J., Reeve, J., Drake, D. R., Kramer, K. W., Marshall, T. A., & Dawson, D. V. (2013). An effective psychoeducational intervention for early childhood caries prevention: part II. *Pediatric Dentistry, 35*(3), 247–251.

Wei, R., Ronfard, S., Leyva, D., & Rowe, M. L. (2019). Teaching a novel word: Parenting styles and toddlers' word learning. *Journal of Experimental Child Psychology, 187*. https://doi.org/10.1016/j.jecp.2019.05.006

Whipple, N., Bernier, A., & Mageau, G. A. (2011). Broadening the study of infant security of attachment: Maternal autonomy-support in the context of infant exploration. *Social Development, 20*(1), 17–32. https://doi.org/10.1111/j.1467-9507.2010.00574.x

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Child Psychology & Psychiatry & Allied Disciplines, 17*(2), 89–100. https://doi.org/bj3656

Wuyts, D., Vansteenkiste, M., Mabbe, E., & Soenens, B. (2017). Effects of social pressure and child failure on parents' use of control: An experimental investigation. *Contemporary Educational Psychology, 51*, 378–390. https://doi.org//fvh7

Yap, M. B. H., & Jorm, A. F. (2015). Parental factors associated with childhood anxiety, depression, and internalizing problems: A systematic review and meta-analysis. *Journal of Affective Disorders, 175*, 424–440. https://doi.org//f65svw

Zimmer-Gembeck, M. J., Webb, H. J., Thomas, R., & Klag, S. (2015). A new measure of toddler parenting practices and associations with attachment and mothers' sensitivity, competence, and enjoyment of parenting. *Early Child Development and Care, 185*(9), 1422–1436. https://doi.org/10.1080/03004 430.2014.1001753

# Conditional Regard in Development and Relationships

Yaniv Kanat-Maymon, Avi Assor, *and* Guy Roth

## Abstract

This chapter focuses on conditional regard as an influence practice in parenting, at school, and among romantic partners. It distinguishes between conditional negative regard (CNR), giving less affection and esteem when others do not comply with one's expectations, and conditional positive regard (CPR), giving more affection and esteem when others comply. As CPR involves positive emotional reinforcement, behaviorally oriented theorists may view it as a benign and useful practice. However, research shows that CPR, and not only CNR, leads to serious performance, emotional, and relational costs. These negative effects occur because these practices provide a diluted and provisional experience of relatedness satisfaction at the cost of significant autonomy frustration. These need experiences then lead to stressful and resentful internalization, which underlies most of the negative effects of conditional regard. Additionally, the chapter discusses potential antecedents and moderators of conditional regard along with conceptual clarifications and challenges as a basis for future research.

**Key Words:** Key words: Conditional positive regard, conditional negative regard, relatedness satisfaction, autonomy satisfaction, introjected internalization, contingent self-worth, parenting

The need to feel strongly and reliably connected and related to another person is central to a number of major psychological theories. Bowlby's (1969) attachment theory revolves around the child's need to form and maintain a caring relationship with the primary caregiver. Maslow (1970) ranks love and belongingness in the middle of his hierarchy, giving it precedence over esteem and self-actualization. Object relations also emphasizes the strong need to receive affection and attention from parents (Fairburn, 1952; Miller, 1981; Mitchel, 2000; Kohut, 2018; Winnicott, 1960). Theories of self-esteem suggest self-esteem acts as a gauge to indicate the quality of an individual's social relationships (Leary & Baumeister, 2000).

Consistent with these theories and a large body of research, self-determination theory (SDT; Deci & Ryan, 2000) argues the need for relatedness is one of three basic psychological needs essential for psychological growth, health, and well-being (Ryan & Deci, 2017). The need for relatedness refers to a need to be socially connected. People typically

feel relatedness when they receive affection and love from others. Yet feeling cared for is not enough; to feel deeply connected with others, we need to know their warmth, love, and caring are reliable, with no strings attached. Intimacy is another important facet of relatedness. We need to feel that we can share with others our authentic aspirations, thoughts, and feelings, including those others may not approve of (Prager, 1997; Knee & Browne, this volume). Finally, relatedness includes the desire to have a continuous relationship with others and to care for them. Thus, relatedness is not only about what we receive but also about finding people you really love and want to contribute to. Realizing the importance of relatedness for human survival and thriving, and based on his experiences with people in distress, Rogers (1951) coined the term "conditional regard" to describe the practice in which parents and educators make their affection, esteem, attention, and acceptance contingent on a child's compliance with their expectations and/or values. As noted by Kanat-Maymon et al. (2016), in conditional regard, acceptance by others is used as a commodity offered or withdrawn in the attempt to motivate others or control their behaviors.

Following the first empirical study on conditional regard as a unidimensional concept (Assor, Roth, & Deci, 2004), a number of other studies (e.g., Assor & Roth, 2005; Roth et al., 2009; Kanat-Maymon et al., 2012) distinguished between two forms of conditional regard. The first, *conditional positive regard* (CPR), is defined as a practice in which one person tries to induce another to comply with their expectations by offering more warmth, esteem, and/or attention following compliance. The second, *conditional negative regard* (CNR), is defined as withdrawing warmth esteem and/or attention following lack of compliance. Importantly, while conditional regard has mostly been examined in the context of parent-child or teacher-child relationships, it also exists in more egalitarian relationships, such as between romantic partners and peers. Romantic partners can make their affection contingent on the other's compliance with their expectations in order to shape the other's behaviors within the relationship (Kanat-Maymon et al., 2016).

The practice of CNR has much in common with the practice of love withdrawal (Sears, Maccoby, & Levin, 1957; Elliot & Thrash, 2001). Whereas there is widespread agreement that this practice is not desirable (but see Aronfreed, 1968), the practice of CPR is much more controversial. From an operant conditioning perspective, conditional regard represents the contingent administration of reinforcements, which is expected to increase the likelihood of desired behaviors (Gewirtz & Pelaez-Nogueras, 1991; McDowell, 1988). Importantly, CPR in particular is also endorsed as a desirable and benign socializing practice by a number of popular guidance books (McGraw, 2005; Frost, 2005).

In contrast to these fairly positive views, we consider both CNR and CPR undesirable and harmful practices, yet noting the less severe and more complex effects of CPR. Figure 27.1 depicts a process model summarizing our conception of the harmful effects of conditional regard. In this model, CNR and CPR first affect the quality of need
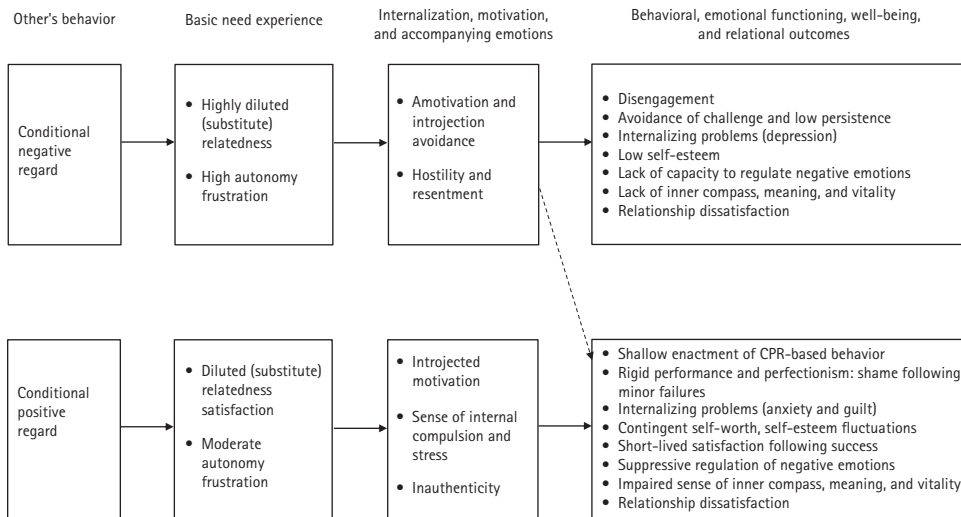
**Figure 27.1** Psychological and behavioral costs of conditional regard as an influence practice

experiences, which then affect the quality of internalization and motivation, which shape subsequent behavioral, emotional, and relational functioning. Our presentation in this chapter follows this order, beginning with the effects on need experiences. In the last sections, we provide a brief survey of antecedents and moderators of conditional regard, and then present various conceptual clarifications, challenges, and questions and as a basis for future research.

## The Effects of Conditional Regard on Basic Need Experience: Diluted Substitutive Relatedness at the Cost of Autonomy Frustration

An SDT (Ryan & Deci, 2017) view of conditional regard was articulated by Assor et al. (2004). In what follows, we develop this view, based on SDT's tenets on the pivotal role of three basic psychological needs in energizing and directing optimal functioning, development, and wellness (Vansteenkiste & Ryan, 2013). In addition to the need for relatedness already discussed, SDT posits the existence of two other basic needs: autonomy and competence.

Autonomy is the need for volitional self-direction and regulation. This need is expressed in the desires to be free from coercion and to be able to form and realize preferences and an authentic inner compass (values, interests, and derived goals), allowing satisfaction of our true needs and inclinations (Assor, 2018b; Assor, Benita, & Geifman, this volume; Deci & Ryan, 2000; Ryan & Deci, 2017). Competence is the need to develop personal capabilities and interact effectively with the environment, for example, to feel capable of completing an academic task (Deci & Ryan, 2000).

The needs for autonomy and relatedness are particularly important in conditional regard. Several scholars have recently highlighted that conditional regard can be

YANIV KANAT-MAYMON, AVI ASSOR, AND GUY ROTH

conceptualized as a need-thwarting practice, creating a conflict between the needs for autonomy and relatedness (Cohen et al., 2019; Kanat-Maymon et al., 2016; Moller et al., 2019). Conditional regard requires individuals to trade or sacrifice some of their autonomy in exchange for a diluted and provisional (substitute), yet highly needed, sense of relatedness.

The use of conditional regard by important others thwarts the need for autonomy for several reasons. First, because conditional regard is a form of pressure and coercion, it undermines an important aspect of the need for autonomy, namely, being free from external coercion (Grolnick, 2003). As conditional regard may result in internalization of others' expectations and values in order to secure their love and esteem (i.e., introjection; Assor et al., 2004), it may also lead to the experience of internal coercion and compulsion (Assor et al., 2004; Assor, Kanat-Maymon, & Roth, 2014; Roth et al., 2009), further undermining the need to be free from control.

Second, behavioral compliance with conditional regard often lead to engagement in actions that go against organismic inclinations that the need for autonomy attempts to realize. For example, a child may be expected to give up activities that deeply interest them (frustration of individual interests) and/or engage in activities they really do not like or that do not fit their temperament (e.g., Assor, Kanat-Maymon, 2020) because the parents value the latter activities much more than the former. Another example is suppressing one's sexual orientation to gain others' acceptance.

Third, prolonged exposure to conditional regard, particularly in childhood and youth, impairs the development of an authentic inner compass allowing one to direct oneself in ways that are truly autonomous. Thus, as noted by Assor and his colleagues (this volume; Assor, 2018b), in order to feel that one has an authentic inner compass, one has to develop and realize values, interests, and derived goals that feel like they reflect one's true needs and inclinations. Consistent exposure to conditional regard does not allow exploration and reflection necessary for the formation of an authentic inner compass. Rather, it results in introjected, nonauthentic values, interests, and goals. The absence of authentic inner guides (values, interests, and goals) undermines one's capacity for autonomous self-direction.

While both CPR and CNR are likely to thwart the need for autonomy, the experience of autonomy frustration in the case of CNR is likely to be more intense (high autonomy frustration) because withdrawal of regard is likely to induce a stronger sense of pressure and control than does conditional enhanced affection.

The effect of conditional regard on the need for relatedness is more complex, particularly for CPR. In the case of CPR, a relationship wherein one receives enhanced regard following compliance with a significant other's expectations supports the need for relatedness because it results in occasional reception of more affection and warmth than one usually gets. Furthermore, in some contexts, CPR may be interpreted as originating from care and concern for the recipient of CPR. For example, in youth involved in deviant

behaviors, parental CPR may signal parental concern and desire to protect their child from dangers (Sher-Censor, Yitshaki, & Assor, 2021). When CPR involves getting a great deal of affection and admiration following successful performance, this may also sustain hopes and dreams of finally feeling truly special and love-worthy (e.g., Kohut, 1981; Assor & Tal, 2012), or at least getting more affection and esteem than potential competitors in the relevant context (Shapira, Ezra, & Assor, 2012).

However, given the multifaceted nature of the need for relatedness, regular use of CPR as an influence strategy is not likely to yield a deep satisfaction of the need for relatedness and is most likely to result in a relational experience that is rather diluted, insecure, and often aggravating. This occurs for several reasons. First, the recipients of CPR feel the affection, attention, and esteem they receive is not secure and could disappear if they do not comply or fail to produce the expected behavior or outcome. Second, conditional regard often evokes considerable covert resentment of and ambivalence toward the person using it. These feelings undermine the experience of close connection, particularly when their relational sources are not discussed and resolved. As a result, the sense of closeness and relatedness is impaired. Furthermore, when conditional regard evokes strong negative feelings, and CPR recipients experience considerable anger and resentment, they may actually avoid prolonged or close contact to avoid showing or expressing anger. Evidence of resentment as a result of exposure to conditional regard was documented by Assor et al. (2004). In that study, college students reported feeling resentment and anger toward parents they experienced as hinging their affection and esteem on the student's compliance with parents' expectations in domains such as academic achievement or expressing feelings of anger, fear, or sadness.

Conditional regard may impair the development of the sincere and open sharing of personal difficulties and important authentic goals and preferences. As already noted, such sharing is at the heart of deep and reliable intimate relationships (Knee & Browne, this volume). Consistent with this view, Lynch and Sheldon (2020) found that the use of conditional regard across different close relationships was associated with a sense of inauthenticity in the relationship. In other words, conditional regard is likely to promote concealment of important authentic self aspects and prevent sharing of personal information and emotions. It appears, then, that frequent use of CPR does not allow the development of a deeply satisfying and growth-promoting relationship. At best, it can provide some sense of diluted relatedness.

The effect of CNR on the need for relatedness is likely to be more severe. Compliant behavior in response to CNR only ensures maintenance of existing levels of warmth, and no hope for receiving a great deal of warmth and esteem even if one exhibits astounding performance that fully meets expectations. Therefore, the experience of relatedness satisfaction that CNR provides is even more diluted and less satisfying than that provided by CPR. Furthermore, when CNR is used frequently, there may be some underlying fears of

parental detachment, lack of protective response in risk situations, perhaps even desertion, particularly if one repeatedly does not comply with expectations.

In support of this notion, Cohen et al. (2019) found that teachers' reported use of CNR in the classroom was negatively associated with students' reports of fulfillment of their autonomy and relatedness needs. Similarly, Garn and colleagues (2018) found that students' perceptions of teachers' CNR were inversely associated with their sense of autonomy and relatedness need satisfaction. In a study involving romantic partners, Kanat-Maymon and colleagues (2016) found the perception of the partner's CNR was inversely related to autonomy and relatedness need satisfaction within the relationship.

A recent diary study by Kanat-Maymon, Argaman, and Roth (2017) supported the notion that the use of CPR as an influence strategy over time does not support the need for relatedness, although it may be satisfying when it occurs at a specific point in time. Participants' perceptions of daily fluctuations in a romantic partner's CPR were positively associated with their daily fluctuations in relationship satisfaction, a proxy of relatedness. Put simply, romantic partners were more satisfied when they received more contingent attention. Over time, however, perceptions of the partner's CPR were negatively related to relationship satisfaction. This research demonstrated that CPR does not fully support relatedness, and its benign effect is, at best, temporary and short-lived. Another study involving both romantic partners examined the dynamics of need satisfaction within the dyad. Kanat-Maymon et al. (2016) found that when individuals reported using CPR in the relationship, their partners responded with a decreased sense of autonomy, yet their sense of relatedness did not increase. Similar findings were obtained in a school context. Using both teachers' and students' reports, Cohen and colleagues (2019) found that when teachers employed CPR in the classroom, students experienced poor autonomy need satisfaction, yet their relatedness satisfaction was not significantly affected. These findings clearly show CPR can frustrate the need for autonomy. Moreover, although CPR may be experienced as having the potential to satisfy the need for relatedness if one complies, it cannot keep this promise, at least not in the long run. CPR may not always thwart the need for relatedness, but it certainly cannot not satisfy it in a deep and reliable way.

## Internalization, Motivation, and Accompanying Feelings

According to SDT, conditional regard fosters a process which yields an introjected type of internalization and motivation (Assor, 2018a; Assor et al., 2004, 2014; Roth et al., 2009). In introjected internalization and motivation, people internalize values, goals, and expected behaviors in order to gain and avoid losing self- or other approval (Assor, Vansteenkiste, & Kaplan, 2009; Ryan & Brown, 2003). Others' criteria for approval and disapproval then translate, respectively, into self-acceptance and self-disapproval criteria. In the case of parental conditional regard, for example, behaviors and goals that are valued by parents are "taken in" without the child accepting them as truly valuable. Rather, the reason those behaviors and goals are internalized is that they prevent loss of parental

regard or enhance parental affection and appreciation. As a result, behavior is controlled by the desire to avoid feeling unworthy of love or ashamed and/or by the striving to feel love-worthy and esteem-worthy. The pressure of avoiding loss of self-regard or gaining more self-regard causes the behaviors and goals adopted via introjected internalization to feel controlling and not autonomous. Furthermore, when people reflect on these behaviors and goals or engage in them, they feel a sense of internal compulsion and pressure, which is the psychological mark of the introjected motivation. In many cases, people feel that there is something within them that forces them to do something they do not fully want to do (Assor et al., 2004).

While CNR and CPR are both likely to promote controlling types of internalization and motivation, CNR may also promote amotivation, particularly if it is used extensively. This is likely to occur because the very minor substitute satisfaction of the need for relatedness does not suffice to offset the negative motivational effect of the massive autonomy frustration it comes with. As their actions are likely to give only meager need satisfaction, recipients of CNR may very well opt to refrain from any action. CNR and CPR may also differ in the type of introjections they create. As shown by Assor et al. (2009), it is possible to distinguish between introjection approach and avoidance. In introjection avoidance, one internalizes and tries to enact certain behaviors in order to avoid others' and self-disapproval. In introjection approach, one internalizes and tries to enact certain behaviors in order to gain others' and self-approval. While CNR may mostly lead to introjected avoidance internalization and motivation, CPR may mostly lead to introjection approach.

In line with this distinction, the immediate emotions accompanying the motivations characterizing CNR and CPR also differ. The strong need frustration evoked by CNR may trigger resentment and hostility toward the people using this practice. In addition, the poor prospects of significant future need satisfaction characterizing amotivation and introjected avoidance motivation may lead to despair. As for CPR, the emotional picture is quite different. In the case of CPR, unlike CNR, meeting introjected approach standards may yield great psychological gains and therefore create strong internal compulsion and pressure to succeed in meeting these standards (Assor et al., 2014). The theoretical propositions regarding the motivational processes and emotional responses triggered by CPR and CNR were supported by several studies. Assor et al. (2004) showed that college students who experienced parental regard as contingent on academic achievement, athletic success, prosocial behavior, or suppression of negative affect reported feeling internal compulsion (i.e., introjected regulation) to behave in ways that would fulfill parental expectations. Roth (2008) found that college students' perceptions of parental conditional regard correlated positively with introjected internalization of the tendency to behave prosocially. Importantly, parental conditional regard was not associated in either study with the sense of identification or choice that normally characterizes autonomous motivation.

In a subsequent study, Roth et al. (2009) examined the effects of parents' use of CPR versus CNR to promote two parentally desired child attributes: academic achievement

and suppression of negative emotions of fear and anger. In line with the model presented in this chapter (Figure 27.1), it was found that CNR in both domains was associated with amotivation and resentment toward parents, whereas CPR in both domains was associated with introjected motivation, as indicated by feelings of internal compulsion. In addition, neither CPR nor CNR was associated with autonomous motivation, as indicated by sense of choice. Israeli-Halevi, Assor, and Roth (2015) similarly found self-reported maternal CPR but not CNR predicted adolescents' introjected motivation to suppress anxiety. These studies did not distinguish between introjection approach and avoidance. Consequently, future empirical research should focus on examining the differential links between CNR, CPR, and the two types of introjection motivations.

## Behavioral and Emotional Functioning Outcomes: Conditional Regard as a Double-Edged Sword

Given that conditional regard is a need-thwarting practice, one may ask: Why is it so frequently used by parents and teachers? A likely answer is that it leads to compliance with parents' and teachers' expectations. In this section, we will show that conditional regard, and specifically CPR, indeed leads to expectations' enactment, but a rather shallow and rigid one, and at significant emotional costs.

There are several studies showing that conditional regard aimed at promoting the enactment of expected behaviors indeed promotes such behavioral enactment. Assor et al. (2004) found that college students describing their parents as using conditional regard to promote compliance with their expectations in the domains of academic success, athletic success, prosocial behavior, or suppression of negative affect enacted the parentally expected behavior more frequently.

More recent studies have differentiated between CPR and CNR. In a study involving over 2,500 student (107 classes) in the 7th to 10th grades, Kanat-Maymon, Shoshani, and Roth (2021) found students who perceived their teachers as using more CPR in the classroom were more behaviorally engaged in class work (i.e., putting more effort into class work and participation). Disentangling within-class from between-class effects, these authors found classes who perceived teachers as using more CPR showed higher average behavioral engagement than classes whose teachers used less CPR.

While these studies support the notion that conditional regard can indeed promote enactment of behaviors expected by parents or teachers, there are a number of studies showing that "success" in promoting valued behaviors comes with a serious cost in terms of the quality of the enacted actions, emotional functioning, and well-being. Thus, taking a wider perspective, conditional regard, especially CPR, can be described as a double-edged sword (Assor et al., 2021). While it may lead to compliance with and shallow internalization of close others' expectations, it creates various performance flaws and psychological difficulties. For example, in the Assor et al. (2004) study reported above, although conditional regard was linked with more enactment of parental expected behaviors, it was

also linked with significant emotional costs: guilt and shame after failure, extreme fluctuations in self-esteem, and short-lived satisfaction following success in meeting parental expectations.

CPR is also likely to affect students' agentic engagement in school tasks. Agentic engagement (Reeve & Tseng, 2011) refers to students' intentional, proactive, and constructive contribution to the flow of the instruction they receive (i.e., working proactively). Using data on teachers and students, Cohen et al. (2019) showed that despite CPR's seemingly benign nature, teachers' reports of using it in the classroom were inversely associated with students' reported agentic engagement. That is, the students of teachers who used CPR as a motivating teaching style were less proactively involved in their learning. In other words, CPR may be limited in its ability to foster high-quality engagement.

This narrow and shallow scope of CPR-driven engagement, focusing only on what is expected, was also demonstrated by Roth and colleagues (2009). These authors found students who perceived their parents as using CPR to promote academic achievement were described by their teachers as showing grade-focused engagement, a measure of the extent to which a student is focused on solely attaining high grades, were not interested in learning material they would not be tested on, and reacted in a very combative way when they received feedback or grades indicating they were wrong on certain topics. This association was mediated by a sense of internal compulsion (i.e., introjected motivation). Importantly, CPR was negatively related to a higher quality of academic involvement, termed "interest-focused engagement," a measure of showing interest and investing effort in material that might not appear on a test. Roth et al. (2009) also showed that parental CPR aimed at promoting suppression of children's anger and fear expression predicted such suppression (i.e., enactment of the expected behavior), although it was also associated with emotion dysregulation. Importantly, there is considerable research showing that fear and anger suppression is not an optimal way of regulating emotions and has a number of negative psychological effects (Roth & Benita, this volume). Additional data pointing to the costs of CPR comes from a study conducted by Kanat-Maymon et al. (2012). The study showed that CPR increases academic dishonesty.

Assor and Tal (2012) found parental CPR predicted compulsive academic overstriving (i.e., the tendency to invest a lot of time studying what is already known). As expected, this effect was mediated by self-aggrandizement following success and by self-devaluation and shame following failure. Otterpohl, Lazar, and Stiensmeier-Pelster (2019) found that perceived parental academic CPR, but not CNR, predicted both trait and state test anxiety. Interestingly, however, CPR did not predict test score performance.

Evidence of the stress caused by complying with conditional regard has also been observed in younger children. In a sample of elementary school children, Smiley, Partington et al. (2020) found greater child-reported maternal CPR to suppress anger expression was significantly associated with greater trait anxiety and with more state distress. These indirect effects held only for children who perceived their relationship with

their mother as more distant. These children may not have experienced their mother's use of PCR as a lovingly metered expression of affection but as a psychologically controlling behavior that contributed to their feelings of alienation.

In a longitudinal project of first-time mothers, Assor, Buhnick-Atzil et al. (2020) found the mothers' prenatal achievement-oriented conditional regard indirectly contributed to the development of their preschoolers' helplessness coping with unsolvable achievement tasks (54–60 months), via mothers' postnatal achievement-oriented controlling behavior at 18 months. Importantly, the effect of mothers' prenatal conditional regard orientation held even when accounting for infants' frustration-reactivity temperament and gender.

In another study from this project (Assor et al., 2021), mothers' reported use of conditional regard to promote child's valued behaviors at 18 months predicted the expected compliance with their request not to touch attractive toys (enactment of expected behavior) when the child was 24 months old. However, also as expected, conditional regard predicted stressful poor coping when, at a later point in the experiment, children unintentionally deviated from the experimenter's request. Specifically, using the mishap paradigm (Barrett, Zahn-Waxler, & Cole, 1993), we set up a situation where children found themselves unintentionally breaking a toy they were asked to be careful with. As expected, children exposed to maternal conditional regard half a year earlier were more inclined to show avoidance of the broken toy rather than attempt to amend the situation by sharing what happened with their mother. The response of avoiding the problem rather than trying to amend appears to reflect the rudiments of anxiety-driven introjected internalization of maternal expectations regarding "appropriate" behaviors. While this type of internalization may promote enactment of the expected proper behaviors (not touching a toy), it also promotes excessive shame, stress, and inadequate coping when failing to comply. In sum, while conditional regard, and CPR in particular, may promote compliance with close others' expectations, it seems to come at a psychological and performance cost.

As for conditional regard relying mostly on love withdrawal (CNR), our theoretical model (Figure 27.1) posits that it has behavioral and psychological outcomes that are particularly harmful and undesirable. Consistent with this view, research on academic CNR has repeatedly found that it correlates with school disengagement among junior high and high school students. Kanat-Maymon, Shoshani, and Roth (2021) found students who perceived their teacher as using more CNR in the classroom were less engaged in class work than their classmates, and classes that perceived the teacher as using more CNR were less engaged than other classes. Kaplan (2018) found perceptions of teachers' CNR were inversely correlated with students' school engagement, and Cohen and colleagues (2019) found teachers' reports of CNR were negatively correlated with overall class ratings of agentic engagement (i.e., a proactive form of learning).

Similar findings have emerged in research on parental CNR in the academic domain. Roth and colleagues (2009) found that students' perceptions of academic parental CNR

were associated with lack of academic engagement, which was mediated by resentment of parents' behavior. As expected, parental CNR aimed at promoting children's fear and anger suppression only predicted fear and anger dysregulation, an effect mediated by resentment toward the parents. Smiley, Rasmussen et al. (2020) found parent-reported use of CNR in the academic domain predicted children's lower task persistence, and Assor and Tal (2012) showed that adolescents' perception of parental academic CNR correlated positively with avoidance of challenge but not with compulsive overinvestment.

In sum, the results presented here support the notion that CPR is likely to lead to enactment of some form of behavior on which affection and appreciation depend. CPR mostly fosters introjected motivation, whereby the individual is more concerned with others' regard than with the value of the behavior itself. This gives rise to a constricted and rigid engagement, accompanied by feelings of pressure, stress, and contingent self-worth. CNR appears even more problematic because it thwarts the need for autonomy more strongly and results in particularly diluted and provisional satisfaction of the need for relatedness, leading to avoidance/resentment of the socializing agent and their expectations. With only a few exceptions, CNR does not promote effortful investment, not even a rigid or low-quality engagement. As CPR and CNR have somewhat different motivational mechanisms and affect engagement differently, it is scientifically wise to differentiate them in research when possible.

In future research, it is important to examine what happens when CPR is accompanied by CNR. Most likely, the coupling of CPR with CNR has more negative effects than the use of CPR alone. Future research may also examine the idea that conditional regard may undermine the need for competence because it does not allow some people to choose activity domains that are most suitable for their natural talents and interests. Focusing your efforts on activities that do not represent your real interests and unique potential ultimately leads to actions that do not allow you to feel as competent as you could. In addition to its specific effects on the quality of expectations' enactment and the emotional reactions accompanying this enactment, conditional regard is expected to have general harmful outcomes in terms of well-being, self-esteem, and emotional problems (See right-hand column in Figure 27.1). According to SDT, people flourish and experience a deep sense of well-being to the extent that the three basic psychological needs are fulfilled; if any is unsupported, wellness and functioning are undermined (Ryan & Deci, 2017). This proposition has been supported by a wealth of experimental, cross-sectional, and daily diary studies across varied life domains. As conditional regard robs people of autonomy (and often also competence) and does not allow deep satisfaction of their basic need for unconditional acceptance and relatedness, it is likely to undermine well-being.

Although conditional regard is mostly studied as a domain-specific socialization practice, across time and interpersonal interactions these experiences may stabilize, generalize beyond the original context, and shape individual differences in well-being. Beyond the consequences of conditional regard for need satisfaction, as described earlier, research on

the well-being consequences of conditional regard has mostly focused on perfectionism and internalizing problems.

Perfectionism is a multidimensional construct related to setting exceedingly high standards of performance, accompanied by stressful and rigid engagement (Curran, 2017). Children of conditionally regarding parents may push themselves to meet very high standards and feel a sense of failure when not fully meeting these standards because they may have a fantasy that they will be fully and unconditionally accepted if they meet such standards.

Consistent with this view, using a 14-day diary study methodology, Dvash-Passi and Kanat-Maymon (2021) showed daily fluctuations in adolescents' perceptions of parental CPR, and to a lesser degree CNR, predicted day-to-day changes in their self-critical perfectionism (i.e., striving for excessively high standards, accompanied by overly critical self-evaluation and concern about others' criticism). Lavrijsen et al. (2020) found parental CPR and CNR both predicted a subdimension of self-critical perfectionism (i.e., concern over mistakes). Using an overall assessment of conditional regard (combined CNR and CPR), Curran, Hill, and Williams (2017) showed adolescents' perceptions of their parents' conditional regard predicted self-critical perfectionism and narcissistic perfectionism (i.e., outward projection of lofty expectations of others).

Conditional regard may foster internalizing problems, such as depression and anxiety, because the individual learns that they are simply not good or worthy enough to win a close other's unconditional love. This may be more salient in parent-child relations, as parents are likely, to a large extent, to have an impact on children's emerging cognitive and emotional processing, including their attributional styles. For example, when a child does not meet parental standards for proper behavior, the parent may avoid any interaction with the child for a certain period. This type of parental reaction may be interpreted by the child as reflecting the parent's global evaluation of them as unworthy or incapable, which, in turn, may foster the child's global negative self-evaluation. Even when a parent uses CPR, parental acceptance is temporary and not guaranteed. Failures are inevitable, so even this type of parental reaction is likely to lead to negative self-attribution. Hence, when parents' reactions are contingent on effort and performance, children may attribute failure to deficiencies in themselves, coming to perceive causes of negative events as internal and stable aspects of the self, putting them at greater risk of internalizing problems.

Perrone et al. (2016) suggested the impact of conditional regard on internalizing problems is more pronounced with CNR. Thus, CNR more strongly pins failure to internal, stable, and global attributions. In two studies based on a sample of elementary school children, these researchers found maternal CNR predicted stable negative self-attributions. Notably, this association was supported even when these constructs were assessed by different informants, avoiding issues of common method variance. The indirect effect of CNR on depression via negative self-attributions, however, was supported in only one of the two studies. In another study of schoolchildren, Smiley, Rasmussen et al.

(2020) showed maternal CNR in the academic domain predicted depressive symptoms. This association was mediated by shame, which is likely to indicate an individual's self-perception as ineffective and unworthy. Similarly, Wouters et al. (2018) found parental CPR and CNR both predicted internalizing symptoms (i.e., depression and anxiety) via lower self-esteem, and Otterpohl et al. (2019) found parental CNR directly predicted depression and parental CPR predicted depression through contingent self-worth. In a study on emotion regulation, Smiley, Partington et al. (2020) discovered greater child-reported maternal CPR to suppress anger expression was significantly associated with greater trait anxiety. Taken together, these findings suggest conditional regard has a fairly profound effect on internalizing problems.

Empirical research relying on a measure of psychologically controlling parents' behavior including many conditional regard items provided considerable support for the link between perceived conditional regard and introjected regulation, internalizing emotional problems, and perfectionist inclinations (see Soenens, Vansteenkiste, & Beyers, 2019).

As fluctuations in self-esteem are a key characteristic of introjected motivation, CPR may predict contingencies of self-worth—a measure of how dependent a person's self-esteem is on success and failure in a certain domain (Crocker & Wolfe, 2001; Kanat-Maymon et al., 2018). Several studies have examined this proposition. In two samples of secondary and university students, Otterpohl et al. (2019) found parental academic CPR but not CNR predicted contingent self-esteem. Assor et al. (2004) found that conditional regard was associated with fluctuations in self-esteem. Assor and Tal (2012) showed that parental academic CPR predicted self-aggrandizement following success, and self-devaluation and shame following failure, while parental CNR predicted self-devaluation and shame following failure, albeit to lesser degree. Wouters et al. (2018) found general perceptions of both parental CPR and CNR positively predicted contingent self-worth.

One exception to the negative pattern of correlates of CPR emerges from a recent study on a closed ultra-orthodox community. In this study, Itzhaki, Itzhaky, and Yablon (2018) explored the role of societal conditional regard, a concept referring to the contingent society's acceptance when the individual behaves in accordance with the society's, rather than the parents', expectations. The authors found that in the case of ultra-orthodox youth dropouts, societal CPR was positively related to well-being and a more positive orientation to the future. Future research should try to understand these findings and explore the challenge they pose to our view of CPR as a rather nonoptimal socializing practice. It is possible that in the case of youth who clearly failed to meet educational expectations and have grown up in a community with a fairly controlling educational approach, CPR, especially when not accompanied by CNR, may be experienced as fairly benign compared to other educational responses—perhaps even as a sign of caring.

## Relationship Quality

Basic psychological needs satisfaction in general and relatedness need satisfaction in particular are closely tied to greater relationship satisfaction, commitment, and intimacy (Patrick et al., 2007). This finding is consistent across different kinds of interpersonal relationships, including parent-child relationships, romantic relationships, and relationships with peers (Ryan & Deci, 2017). Conditional regard, especially CNR, is expected to undermine relationship quality because it thwarts need satisfaction and relatedness in particular. Several empirical studies support this hypothesis. For example, using an aggregated conditional regard scale comprised of both CNR and CPR, Assor et al. (2004) showed college students' perception of parental conditional regard was related to perceptions of the parents as disapproving and also to resentment of the parents. In a subsequent study, Roth et al. (2009) found resentment of parents was attributed to parental CNR.

More recent research has extended this work to include egalitarian relationships, such as romantic partners and peers. In the course of close relationships, partners are required to adjust to one another and to negotiate the division of roles and responsibilities. Throughout these processes, partners continually try to influence each other to get things done "their way" without jeopardizing the relationship. Direct control strategies, such as control of resources, use of threats, and unilateral decision-making, are effective but may hamper the longevity of the romantic relationship. Therefore, Kanat-Maymon et al. (2016) argued, individuals may be prone to use conditional regard with their partners. This strategy is more indirect; it involves subtler and less painful tactics but can be just as effective without seriously thwarting relationship intactness (Falbo & Peplau, 1980).

Several studies have shed light on the effects of conditional regard in close relationships. In the first work on conditional regard among romantic partners, Kanat-Maymon et al. (2016) showed CNR from a partner was negatively associated with romantic relationship quality. In a subsequent study using a daily diary design, Kanat-Maymon et al. (2017) discovered partners felt less close and satisfied in their relationship on days when they perceived their partner was using CNR. Similarly, Cournoyer et al. (2021) found first-time parents who perceived CNR from their partner reported lower dyadic adjustment six months later.

CPR has also been found to correlate with poor relationship quality. Kanat-Maymon et al. (2012) showed a negative link between perceptions of romantic partners' CPR and participants' reported relationship quality. To overcome same-reporter common variance, in a second study Kanat-Maymon et al. (2016) included both romantic partners; in this study, one partner's use of CPR was inversely related to the other partner's reports on relationship quality. In the same project, the authors examined the association between CPR and relationship quality across four relationship targets (mother, father, best friend, romantic partner). Using a within-person design, they showed that across the relationship targets, participants were more satisfied in relationships in which the target partner used less CPR.

Interestingly, a diary study among romantic partners found daily fluctuations in perceptions of a partner's CPR were positively associated with daily fluctuations in relationship satisfaction and closeness (Kanat-Maymon et al., 2017). These authors argued the temporary effects of receiving more regard than usual from a romantic partner can cause a temporary elevation in relationship quality because the other partner will feel more accepted and cared for. This satisfaction is short-lived, however, because the person is not truly accepted for who they are, as acceptance is contingent on meeting the partner's expectations. Indeed, at the between-person level, when CPR and relationship satisfaction were aggregated across days, CPR was negatively related to relationship satisfaction.

The extent to which the basic psychological needs for autonomy and relatedness serve as an explanatory mechanism for the relations between conditional regard and relationship quality has been tested in several studies. Moller et al. (2019) showed that an overall measure of the three basic psychological needs mediated the association between perceived parental conditional regard and secure attachment to parents. These authors found need satisfaction played a mediating role in relationships with peers and romantic partners. That is, when a peer or a romantic partner was perceived to be using conditional regard, the participant experienced less need satisfaction, which in turn was associated with attachment insecurity. Kanat-Maymon et al. (2016) further examined how autonomy and relatedness uniquely mediate the effect of CNR and CPR. Their results indicated that the negative association between CNR and relationship quality was mediated through frustration of both autonomy and relatedness needs. The effect of CPR was mediated only by frustrating autonomy, not relatedness. These findings fit well with the notion that both CNR and CPR thwart the need for autonomy, but CNR poses an additional threat to the need for relatedness.

## Antecedents and Moderators

We assume there are a number of potential antecedents of a person's use of conditional regard as an influence or socializing practice. Some originate from the person's own internalized models and personality, and others may develop in response to the recipient's disposition. One source of an individual's use of conditional regard as a socializing practice may be their parents. Two studies presented data supporting intergenerational transmission of conditional regard. Assor et al. (2004) found mothers' perception of grandmothers' conditional regard predicted daughters' perception of mothers' conditional regard. Otterpohl et al. (2020) found a direct relationship between grandmothers' CPR and mothers' CPR. The intergenerational transmission of conditional regard may be a product of a modeling processes whereby parenting behaviors encountered in childhood serve as an internalized model for people to use years later, when they become parents themselves.

Another explanation involves contingent self-worth. Parental conditional regard is a key precursor of children's contingent self-worth. As children grow into adulthood and become parents, these early contingencies of self-worth translate into child-invested

contingent self-worth (i.e., when parents' own self-worth hinges on their children's achievement). Parents whose self-worth hinges on their children's behavioral conduct may endorse controlling childrearing practices, such as conditional regard, to ensure their children's achievement and thus protect their own fragile self-esteem (Grolnick et al., 2007; Ng, Pomerantz, & Deng, 2014).

This notion has been supported in four studies. First, Israeli-Halevi et al. (2015) showed maternal contingent self-esteem predicted maternal use of both CPR and CNR in the domain of negative emotion regulation. Second, in a project on early development, Assor, Buhnick-Atzil et al. (2020) found mothers' prenatal contingent self-esteem predicted their self-reported use of conditional regard when their children were 18 months old. Third, Otterpohl et al. (2020) found perceived grandmothers' conditional regard was indirectly related to perceived mothers' conditional regard through maternal child-invested contingent self-worth. Fourth, Wuyts et al. (2015) reported a short-term longitudinal study involving parents of 10-year-old children, in which they assessed a measure tapping a variable that is very close to achievement-oriented conditional regard: achievement-oriented psychologically controlling parenting. They found that increases in parental child-invested contingent self-esteem predicted increases in achievement-oriented psychologically controlling parenting even when controlling for child performance. Other variables that increase the tendency to use the practice of conditional regard involve cultural-contextual pressures. For example, Wuyts et al. found that social achievement pressure was associated with increased use of achievement-oriented conditional regard.

One personal strength that may decrease parents' tendency to use conditional regard to promote child behavior that conforms with social expectations is parents' sense of having an authentic inner compass (Assor, Benita, & Geifman, in press). Having a firm and authentic inner compass is assumed to enable parents to be less dependent on others' approval and resist the temptation to use conditional regard to ensure that their child conforms with social norms. Evidence supporting this view was obtained by Sabage-Cohen, Assor, and Almashla (2021) in a study of Bedouin adolescents and their mothers. The authors found that mothers who described themselves as knowing what is truly important to them in life, and as having values, aspirations, and goals that they deeply identify with (indicating a firm and authentic sense of inner compass) were perceived by their adolescent children as less inclined to use conditional regard.

Moller et al. (2019) looked at the dynamics of conditional regard transmission from an individual's parents to the individual's relations with peers and romantic partner. These authors found early evidence for two additional processes. The first is a selection process by which children of conditionally regarding parents tend to choose conditionally regarding peers and romantic partners in adulthood. These findings are likely to reflect a preference for familiarity or self-validation (Katz & Beach, 2000; Reis et al., 2011). The second process involves projection of the childhood experience of parental conditional regard onto other relationships in adulthood.

Another possible antecedent of conditional regard is its development in response to the recipient's temperament. In the context of parent-child relations, Assor, Buhnick-Atzil et al. (2020) suggested parents are more likely to use controlling practices such as conditional regard when children manifest dispositions that are difficult or unpleasant for parents. They found children's temperament, specifically children's frustration-proneness at eight months (i.e., the tendency to express strong negative emotions, particularly anger, in frustrating situations) predicted maternal use of conditional regard with these children at 18 months.

Several studies have looked at gender as a potential moderator of the harmful effects of conditional regard. Girls may be more vulnerable to CNR because of early gender socialization; more specifically, their sense of self-worth may be more heavily dependent on the satisfaction of their relatedness needs. Consequently, girls may find it more difficult to tolerate parental love withdrawal. Indeed, Kanat-Maymon, Shoshani, and Roth (2021) found gender moderated the effect of perceived teachers' CNR on school engagement. The results indicated CNR was more strongly associated with disengagement among girls than among boys. Similar findings were reported for a qualitative study by Assor and Shavit-Miller (2012). Notably, in this study, girls vulnerable to CNR were not more sensitive than boys to signs of frustration stemming from social influence and achievement needs. The authors concluded girls' vulnerability to CNR can be attributed to their sensitivity to relatedness need frustration; it is not a result of sensitivity to negative events in general. This interesting finding and hypothesis warrant further investigation.

## Conceptual Issues and Challenges: Conditional Regard, Psychological Control, Feedback, and a Warm Empathic Response to Success

To further clarify the conceptualization of conditional regard, it is important to understand the differences between conditional regard and other closely related constructs, such as psychological control and feedback. In the domain of parent-child socialization practices, parental conditional regard has some conceptual overlap with the well-known construct of parental psychological control (Barber, Stolz, & Olsen, 2005), as both have elements of control and neither respects the child's needs. But several important differences distinguish conditional regard from psychological control. First, psychological control is a multidimensional construct that involves several emotionally controlling parenting behaviors that do not include conditional regard, such as a highly critical-accusatory attitude toward the child (e.g., "blames me for other family member's mistakes"), intrusiveness (e.g., "often interrupts me"), and invalidation of feelings and thoughts (e.g., "is always trying to change how I feel or think about things"; Romm, Metzger, & Alvis, 2020). Moreover, psychological control does not include giving more affection when the child complies (as does CPR). Second, psychological control includes parental behaviors which children cannot affect by their behavior (e.g., "blames me for other family member's problems").

Third, psychological control refers to a general parental style, whereas conditional regard usually refers to specific domains (e.g., academic achievement).

A more complex conceptual issue in the study of conditional regard is the differentiation between conditional regard and feedback. CPR and CNR can be viewed as forms of feedback, occurring when recipients meet (or fail to meet) behavior or performance expectations. It is therefore important to distinguish between conditional regard and other aspects of feedback, such as feedback valence (positive/negative), competence-supporting information, process-oriented praise, and controlling versus empathic intentions motivating the feedback.

Conditional positive and negative regard should not be confused with positive/negative feedback (Ryan & Deci, 2017). Positive feedback is a response signaling a "goal" has been satisfactorily achieved, and negative feedback involves signaling that the achievement or engagement level has fallen short. Because positive feedback typically increases basic need satisfaction, it stimulates autonomous motivation and performance. In contrast, negative feedback is mostly detrimental for autonomous motivation (Deci, Koestner, & Ryan, 1999; Fong et al., 2019). As explained above, even CPR, which entails receiving more affection, mostly thwarts need satisfaction and does not enhance autonomous motivation.

The informational versus evaluative approach to feedback suggests that any feedback, either positive or negative, can be viewed as comprising two broad aspects (Ryan & Deci, 2017; Soenens & Vansteenkiste, 2020). One is an informational task-oriented aspect, conveying valuable information on what has been achieved and whether the actions taken have been effective. The other is the controlling aspect, or pressure toward an outcome. This can entail an evaluative ego-oriented aspect, tying feedback on the performance level to self-worth and the need for approval. The informational aspect of feedback has considerable impact on learning growth, performance, and autonomous motivation because it more closely ties what has been done to what still needs to be done (Kluger & DeNisi, 1996).

Unfortunately, CPR and CNR do not focus on this growth-promoting aspect of feedback. Rather, they both emphasize the controlling, evaluative ego-oriented aspect of feedback. For example, when parents make acceptance dependent on the child's performance using CPR, their elevated acceptance provides little information, if any, to the child about which actions were effective. It simply signals to the child that as a whole they are currently worth more in the eyes of the parents. Yet this elevated worth is temporary; another challenge may soon take precedence, and worth will once again be questionable. As the child's worth and the parents' affection are at stake, the child may refrain from engaging in tasks that may not be worth-promoting. Alternatively, as shown by Assor and Tal (2012), conditional regard may lead to rigid engagement, such that a child may overinvest and neglect other personally important domains in an attempt to secure the parent's regard and the associated sense of self-worth.

Related research has shown that feedback directed at the child's effort and strategy, known as process feedback or praising effort (e.g., "You really studied for your math test and your improvement shows it"), has more informational value and is thus more beneficial to the child's autonomous motivation and engagement than person feedback (e.g., "You are good at math"), a general, trait-like feedback aimed at the child's performance (Dweck, 1999). Cimpian et al. (2007) showed children are very sensitive to person versus process feedback, and even small changes in the wording of the feedback, focusing on their performance versus effort, affect their coping with failure. In our view, conditional regard is similar to person feedback because it either accepts or rejects the individual as a whole, whether or not it hinges on performing well or investing enough effort.

It is also reasonable to assume that the extent to which feedback is experienced as expressing conditional regard depends on the intentions attributed to the feedback provider and the specific context. For example, consider the following response to a child failure in an important school task: "I am sure that you are smart enough to succeed in such tasks in the future." If the parent is experienced as providing a great deal of relational and autonomy support in general, such a response may be experienced as empathic and competence-supporting. However, if the parent is experienced as generally controlling and using praise to manipulate the child to do things they do not want to do, then the response may be experienced as control-oriented and conditional, showing how the child can win the parent's esteem. Indeed, there is considerable research showing that people can interpret positive responses as control attempts (e.g., Deci, 1975; Katz et al., 2006; Ryan, 1982). A similar emphasis on the importance of interpretation of the other's intentions was presented in Sher-Censor, Yitshaki, & Assor et al.'s (2021) paper on youth perceptions of parents' monitoring warnings following risk behavior.

One issue that was not sufficiently explored is what differentiates CPR from a warm, empathic, appreciative response to success. It is quite possible that after people succeed and feel proud of a significant achievement or superb performance, they expect close others to show appreciation and enthusiasm. Thus, when this occurs, need-supportive close others may respond empathically with much more warmth and enthusiasm than they usually do. They may even say things like "I am really proud of you" or "Bravo, that was a great performance." As this empathic response and CPR are both characterized by elevated warmth and appreciation following success, future research needs to identify what differentiates the responses, so that the recommendation to avoid CPR would not be interpreted as a recommendation to avoid empathic appreciative response to success. This is an important point because the concept of conditional regard should not lead people to moderate their appreciative and enthusiastic responses to superb performance or persistent coping with challenges. Future research may delineate what we can do so that our appreciative and enthusiastic responses will not be experienced as conditionally regarding.

## Conclusions

In this chapter, we focused primarily on the need experiences created by the practice of conditional regard within relationships, and the outcomes of these experiences. We distinguished between two types of conditional regard: conditional positive regard and conditional negative regard. CPR involves the provision of more affection and esteem than usual in order to motivate enactment of expected behaviors. CNR involves the provision of less affection and esteem than usual in order to motivate enactment of expected behaviors. Both CPR and CNR provide a diluted and provisional experience of relatedness satisfaction at the cost of autonomy frustration (freedom from coercion, and forming and realizing a sense of inner compass based on authentic values, interests, and goals). In CNR these need experiences are particularly intense. Accordingly, CNR has more negative psychological, performance, and relational effects. However, when CPR is used frequently it also has harmful effects. CNR mostly promotes amotivation and introjected-avoidance motivation, leading to avoidance of challenge and lack of persistence. CPR promotes both introjected approach and avoidance motivation, leading to rigid and often shallow enactment of expected behaviors. Future research may examine how CNR and CPR interfere with the formation of an authentic inner compass (Assor et al., this volume) and a sense of meaning, authenticity, and vitality that are based on this compass and that in SDT reflect fuller and healthier functioning.

## References

Aronfreed, J. (1968). *Conduct and conscience: The socialization of internalized control over behavior*. Academic Press.

Assor, A. (2018a). Parental conditional regard. In M. H. Bornstein (Ed.), *The Sage encyclopedia of lifespan human development* (pp. 1579–1581). New York: Sage Publications.

Assor, A. (2018b). The striving to develop an authentic inner-compass as a key component of adolescents' need for autonomy: Parental antecedents and effects on identity, well-being, and resilience. In B. Soenens, M. Vansteenkiste, & S. Van Petegem (Eds.), *Autonomy in adolescent development: Towards conceptual clarity* (pp. 119–145). Psychology Press.

Assor, A., Benita, M., & Geifman, Y. (in press). You can motivate others by nurturing five experiences that satisfy their need for autonomy: Authentic inner compass, authentic intentions, and freedom. In M. Bong, S. Kim, & J. Reeve (Eds.), *Motivation science: Controversies and insights*. Oxford University Press.

Assor, A., Buhnick-Atzil, O., Rabinovitz-Magen, L., Auerbach, J., Kanat-Maymon, Y., Smiley, P., & Moed, A. (2020). Maternal prenatal conditional regard orientation and postnatal controlling behaviour as predictors of preschoolers' helpless coping with failure: A prospective study. *European Journal of Developmental Psychology*, *17*(6), 828–854.

Assor, A., Ezra, O., Kanat-Maymon, Y., Auerbach, J. G., Cohen-Iluz, M., Rabinovitch-Magen, L., Geller, Y., Dagan, T., & Hagari, N. (2021). *Maternal conditional regard in early childhood as a double-edged sword: A longitudinal study of child-outcomes and antecedents*. Manuscript submitted for publication.

Assor, A., Kanat-Maymon, Y., Keren-Pariente, S., & Katz, I. (2020). You should know me better: Parents' temperament-insensitivity has negative motivational effects on Bedouin and Jewish adolescents. *Journal of Personality*, *88*(5), 874–891.

Assor, A., Kanat-Maymon, Y., & Roth, G. (2014). Parental conditional regard: Psychological costs and antecedents. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships* (pp. 215–237). Springer.

Assor, A. & Roth, G. (2005). Conditional love as a socializing approach: Costs and alternatives. *Scientific Annals of the Psychological Society of Northern Greece*, *7*, 17–34.

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of perceived parental conditional regard: A self-determination theory analysis. *Journal of Personality*, *72*(1), 47–87.

Assor, A., & Shavit-Miller, A. (2012). *Vulnerability to the experience of conditional parental regard in the academic domain: Gender differences and possible mechanisms*. Paper presented in the Society for Research on Adolescence, March, Vancouver.

Assor, A., & Tal, K. (2012). When parents' affection depends on child's achievement: Parental conditional positive regard, self-aggrandizement, shame and coping in adolescents. *Journal of Adolescence*, *35*(2), 249–260.

Assor, A., Vansteenkiste, M., & Kaplan, A. (2009). Identified versus introjected approach and introjected avoidance motivations in school and in sports: The limited benefits of self-worth strivings. *Journal of Educational Psychology*, *101*(2), 482–497.

Barber, B., Stolz, H., & Olsen, J. (2005). Parental support, psychological control and behavioral control: Assessing relevance across time, culture and method. *Monographs of the Society for Research in Child Development*, *70*, 1–151.

Barrett, K. C., Zahn-Waxler, C., & Cole, P. M. (1993). Avoiders vs. amenders: Implications for the investigation of guilt and shame during toddlerhood? *Cognition & Emotion*, *7*(6), 481–505.

Bowlby, J. (1969). *Attachment and loss: Attachment* (Vol. 1). Basic Books.

Cimpian, A., Arce, H. M. C., Markman, E. M., & Dweck, C. S. (2007). Subtle linguistic cues affect children's motivation. *Psychological Science*, *18*(4), 314–316.

Cohen, R., Moed, A., Shoshani, A., Roth, G., & Kanat-Maymon, Y. (2019). Teachers' conditional regard and students' need satisfaction and agentic engagement: A multilevel motivation mediation model. *Journal of Youth and Adolescence*, *49*(4), 790–803.

Cournoyer, A., Laurin, J. C., Daspe, M. È., Laniel, S., & Huppé, A. S. (2021). Conditional regard, stress, and dyadic adjustment in primiparous couples: A dyadic analysis perspective. *Journal of Social and Personal Relationships*, *38*(5), 1427–1494.

Crocker, J., & Wolfe, C. T. (2001). Contingencies of self-worth. *Psychological Review*, *108*(3), 593–623.

Curran, T., Hill, A. P., & Williams, L. J. (2017). The relationships between parental conditional regard and adolescents' self-critical and narcissistic perfectionism. *Personality and Individual Differences*, *109*, 17–22.

Deci, E. L. (1975). *Intrinsic motivation*. Plenum.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268.

Dvash-Passi, S., & Kanat-Maymon, Y. (2021). No less than perfect: The association between parental conditional regard and perfectionism. Reichman University (Unpublished manuscript).

Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development*. Psychology Press.

Elliot, A. J., & Thrash, T. M. (2001). Narcissism and motivation. *Psychological Inquiry*, *12*(4), 216–219.

Falbo, T., & Peplau, L. A. (1980). Power strategies in intimate relationships. *Journal of Personality and Social Psychology*, *38*, 618–628.

Fairburn, W. R. D. (1952). *An object-relations theory of the personality*. Basic Books.

Fong, C. J., Patall, E. A., Vasquez, A. C., & Stautberg, S. (2019). A meta-analysis of negative feedback on intrinsic motivation. *Educational Psychological Review*, *31*, 121–162.

Frost, J. (2005). *Supernanny: How to get the best from your children*. Hyperion.

Garn, A. C., Morin, A. J., & Lonsdale, C. (2018). Basic psychological need satisfaction toward learning: A longitudinal test of mediation using bifactor exploratory structural equation modeling. *Journal of Educational Psychology, 111*, 354–372.

Gewirtz, J. L., & Peláez-Nogueras, M. (1991). The attachment metaphor and the conditioning of infant separation protests. In J. L. Gewirtz & W. M. Kurtines (Eds.), *Intersections with attachment* (pp. 123–144). Lawrence Erlbaum Associates.

Grolnick, W. S. (2003). *The psychology of parental control: How well-meant parenting backfires*. Lawrence Erlbaum Associates.

Grolnick, W. S., Price, C. E., Beiswenger, K. L., & Sauck, C. C. (2007). Evaluative pressure in mothers: Effects of situation, maternal, and child characteristics on autonomy supportive versus controlling behavior. *Developmental Psychology*, *43*(4), 991–1002.

Israeli-Halevi, M., Assor, A., & Roth, G. (2015). Using maternal conditional positive regard to promote anxiety suppression in adolescents: A benign strategy? *Parenting*, *15*(3), 187–206.

Itzhaki, Y., Itzhaky, H., & Yablon, Y. B. (2018). The contribution of parental and societal conditional regard to adjustment of high school dropouts. *Journal of Adolescence*, *62*, 151–161.

Kanat-Maymon, Y., Almog, L., Cohen, R., & Amichai-Hamburger, Y. (2018). Contingent self-worth and Facebook addiction. *Computers in Human Behavior*, *88*, 227–235.

Kanat-Maymon, Y., Argaman, Y., & Roth, G. (2017). The association between conditional regard and relationship quality: A daily diary study. *Personal Relationships*, *24*(1), 27–35.

Kanat-Maymon, Y., & Dvash, S. (2020). *Parental conditional regard and perfectionism*. Unpublished manuscript.

Kanat-Maymon, Y., Roth, G., Assor, A., & Reizer, A. (2012). Conditional regard in close relationship. In M. Mikulincer & P. R. Shaver (Eds.), *The social psychology of meaning, morality, and choice* (pp. 235–251). American Psychological Association.

Kanat-Maymon, Y., Roth, G., Assor, A., & Reizer, A. (2016). Controlled by love: The harmful relational consequences of perceived conditional positive regard. *Journal of Personality*, *84*(4), 446–460.

Kanat-Maymon, Y., Shoshani, A., & Roth, G. (2021). Conditional regard in the classroom: A double-edged sword. *Frontiers in Psychology*, *3180*.

Kaplan, H. (2018). Teachers' autonomy support, autonomy suppression and conditional negative regard as predictors of optimal learning experience among high-achieving Bedouin students. *Social Psychology of Education*, *21*(1), 223–255.

Katz, I., Assor, A., Kanat-Maymon, Y., & Bereby-Meyer, Y. (2006). Interest as a motivational resource: Feedback and gender matter, but interest makes the difference. *Social Psychology of Education*, *9*(1), 27–42.

Katz, J., & Beach, S. R. (2000). Looking for love? Self-verification and self-enhancement effects on initial romantic attraction. *Personality and Social Psychology Bulletin*, *26*, 1526–1539.

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, *119*(2), 254–284.

Kohut, H. (2018). "On empathy". In Ornstein, P. (Ed.), *The Search for the Self: Selected Writings of Heinz Kohut, 1978–1981* (Vol. 4, pp. 525–535). International Universities Press.

Lavrijsen, J., Soenens, B., Vansteenkiste, M., & Verschueren, K. (2020). Is intelligence related to perfectionism? Multidimensional perfectionism and parental antecedents among adolescents across varying levels of cognitive ability. *Journal of Personality*, *89*(4)1–20.

Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 32, pp. 1–62). San Diego, CA: Academic Press.

Lynch, M. F., & Sheldon, K. M. (2020). Conditional regard, self-concept, and relational authenticity: Revisiting some key Rogerian concepts cross-culturally, through multilevel modeling. *Journal of Humanistic Psychology*, *60*(2), 168–186.

Maslow, A. (1970). *Motivation and personality* (2nd ed.). Harper & Row.

McDowell, J. J. (1988). Matching theory in natural environments. *Behavior Analyst, 11*, 95–109.

McGraw, P. (2005). *Family first: Your step-by-step plan for creating a phenomenal family*. Free Press.

Miller, A. (1981). *Prisoners of childhood: The drama of the gifted child and the search for the true self*. Basic Books.

Mitchell, S. (2000). *Relationality*. Analytic Press.

Moller, A. C., Roth, G., Niemiec, C. P., Kanat-Maymon, Y., & Deci, E. L. (2019). Mediators of the associations between parents' conditional regard and the quality of their adult-children's peer-relationships. *Motivation and Emotion*, *43*(1), 35–51.

Ng, F. F. Y., Pomerantz, E. M., & Deng, C. (2014). Why are Chinese mothers more controlling than American mothers? "My child is my report card." *Child Development*, *85*(1), 355–369.

Otterpohl, N., Lazar, R., & Stiensmeier-Pelster, J. (2019). The dark side of perceived positive regard: When parents' well-intended motivation strategies increase students' test anxiety. *Contemporary Educational Psychology*, *56*, 79–90.

Otterpohl, N., Steffgen, S. T., Stiensmeier-Pelster, J., Brenning, K., & Soenens, B. (2020). The intergenerational continuity of parental conditional regard and its role in mothers' and adolescents' contingent self-esteem and depressive symptoms. *Social Development*, *29*(1), 143–158.

Patrick, H., Knee, C. R., Canevello, A., & Lonsbary, C. (2007). The role of need fulfillment in relationship functioning and well-being: A self-determination theory perspective. *Journal of Personality and Social Psychology*, *92*, 434–457.

Perrone, L., Borelli, J. L., Smiley, P., Rasmussen, H. F., & Hilt, L. M. (2016). Do children's attributions mediate the link between parental conditional regard and child depression and emotion? *Journal of Child and Family Studies*, *25*(11), 3387–3402.

Prager, K. J. (1997). *The psychology of intimacy*. Guilford Press.

Reeve, J., & Tseng, C. M. (2011). Agency as a fourth aspect of students' engagement during learning activities. *Contemporary Educational Psychology*, *36*(4), 257–267.

Reis, H. T., Maniaci, M. R., Caprariello, P. A., Eastwick, P. W., & Finkel, E. J. (2011). Familiarity does indeed promote attraction in live interaction. *Journal of Personality and Social Psychology*, *101*, 557–570.

Rogers, C. R. (1951). *Client centered therapy*. Houghton-Mifflin.

Romm, K. F., Metzger, A., & Alvis, L. M. (2020). Parental psychological control and adolescent problematic outcomes: A multidimensional approach. *Journal of Child and Family Studies*, *29*(1), 195–207.

Roth, G. (2008). Perceived parental conditional regard and autonomy support as predictors of young adults' self- versus other-oriented prosocial tendencies. *Journal of Personality*, *76*, 513–534.

Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and behavioral consequences of parental conditional regard: Comparing positive conditional regard, negative conditional regard, and autonomy support as parenting practices. *Developmental Psychology*, *45*(4), 1119–1142.

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, *43*(3), 450–461.

Ryan, R. M., & Brown, K. W. (2003). Why we don't need self-esteem: On fundamental needs, contingent love, and mindfulness. *Psychological Inquiry*, *14*(1), 71–76.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory. Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Sabage-Cohen, R., Assor, A., & Almashla, H. (2021). *Bedouin mothers' sense of authentic inner compass as a parenting resource: Relations with need-supporting parenting and adolescent's well-being*. Manuscript submitted for publication, Ben Gurion University.

Sears, R. R., Maccoby, E., & Levin, H. (1957). *Patterns of child rearing*. Row, Peterson.

Shapira, M., Ezra, O., & Assor, A. (2012). The multiple appearances of parental conditional positive regard: Direct and vicarious conditional regard as predictors of labile self-esteem dynamics. Paper presented at the International Conference on Motivation, Frankfurt, Germany.

Sher-Censor, E., Yitshaki, N., & Assor, A. (2021). How should mothers react when they first learn about their child's involvement with deviant peers? The adolescents' perspective. *Journal of Youth and Adolescence*, *50*(5), 935–951.

Smiley, P. A., Partington, L. C., Cochran, C. R., & Borelli, J. L. (2020). Autonomy-restrictive socialization of anger: Associations with school-aged children's physiology, trait anxiety, state distress, and relationship closeness. *Developmental Psychobiology*, *62*(8), 1134–1149.

Smiley, P. A., Rasmussen, H. F., Buttitta, K. V., Hecht, H. K., Scharlach, K. M., & Borelli, J. L. (2020). Parent control and child shame: Associations with children's task persistence and depressive symptoms in middle childhood. *Parenting*, *20*(4), 311–336.

Soenens, B., & Vansteenkiste, M. (2020). Understanding the complexity of praise through the lens of self-determination theory. In E. Brummelman (Ed.), *Psychological Perspectives on Praise* (pp. 27–35). Routledge.

Soenens, B., Vansteenkiste, M., & Beyers, W. (2019). In M. H. Bornstein (Ed.), *Parenting adolescents* (Vol. 1, pp. 101–167). Routledge.

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*(3), 263–280.

Winnicott, D. W. (1960). The theory of the parent-infant relationship. *International Journal of Psycho-Analysis*, *41*, 585–595.

Wouters, S., Colpin, H., Luyckx, K., & Verschueren, K. (2018). Explaining the relationship between parenting and internalizing symptoms: The role of self-esteem level and contingency. *Journal of Child and Family Studies*, *27*(10), 3402–3412.

Wuyts, D., Vansteenkiste, M., Soenens, B., & Assor, A. (2015). An examination of the dynamics involved in parental child-invested contingent self-esteem. *Parenting*, *15*(2), 55–74.

# Developmental Issues in Emerging Adulthood

Catherine F. Ratelle *and* Frédéric Guay

## Abstract

This chapter focuses on emerging adulthood, a developmental stage spanning the late teens, as youths leave adolescence and secondary education, to the mid-20s, when many leave postsecondary education and enter the job market. Based on self-determination theory, the chapter examines young adults' psychological need satisfaction (for autonomy, competence, relatedness) and motivational functioning (motivations, goals, aspirations) as well as how these processes support their ability to tackle important developmental challenges. Among these issues are young adults' identity development, their career decision-making, and their psychological adjustment and thriving. Special attention is devoted to the role of psychological need frustration and motivational deficits in the emergence of physical and psychological issues during this period. The chapter ends with recommendations for intervention and future research.

**Key Words:** emerging adulthood, identity development, career decision-making, vocational development, eudaimonia, well-being, ill-being, self-determination theory, psychological needs

The past century has seen a significant change in youth development, where reaching adulthood takes longer than it did a hundred years ago. Students stay in school longer and forge stable romantic relationships at a later age (Arnett, 2014). This delay in youth adoption of socially prescribed adult roles led to the identification of *emerging adulthood* (EA) as a developmental stage spanning the late teens, when youths leave adolescence and secondary education, to the mid-20s, when many leave postsecondary education (Arnett, 2014). EA is characterized by identity exploration, instability, self-focus, feeling in between, and optimism. Longitudinal findings suggest that although these five characteristics are shared by older adults, they emerge and peak in EA, when young adults experience more freedom to explore who they are and what they want to become and try to connect with others (Arnett & Mitra, 2020). Mainly conducted in developed countries, research on EA has been criticized because EA might be irrelevant to some young adults. Specifically, while this period is posited to apply to all individuals, little research has focused on emerging adults following atypical developmental trajectories or who have

already entered the job market (Côté, 2014). Consequently, our research overview focuses mainly on youths pursuing postsecondary education.

In this chapter, we focus on two fundamental challenges faced by emerging adults that intersect with several features of EA. One pertains to identity development, which includes their professional identity and career development. One is how emerging adults adjust psychologically and thrive during this period. Given the developmental challenges that characterize EA and set it apart from other developmental periods, examining these issues from a self-determination theory (SDT) perspective appears useful. Specifically, we examine the motivational underpinnings of development and functioning during EA as well as the factors helping or undermining young adults' ability to tackle these issues. In doing so, we adopt a developmental focus by attending to changes and continuity in processes that support youth functioning and development.

## Challenge 1: Identity and Career Development

EA is a period during which youths are increasingly oriented toward better knowing themselves and their world (Arnett, 2004). One important developmental task for emerging adults is thus to learn about their likes and dislikes, what they value and are good at, and where they want to go (Savickas, 2008). SDT views the resolution of this developmental task through the self, conceived to be an active agent of one's development, oriented toward organismic integration and actualization (Ryan & Deci, 2017). The self's growth-oriented tendency underlies optimal career development by offering individuals the possibility to implement identities that are well integrated in their self (La Guardia, 2009; Soenens & Vansteenkiste, 2011). Accordingly, self and identity are considered distinct such that individuals can have multiple identities (e.g., student, skater, guitarist) that vary in their level of integration within the self (Ryan & Deci, 2017). Adopting and enacting these different identities is thus an important developmental task.

### Identity Development

Identity formation is a core challenge of EA (Kroger & Marcia, 2011). The distress youth can experience in defining identities is highest upon entering this period (Palmeroni et al., 2020). This central developmental task mobilizes their resources, thoughts, and time. For this process to yield optimal results, it must align with an *inner compass*; that is, their choices and goals are congruent with their self (Assor, Benita, & Geifman, this volume; Russo-Netzer & Shoshani, 2020). According to SDT, not all identities are congruent with the self and, thus, do not always yield optimal development and thriving. As such, identities that are not autonomously integrated in one's self—resulting from internal or external pressure—can yield anxiety and low self-esteem, which undermines youth thriving and functioning (e.g., Luyckx et al., 2010).

Because emerging adults' identity development consists largely in establishing their professional identity, it is inextricable from their career development (Marttinen, Dietrich,

& Salmela-Aro, 2018). *Career identity* is how individuals define themselves in regard to the work sphere—answering the question, "Who am I at work?"—which includes elements such as career goals and plans, work values, and vocational interests (Porfeli & Lee, 2012). It serves an important function in identity development by giving youth direction and facilitating the transitions they undergo (Skorikov & Vondracek, 1998). It also contributes to their educational and vocational choices (i.e., career choices and commitment).

Self-determination is fundamental for career identity and identity formation. Youth dispositions such as causality orientation and life aspirations are linked to how they view their future and how this information is integrated in their self. For example, when university students are autonomously oriented, they have a stronger sense of direction in life—knowing who they are and where they are headed—and this behavior regulation in general helps them choose among alternatives (Luyckx et al., 2010). In contrast, an impersonal orientation undermines identity integration and commitment, and a controlled orientation is unrelated to these variables. Hence, youth who approach situations and tasks encountered across life domains by focusing on their intrinsic nature or their importance and personal meaning are better equipped to define themselves and foresee their future. Longitudinal findings obtained over a three-year period suggest that Belgian youth who valued extrinsic life goals, relative to intrinsic ones, tended to put off thinking about their future to subsequent years (Duriez, Meeus, & Vansteenkiste, 2012). This study also showed that early adults who rely on social norms and standards to a greater extent when thinking about their future (i.e., having a normative identity style) pursue goals that are more extrinsic. These findings illustrate the intertwined development of identity formation and life aspirations, with intrinsic aspirations being most beneficial to this developmental task.

Another important process underlying identity formation is psychological need satisfaction. Using a person-centered approach, Luyckx and colleagues (2009) showed that identity formation was associated with psychological need satisfaction, both during adolescence and in EA. Reciprocal relations between identity and psychological need satisfaction were also supported over a four-month period, as youth negotiated their transition to college.

Research on career identity includes the domain of vocational interests. Defined as individuals' preferences for behaviors, situations, and contexts pertaining to work activities, vocational interests are important manifestations of one's self at work (or identity) and serve to motivate career- and achievement-related behaviors (Porfeli, Lee, & Vondracek, 2013). Holland's (1997) theory conceptualizes vocational interests as individual preferences that can be categorized into activity domains (i.e., realistic, investigative, artistic, social, enterprising, and conventional, or RIASEC) and matched to work environments to yield optimal fit between individuals' interests and chosen work environment. Recently, research with French Canadian college students showed that their vocational development not only benefits from pursuing a given RIASEC domain based on their interests, but also

that autonomy (manifested through their identified regulation) leads to higher self-efficacy beliefs in that domain as well as selecting a program congruent with it (Guay et al., 2020). Hence, students interested in a specific domain (e.g., realistic), but whose interests are associated with internal or external pressures (e.g., a high job placement rate), experience lower efficacy in that domain. In contrast, students interested in the same domain but who value it without feeling pressured report stronger efficacy in that domain. Interests are thus important but insufficient to fully explain vocational behaviors. Measuring them along with motives differentiated by SDT revealed how interests contribute to youth vocational behaviors with greater precision. These findings can inform interventions by school counselors', who need to ensure that students' interests are not based on internal or external pressures from significant individuals in their lives, such as their parents or peers.

*Career Development*

Career development is a lifelong process in which individuals explore who they are, learn about the world of work, set goals for themselves and decide on a career, pursue the necessary steps to reach their career goals through training and skill development, and commit to their decision (Porfeli et al., 2013). It can be conceived as the development and implementation of one's career identity (Porfeli & Lee, 2012). While it begins in childhood and unfolds until adulthood, it is prior to and during EA that career development is most active. Importantly, this developmental process unfolds in different ways for different individuals, as the onset, duration, and magnitude of developmental tasks vary greatly (Kroger, Martinussen, & Marcia, 2010; Meeus, 2011). There are two key processes in emerging adults' career development: exploration and commitment (Porfeli et al., 2013; Marcia, 1966; Lent & Brown, 2013). They follow a developmental sequence where exploration is initiated prior to commitment.

**Vocational exploration**. *Exploration* is a central developmental task in youth career development (Porfeli et al., 2013) that involves gathering information about the professional world while considering personal interests, skills, and personality (Stumpf, Colarelli, & Hartman, 1983). It is through exploration that active vocational development begins, allowing emerging adults to identify personal interests, possible fields of study, and potential professions (Germeijs & Verschueren, 2007). Researchers distinguish two dimensions of exploration: self-exploration (i.e., discovering one's interests, values, and personality traits that can guide vocational choice) and exploration of the environment (i.e., participating in activities of a guiding nature, such as visiting a workplace of interest or participating in activities to discover a profession; Stumpf et al., 1983). Although it is important, this developmental process was found to unfold heterogeneously before and during EA (Gagnon et al., 2019). Over the course of five years, French Canadian youths followed one of three exploration trajectories: (1) moderate exploration toward the end of secondary education, which increased during postsecondary education; (2) weak and stable exploration throughout this period; and (3) moderately high levels of exploration

that increased over time. This study showed that emerging adults were more likely to follow a high and increasing exploration trajectory when their basic psychological needs were supported by their parents.

Research showed that need satisfaction can facilitate career exploration. Focusing on the need for competence, a three-year longitudinal study showed that Australian students who felt more competent in performing career-related tasks explored to a larger extent (Creed, Patton, & Prideaux, 2007). This finding was replicated in several studies using various research designs and analytical strategies (e.g., Lee, Porfeli, & Hirschi, 2016; Rogers & Creed, 2011). Autonomy satisfaction has mostly been linked to exploration via the contribution of autonomous motivation. Being autonomously motivated toward one's job search was positively associated with youths' active exploration (Soenens & Vansteenkiste, 2005). With respect to academic motivation, students who are more autonomously motivated explored in greater depth and breadth, but also in a ruminative fashion (Kindelberger et al., 2020). This study also showed that higher levels of controlled motivation or amotivation were associated with a tendency to explore only through ruminations. Research with a person-centered approach showed that students whose motivational profile revealed strong autonomous and controlled motivations for their job search reported more exploratory behaviors, although it also made them more indecisive, which can be attributed to their controlled motivation (Paixao & Gamboa, 2017). Academic motivation profiles were also linked to exploration, where students' autonomous motivations were highest when their profile was characterized by high exploration (Duchesne, Mercier, & Ratelle, 2012). With respect to relatedness satisfaction, emerging adults' exploration was facilitated when they had developed secure relational ties with their parents. Hence, relatedness (using attachment as a proxy) was positively associated with increased career exploration cross-sectionally (Lee & Hughey, 2001) and longitudinally, where initial levels and, to a lesser extent, rate of change in exploration were predicted by relatedness satisfaction (Germeijs and Verschueren, 2009).

Rather than distinguishing the role of specific needs, some studies examined the combined contribution of all three needs in predicting career exploration. In a study focusing on changes over a semester, Belgian students whose needs were more satisfied reported stronger levels of exploration. Their need satisfaction also appeared to buffer against ruminative exploration (Luyckx et al., 2009). However, when the contribution of need satisfaction was compared to that of self-efficacy toward career decision-making, only self-efficacy predicted exploration nine months later (Cordeiro et al., 2018). This can, however, be explained by the fact that needs and efficacy measures were assessed at different levels of generality, with self-efficacy and exploration measures being contextualized to the same domain.

Another important variable supporting youth career development is the nature of youth aspirations. A longitudinal study with a sample of Swiss students surveyed over the course of a school year showed that positive changes in career development—a composite

score that combined indicators of exploration and commitment—was predicted by endorsing intrinsic work aspirations (e.g., valuing work that offers variety, helping others, interesting tasks; Hirschi, 2010). In contrast, pursuing extrinsic work aspirations (i.e., valuing work that is prestigious, has a high income, offers security) was unrelated to changes in youth career development.

Overall, these findings suggest that youth exploration of themselves and their environment benefits from their psychological need satisfaction and intrinsic aspirations. And while exploration helps emerging adults define their professional identities (Gushue et al., 2006) and facilitate their transitions (Lent & Brown, 2013), intense and lingering exploration might not be optimal if it is not combined with commitment (labeled "moratorium stage"; Marcia, 1966). Auspiciously, vocational exploration contributes to youth commitment (via career decidedness; Denault et al., 2019), the developmental task to which we now turn.

**Vocational commitment.** The other important process involved in career development during EA is deciding what to do with one's life, the kind of career one will pursue (Arnett, 2004; Savickas, 2008). How youth cope with this developmental task strongly influences how they thrive and adjust in EA. Being strongly committed to their career choice—or being decided—is important for youths' psychological well-being (i.e., lower depression, anxiety, and substance use, and higher emotional stability and self-esteem; Meeus, 2011), but also for getting admitted to their chosen program, dedicating themselves to their studies, and adapting to the demands of the university (Germeijs & Verschueren, 2007; Meeus, 2011).

The inability to commit to an educational or career option is referred to as "vocational indecision," a process that puts youths' psychological well-being at risk and undermines their successful transition to adulthood (Osipow, 1999). Nuance is nevertheless warranted because career indecision is not a uniform process. Indeed, experiencing some transient moments of indecision—labeled "developmental indecision"—is normative and expected. Results from a three-year longitudinal study showed that while half of French Canadian emerging adults report being decided, a quarter of the sample reported being chronically undecided—reporting strong and stable levels of indecision throughout these years (Guay et al., 2006). The remaining students were initially as undecided as those in the chronic indecision trajectory, but as they learned more about themselves and their world, their decidedness (i.e., how decided they perceived themselves to be in making a career decision) increased substantially over time.

Competence satisfaction was identified as a key variable supporting career decidedness. A two-year longitudinal study with Filipino nursing students found that student competence predicted increases in their level of decidedness and persistence in their program (Restubog, Florentino, & Garcia, 2010). These findings were echoed by those obtained with French Canadian college students, whose competence predicted their career decidedness in a moderately strong fashion (Guay et al., 2003). This study also

showed that career decision-making autonomy moderately protected emerging adults against career indecision. The beneficial role of competence in supporting commitment to career decision-making might, however, be time-sensitive, as these findings obtained with emerging adults were not replicated with Australian secondary school students (Creed, Patton, & Prideaux, 2006). Examining the joint contribution of autonomy and competence satisfaction to developmental trajectory of career indecision, Guay et al. (2006) found that increases in competence were paralleled by decreases in career indecision for youths who follow a developmentally undecided trajectory. These students also reported feeling as autonomous as those in the decided trajectory. With respect to the importance of relatedness satisfaction, studies focusing on parent-child attachment in college and university have shown that the quality of youths' relation with their mother, but not with their father, protected them against indecision (e.g., Vignoli, 2009). The differential contributions of mothers and fathers, which contrast with findings from other studies (e.g., Vignoli et al., 2005), might reflect the higher stability observed in mother-child interactions than that of father-child interactions (Ravindran et al., 2020). It could also indicate that fathers' contribution operates through other means than relatedness satisfaction (e.g., autonomy support; Soenens & Vansteenkiste, 2005).

Some studies examined youth psychological need satisfaction globally, without discriminating the specific contribution of needs (i.e., via a composite score). Their results highlight the importance of considering emerging adults' global need satisfaction when predicting their commitment making (Luyckx et al., 2009; Cordeiro et al., 2018). Hence, when students' needs were generally satisfied, they reported stronger decidedness. In contrast, when their psychological needs were frustrated, they reported lower commitment making, as well as greater ill-being and hampered well-being (Cordeiro et al., 2018).

In sum, the state of knowledge regarding emerging adults' adaptation to this developmental challenge—figuring out who they are with respect to the world of work and where they are headed—highlights three central points: (1) research from a self-determination stance mostly focused on identity development and exploration, and to a lesser extent on commitment; (2) psychological need satisfaction was found to facilitate vocational development, although relatively less attention has been devoted to the role of relatedness satisfaction; and (3) longitudinal studies need to extend beyond one- or two-year intervals. In the next section, we turn our attention to another important issue, that of emerging adults' well-being.

## Challenge 2: Wellness and Ill-Being

Emerging adults face different challenges, including how to give meaning to their life. While some emerging adults set important life goals to actualize their potential, some are likely to pursue compensatory life goals (Ryan & Deci, 2017). For example, individuals may be more inclined to endorse life goals that would interfere with their wellness by seeking immediate pleasure or pursing extrinsic goals (e.g., fame, financial wealth). According

to SDT, wellness is achieved through eudaimonia, which is a way of living rather than subjective experiences or feelings of happiness (Ryan & Martela, 2016). In this section, we review empirical work on eudaimonia and wellness, as well as on indicators of ill-being that are particularly salient during EA.

## Eudaimonia and Wellness

Focusing on a eudaimonic conceptualization of wellness, we review work on SDT pertaining to two factors promoting wellness during the EA period: intrinsic goals and autonomous regulation (Ryan & Martela, 2016).

**Intrinsic goals.** Kasser and Ryan (1996) showed that when emerging adults endorse intrinsic goals—striving for and valuing self-acceptance, affiliation, contributing to one's community, and health—they are more likely to experience wellness (i.e., self-actualization, vitality, positive affect). In contrast, endorsing extrinsic goals—seeking financial success, social recognition, and attractiveness—undermines their wellness. Without focusing on goal content per se, Sheldon and Elliot's (1999) self-concordance model explains why individuals pursuing goals that are coherent with their self tend to report greater wellness. Self-concordance of goals is captured by evaluating if these goals are regulated by autonomous reasons rather than by controlled ones (self-discordance). A study with college students from the United States, China, South Korea, and Taiwan showed that students pursuing self-concordant goals experience more wellness (i.e., low negative affect, high positive affect, high life satisfaction; Sheldon et al., 2004). Other studies demonstrated that goal content as well as their self-concordance are important for wellness. College students experience more happiness and subjective well-being when they choose to pursue goals that are intrinsic rather than extrinsic, as well as when goals are sought for autonomous rather than controlled motivations (Sheldon et al., 2004). Hence, while these findings highlight the benefits of pursuing intrinsic rather than extrinsic goals, they also show how these benefits are maximized if these goals are pursued by interest and personal meaning rather than to relieve pressures (internal or external; see also Bradshaw, this volume).

**Regulating behaviors autonomously.** More recently, both the tasks and contexts of EA have changed. Especially within developed nations, individuals spend a sizable proportion of their time attending college or university or pursuing a technical program. Regulation in this domain is important because although students choose an academic program, they might not choose, or find intrinsically motivating, all the specific activities required by their training or curriculum. These decisions are taken by individuals in positions of authority, typically professors and program directors. Yet even though many activities are imposed, students' academic behaviors are not invariantly controlled and can actually be willingly endorsed and autonomously valued by students. Indeed, when students' social environment (i.e., their professors, peers, parents) supports their psychological needs, they will autonomously regulate their academic behaviors. Hence, an autonomy-supportive environment (i.e., one taking youths' perspective, respecting

their natural developmental pace, acknowledging their perspective, allowing them to have responsibilities and exert meaningful choices) nurtures autonomous regulations and helps diminish controlled motivation toward mandatory activities, which in turn sustain wellness (e.g., Inguglia et al., 2016). In contrast, environments that thwart emerging adults' psychological needs, such as a controlling environment—which instills a climate of pressure and coercion—undermine their need satisfaction and foster greater controlled regulation and ill-being (e.g., Inguglia et al., 2016).

Supporting the importance of distinguishing between types of motivation, a recent meta-analysis conducted over 344 samples ($N = 223{,}209$) revealed that autonomous academic regulations were positively associated with indicators of wellness and negatively associated with indicators of ill-being. The pattern was, however, less conclusive for controlled regulations; whereas external regulation was positively albeit weakly associated with ill-being and unrelated to well-being, introjection was positively associated with indicators of both well- and ill-being (Howard et al., 2020). Although this meta-analysis focused on several developmental periods, analyses on the moderating role of age suggested that most of the findings were similar for students in various developmental periods, including EA.

While emerging adults' wellness has been examined as a function of their behavior regulation in important life domains, considering more transient motivational functioning also provides valuable information. Given that regulation types and wellness are expected to fluctuate across time and situations, days when students are regulated by autonomous motivation for their academic activities could be more enjoyable than days when their regulation is controlled. In line with this reasoning, Ketonen and colleagues (2018) showed, in a sample of Finnish first-year university students, that the higher their autonomous motivation was in the morning, the more positive their emotions were during the day. Similar findings were obtained in a sample of Chinese undergraduate students, whose daily fluctuations in autonomous motivation positively correlated with fluctuations in their daily vitality (Yu & Levesque-Bristol, 2020).

Considering these findings, it is vital to raise the awareness of professors, program directors, other university professionals, and parents regarding the importance of supporting emerging adults' autonomous motivation, which sustains their wellness. It is also essential to educate them on the pitfalls of emphasizing controlled motivations. Although well intentioned, professors who use internal or external contingencies to help students navigate challenges and stressful situations can do more harm than good by amplifying or precipitating youths' mental health problems.

### Ill-Being

Approximately three-quarters of mental disorders are diagnosed by the end of EA (Kessler et al. 2007). Moreover, a third of college students have been or are currently treated for mental health problems (e.g., anxiety and depression; American College Health

Association 2016). In this section, we review some of the work based on SDT that focused on indicators of ill-being that are prevalent during EA.

**Internalizing problems.** Birth-cohort studies revealed that emerging adults from more recent generations report experiencing more anxiety (Booth, Sharma, & Leader et al., 2016) and depression (Twenge et al., 2010) than those from previous generations. Among the factors that might explain this phenomenon is meritocracy, an ideology prevalent in most industrialized societies, under which important outcomes such as wealth, power, academic achievement, and professional success is based on merit (or internal factors such as intelligence and effort; Son Hing et al., 2011) rather than factors such as personal connections or parental status. As a result, individuals who work hard are perceived as deserving their wealth and social status and underachievers deserve their disadvantaged status, which is perceived to result from their laziness. Meritocracy may put pressure on students by establishing a competitive climate. Findings from a birth-cohort study showed that recent cohorts of college students believe, more than those from any previous generations, that their social context is excessively demanding (Curran & Hill, 2019). This pressure experienced by emerging adults can be exerted by significant others with their best interest in mind, but also for the good of society (e.g., improving individual financial wealth seen as contributing to society). Unfortunately, this can heighten young adults' distress and incur financial costs for society. Indeed, the economic burden imposed by psychiatric disorders has increased substantially over the years and represents a significant amount in health expenditures in most economically developed countries (Hockenberry et al., 2019).

For many, EA can be a critical period when pressures of meritocracy and economic competition can focus awareness on one's goals, skills, and responsibilities. These appraisals coalesce toward career choices that will have long-lasting effects on development and living conditions. Parents of emerging adults may contribute to these complex choices in multiple ways. Some parents believe their role is to provide resources to their children so they can reach their educational and professional goals. Still others may feel deeply invested in their young adult child's choices, successes, and failures. Such ego-involved parenting may manifest in their high expectations for their children's achievements (Yamamoto & Holloway, 2010). Such expectations can also take the form of "helicopter parenting": providing substantial support (e.g., financial, emotional) but in a controlling way, by directly intervening in their adult child's activities and making decisions for them (e.g., influencing their college major; Odenweller, Booth-Butterfield, & Weber, 2014). Research has shown that helicopter parenting frustrates youths' need for competence, which in turn predicts internalizing problems such as anxiety and depression (Reed et al., 2016). Other forms of parental control, such as achievement-oriented psychological control (i.e., making one's child feel guilty when performing below expectations), have been associated with the frustration of youths' psychological needs, which contributes to high levels of anxiety and depression (Inguglia et al., 2015). When researchers combined helicopter parenting

with parental overcontrol, they found that emerging adults perceiving their parents as manifesting both types of need-thwarting behaviors reported the highest levels of internalizing problems (e.g., stress, anxiety, depression; Rote et al., 2020).

These findings converge toward a clear message: parents would do well to offer a bulwark against the pervasive effects of economic pressures by avoiding putting additional pressure on emerging adults and nurturing their psychological needs. In doing so, internalizing problems will be less prevalent in future cohorts of students, and as a result, these students will live more fulfilling and productive lives.

**Nonsuicidal self-injury.** Beyond internalizing problems, an important and troubling phenomenon related to the ill-being of emerging adults is nonsuicidal self-injury (NSSI), defined as the deliberate destruction of body tissue, but without the intent of dying (American Psychiatric Association, 2013). A recent meta-analysis found that 13% of emerging adults report having engaged in NSSI (Swannell et al. 2014). A different study revealed that youth who had engaged in NSSI reported their psychological needs were substantially less satisfied than those who did not self-harm, as well as reporting greater difficulties in regulating their emotions (Emery, Heath, & Mills, 2016). Examining the relational correlates of NSSI, Emery, Heath, and Mills (2017) underlined the role played by parents in this phenomenon. Specifically, youth who perceived their parents as less autonomy-supportive reported more difficulties regulating their emotions and, in turn, used NSSI as a means to cope. Although emerging adults might also have personal vulnerabilities, the lack of parental autonomy support is associated with an increased use of NSSI as a coping strategy.

**Eating disorders.** EA can also be a period of vulnerability for the development of risky health behaviors, including poor nutrition and eating disorders (Goldschmidt et al., 2016). Research identified the beginning of postsecondary education as a critical period for the adoption of these maladaptive health behaviors and documented their association with increases in body weight and fat (Beaudry et al., 2019). Specifically, a significant proportion of university students do not adopt a healthy lifestyle (e.g., exercise regularly, have a regular sleep schedule, eat healthy food; American College Health Association, 2016), and this seems to be particularly the case for first-year university students. The lifestyle of some first-year students led them to gain up to 15 pounds (Vella-Zarb & Elgar, 2009).

Among the reasons students struggle to follow a healthy lifestyle is their psychological needs are frustrated. Indeed, basic psychological need satisfaction has been positively associated with greater autonomous regulation to maintain a healthy body weight, which was positively associated with greater body satisfaction and a healthy diet (fruit and vegetable intake; Lacaille, Hooker, & LaCaille, 2020). In contrast, need frustration was associated with a more controlled regulation to maintain a healthy body weight, which was associated with lower body satisfaction. Participants who were less satisfied with their body engaged more frequently in unhealthy behaviors aimed at weight control. As a result, these students reported greater weight gain during their first semester in college. Similarly,

a study found that students with higher autonomous motivation for a healthy diet were more likely to maintain rather than increase their percentage of body fat over their college years (Morgan et al., 2012). Research also suggests that some social contexts can play an important role in explaining youth eating disorders; for example, a study conducted among British emerging adult athletes revealed that those who experienced controlling behaviors from their coaches perceived that their psychological needs were thwarted, which was positively associated with eating disorders (Bartholomew et al., 2011). Eating disorders have also been associated with controlling parenting, especially that of fathers (Soenens et al., 2008).

**Excessive alcohol consumption.** Another risky health behavior is excessive alcohol consumption. During EA, individuals increase the amount of alcohol they drink during social events. A recent systematic literature review conducted on samples of Irish and British university students revealed that almost 66% of students reported excessive alcohol consumption, while 20% reported alcohol problems over their lifetime, and 20% exceeded sensible limits each week (Davoren et al., 2016). The importance of focusing on excessive alcohol consumption is its ensuing negative outcomes, which include relational conflicts, intimate partner violence, injuries, risky sexual behaviors, poor academic performance, legal problems, suicide, and death (Ham & Hope, 2003). Emerging adults who have a controlled dispositional orientation (i.e., a predisposition to seek external approval and praise to enhance feelings of self-worth and value) are more prone to excessive alcohol consumption, which is not the case for more autonomously oriented individuals (Hove et al., 2010). One explanation for the role of causality orientations is that a controlled orientation might detract youth from satisfying their psychological needs, which subsequently leads them to cope by seeking compensatory affective states through problematic alcohol consumption.

In sum, previous research shows that emerging adults with greater wellness and lower ill-being are those who experience more need support, psychological need satisfaction, and autonomous regulation. Indeed, these appear to be critical resources during this transformational period of development.

## Intervention Targets and Future Directions

Research on EA is relatively recent yet rich in its applications. Based on SDT, here are key recommendations and intervention strategies to help emerging adults tackle the developmental challenges they typically encounter. One strategy involves the support of youths' psychological needs, which will reflect on their identity formation, vocational development, and wellness. Significant individuals in their lives can do so by trusting the youths' natural tendency toward growth and respect that their rate of development might not be what these close individuals expected or wished for. As emerging adults negotiate these processes and encounter changes, it is important to allow them to make mistakes in a climate of trust and exploration where they can challenge themselves and discover their

environment. A second intervention strategy involves tolerating ambiguity and indecision. As youths explore and discover who they are and what is out there, they might go out of their comfort zone and experience discomfort. It is important that they feel connected to important individuals such as their parents and feel they can rely on them if needed. But unless their children communicate otherwise, parents should let their children figure out by themselves their direction and who they want to become. Finally, significant individuals must also recognize their inclination to pressure and coerce, even when they mean well, and examine what underlies this urge to control. Is your student or child really asking for help, or are you acting to relieve your stress or discomfort?

For future research, our recommendations include (1) using truly longitudinal designs (i.e., involving several years and more than two data waves) to allow teasing out within-person and between-person variations when testing the directionality of association between motivational processes and developmental challenges; (2) examining the compensatory and additive contributions of social contexts (e.g., bosses, professors, peers, parents) on emerging adults' motivational functioning, identity and career development, and wellness; (3) moving beyond reliance on self-reports. Without arguing against the value of considering emerging adults' perceptions of themselves and their environment, we suggest that these measures should be complemented by other sources of information, such as from other informants (e.g., peers, parents), implicit measures (e.g., tone of voice, nonverbal behaviors, facial expressions), or physiological states. And (4) examining the psychological needs and motivational functioning of emerging adults who do not pursue postsecondary education, since not everyone has the opportunity, resources, or desire to follow such a normative path (Côté & Brynner, 2008). Most career development theories have focused on Western and more educated individuals. As such, psychological processes involved in career and identity development of trade workers or those primarily engaged in parenting and family roles have been much less studied. Such research avenue is vital given that this normative trend could be reversing to some extent. Indeed, millennials are increasingly inclined to forgo college for skilled trades, especially as baby boomers are leaving the job market, which leads to shortages in core areas (e.g., Corporate Legal Operations Consortium, 2020). Although EA is a period of changes and challenges, most youth fare well during this period. They are generally successful at handling the developmental challenges they encounter, thrive, and develop to reach their full potential. Nurturing and supporting their innate tendency to explore, integrate, and thrive should therefore be the focus of significant individuals in their lives.

## References

American College Health Association. (2016). National College Health Assessment II: Canadian Reference Group. Retrieved from https://www.acha.org/documents/ncha/NCHA-II%20SPRING%202016%20CANADIAN%20REFERENCE%20GROUP%20DATA%20REPORT.pdf

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). APA.

Arnett, J. J. (2004). *Emerging adulthood: The winding road from the late teens through the twenties*. Oxford University Press.

Arnett, J. J. (2014). The emergence of emerging adulthood: A personal history. *Emerging Adulthood*, *2*, 155–162.

Arnett, J. J., & Mitra, D. (2020). Are the features of emerging adulthood developmentally distinctive? A comparison of ages 18–60 in the United States. *Emerging Adulthood*, *8*, 412–419.

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., & Thøgersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport and Exercise Psychology*, *33*(1), 75–102.

Beaudry, K. M., Ludwa, I. A., Thomas, A. M., Ward, W. E., Falk, B., & Josse, A. R. (2019). First-year university is associated with greater body weight, body composition and adverse dietary changes in males than females. *PLoS One*, *14*(7), article e0218554.

Booth, R. W., Sharma, D., & Leader, T. I. (2016). The age of anxiety? It depends where you look: Changes in STAI trait anxiety, 1970–2010. *Social Psychiatry and Psychiatric Epidemiology*, *51*, 193–202.

Cordeiro, P. M. G., Paixão, M. P., Lens, W., Lacante, M., & Luyckx, K. (2018). Parenting styles, identity development, and adjustment in career transitions: The mediating role of psychological needs. *Journal of Career Development, 45*(*1*), 83–97. doi:10.1177/0894845316672742

Corporate Legal Operations Consortium. (2020). *2020 state of the industry survey: Results and analysis*. Corporate Legal Operations Consortium. Retrieved from https://cloc.org/wp-content/uploads/2020/08/CLOC-2020-State-of-the-Industry-Survey-Report.pdf

Côté, J. E. (2014). The dangerous myth of emerging adulthood: An evidence-based critique of a flawed developmental theory. *Applied Developmental Science*, *18*, 177–188. doi:10.1080/10888691.2014.954451

Côté, J. E., & Bynner, J. (2008). Changes in the transition to adulthood in the UK and Canada: The role of structure and agency in emerging adulthood. *Journal of Youth Studies*, *11*, 251–268.

Creed, P., Patton, W., & Prideaux, L.-A. (2006). Causal relationship between career indecision and career decision-making self-efficacy: A longitudinal cross-lagged analysis. *Journal of Career Development*, *33*, 47–65.

Creed, P. A., Patton, W., & Prideaux, L. A. (2007). Predicting change over time in career planning and career exploration for high school students. *Journal of Adolescence*, *30*(3), 377–392.

Curran, T., & Hill, A. P. (2019). Perfectionism is increasing over time: A meta-analysis of birth cohort differences from 1989 to 2016. *Psychological Bulletin*, *145*(4), 410.

Davoren, M. P., Demant, J., Shiely, F., & Perry, I. J. (2016). Alcohol consumption among university students in Ireland and the United Kingdom from 2002 to 2014: A systematic review. *BMC Public Health*, *16*(1), 1–13.

Denault, A.-S., Ratelle, C. F., Duchesne, S., & Guay, F. (2019). Extracurricular activities and vocational indecision: A look at the mediating effect of vocational exploration. *Journal of Vocational Behavior*, *110*, 43–53.

Duchesne, S., Mercier, A., & Ratelle, C. F. (2012). Vocational exploration in middle school: Motivational characteristics of students and perceptions of the learning climate. *Canadian Journal of Counselling and Psychotherapy*, *46*, 367–386.

Duriez, B., Meeus, J., & Vansteenkiste, M. (2012). Why are some people more susceptible to ingroup threat than others? The importance of a relative extrinsic to intrinsic value orientation. *Journal of Research in Personality*, *46*, 164–172.

Emery, A. A., Heath, N. L., & Mills, D. J. (2016). Basic psychological need satisfaction, emotion dysregulation, and non-suicidal self-injury engagement in young adults: An application of self-determination theory. *Journal of Youth and Adolescence*, *45*(3), 612–623.

Emery, A. A., Heath, N. L., & Mills, D. J. (2017). The role of basic need satisfaction in the onset, maintenance, and cessation of non-suicidal self-injury: An application of self-determination theory. *Archives of Suicide Research*, *21*(3), 413–424.

Gagnon, É., Ratelle, C. F., Guay, F., & Duchesne, S. (2019). Developmental trajectories of vocational exploration from adolescence to early adulthood: The role of parental need supporting behaviors. *Journal of Vocational Behavior*, *115*, 103338.

Germeijs, V., & Verschueren, K. (2007). High school students' career decision-making process: Consequences for choice implementation in higher education. *Journal of Vocational Behavior*, *70*(2), 223–241.

Germeijs, V., & Verschueren, K. (2009). Adolescents' career decision-making process: Related to quality of attachment to parents. *Journal of Research on Adolescence*, *19*(3), 459–483.

Goldschmidt, A. B., Wall, M. M., Zhang, J., Loth, K. A., & Neumark-Sztainer, D. (2016). Overeating and binge eating in emerging adulthood: 10-year stability and risk factors. *Developmental Psychology*, *52*(3), 475–483.

Guay, F., Bureau, J. S., Litalien, D., & Ratelle, C. F. (2020). A self-determination theory perspective on RIASEC interest types: Autonomy and controlled orientations as predictors of self-efficacy and college program choices. *Motivation Science*, *6*, 164–170.

Guay, F., Ratelle, C. F., Senécal, C., Larose, S., & Deschênes, A. (2006). Distinguishing developmental from chronic career indecision: Self-efficacy, autonomy, and social support. *Journal of Career Assessment*, *14*(2), 235–251.

Guay, F., Senécal, C., Gauthier, L., & Fernet, C. (2003). Predicting career indecision: A self-determination theory perspective. *Journal of Counseling Psychology*, *50(2)*, 165–177. doi:10.1037/0022-0167.50.2.165

Gushue, G. V., Scanlan, K. R. L., Pantzer, K. M., & Clarke, C. P. (2006). The relationship of career decision-making self-efficacy, vocational identity, and career exploration behavior in African American high school students. *Journal of Career Development*, *33*, 19–28.

Ham, L. S., & Hope, D. A. (2003). College students and problematic drinking: A review of the literature. *Clinical Psychology Review*, *23*(5), 719–759.

Hirschi, A. (2010). Vocational interests and career goals: Development and relations to personality in middle adolescence. *Journal of Career Assessment*, *18*, 223–238.

Hockenberry, J. M., Joski, P., Yarbrough, C., & Druss, B. G. (2019). Trends in treatment and spending for patients receiving outpatient treatment of depression in the United States, 1998–2015. *JAMA Psychiatry*, *76*(8), 810–817.

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Psychological Assessment Resources.

Hove, M. C., Parkhill, M. R., Neighbors, C., McConchie, J. M., & Fossos, N. (2010). Alcohol consumption and intimate partner violence perpetration among college students: The role of self-determination. *Journal of Studies on Alcohol and Drugs*, *71*(1), 78–85.

Howard, J., Bureau, J., Guay, F., Chong, J., & Ryan, R. M. (2020). *Student motivation and associated outcomes: A meta-analysis from self-determination theory*. Unpublished manuscript.

Inguglia, C., Ingoglia, S., Liga, F., Coco, A. L., & Cricchio, M. G. L. (2015). Autonomy and relatedness in adolescence and emerging adulthood: Relationships with parental support and psychological distress. *Journal of Adult Development*, *22*(1), 1–13.

Inguglia, C., Ingoglia, S., Liga, F., Coco, A. L., Cricchio, M. G. L., Musso, P., & Lim, H. J. (2016). Parenting dimensions and internalizing difficulties in Italian and US emerging adults: The intervening role of autonomy and relatedness. *Journal of Child and Family Studies*, *25*(2), 419–431.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, *22*(3), 280–287.

Kessler, R. C., Amminger, G. P., Aguilar-Gaxiola, S., Alonso, J., Lee, S., & Ustun, T. B. (2007). Age of onset of mental disorders: A review of recent literature. *Current Opinion in Psychiatry*, *20*(4), 359.

Ketonen, E. E., Dietrich, J., Moeller, J., Salmela-Aro, K., & Lonka, K. (2018). The role of daily autonomous and controlled educational goals in students' academic emotion states: An experience sampling method approach. *Learning and Instruction*, *53*, 10–20.

Kindelberger, C., Safont-Mottay, C., Lannegrand-Willems, L. & Galharret, J.-M. (2019). Searching for autonomy before the transition for higher education: How do identity and self-determined academic motivation co-evolve? *Journal of Youth and Adolescence*, *49*, 881–894.

Kroger, J., & Marcia, J. E. (2011). The identity statuses: Origins, meanings, and interpretations. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 31–53). Springer Science + Business Media.

Kroger, J., Martinussen, M., & Marcia, J. E. (2010). Identity status change during adolescence and young adulthood: A meta-analysis. *Journal of Adolescence*, *33*(5), 683–698.

LaCaille, R. A., Hooker, S. A., & LaCaille, L. J. (2020). Using self-determination theory to understand eating behaviors and weight change in emerging adults. *Eating Behaviors*, *39*, 101433.

La Guardia, J. G. (2009). Developing who I am: A self-determination theory approach to the establishment of healthy identities. *Educational Psychologist*, *44*, 90–104.

Lee, B., Porfeli, E. J., & Hirschi, A. (2016). Between- and within-person level motivational precursors associated with career exploration. *Journal of Vocational Behavior*, *92*, 125–134.

Lee, H.-Y. & Hughey, K. F. (2001). The relationship of psychological separation and parental attachment to the career maturity of college freshmen from intact families. *Journal of Career Development, 27*, 279–293.

Lent, R. W., & Brown, S. D. (2013). Social cognitive model of career self-management: Toward a unifying view of adaptive career behavior across the life span. *Journal of Counseling Psychology, 60*(4), 557–568.

Luyckx, K., Schwartz, S. J., Soenens, B., Vansteenkiste, M., & Goossens, L. (2010). The path from identity commitments to adjustment: Motivational underpinnings and mediating mechanisms. *Journal of Counseling and Development, 88*, 52–60.

Luyckx, K., Vansteenkiste, M., Goossens, L., & Duriez, B. (2009). Basic need satisfaction and identity formation: Bridging self-determination theory and process-oriented identity research. *Journal of Counseling Psychology, 56*(2), 276–288.

Marcia, J. E. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology, 3*, 551–558.

Marttinen, E., Dietrich, J., & Salmela-Aro, K. (2018). Intentional engagement in the transition to adulthood. *European Psychologist, 23*(4), 311–323.

Meeus, W. (2011). The study of adolescent identity formation 2000–2010: A review of longitudinal research. *Journal of Research on Adolescence, 21*(1), 75–94.

Morgan, A. Z., Keiley, M. K., Ryan, A. E., Radomski, J. G., Gropper, S. S., Connell, L. J., & Ulrich, P. V. (2012). Eating regulation styles, appearance schemas, and body satisfaction predict changes in body fat for emerging adults. *Journal of Youth and Adolescence, 41*(9), 1127–1141.

Odenweller, K. G., Booth-Butterfield, M., & Weber, K. (2014). Investigating helicopter parenting, family environments, and relational outcomes for millennials. *Communication Studies, 65*(4), 407–425.

Osipow, S. H. (1999). Assessing career indecision. *Journal of Vocational Behavior, 55*, 147–154.

Paixão, O., & Gamboa, V. (2017). Motivational profiles and career decision making of high school students. *The Career Development Quarterly, 65*(3), 207–221. doi:10.1002/cdq.12093

Palmeroni, N., Claes, L., Verschueren, M., Bogaerts, A., Buelens, T., & Luyckx, K. (2020). Identity distress throughout adolescence and emerging adulthood: Age trends and associations with exploration and commitment processes. *Emerging Adulthood, 8*, 1–11.

Porfeli, E. J., & Lee, B. (2012). Career development during childhood and adolescence. In K. Hynes & B. J. Hirsch (Eds.), *Career programming: Linking youth to the world of work* (pp. 11–22). Jossey-Bass.

Porfeli, E. J., Lee, B., & Vondracek, F. W. (2013). Identity development and careers in adolescents and emerging adults: Content, process, and structure. In B. W. Walsh, M. L. Savickas, & P. J. Hartung (Eds.), *Handbook of vocational psychology: Theory, research, and practice* (pp. 133–153). Routledge.

Ravindran, N., Hu, Y., McElwain, N. L., & Telzer, E. H. (2020). Dynamics of mother–adolescent and father–adolescent autonomy and control during a conflict discussion task. *Journal of Family Psychology, 34(3)*, 312–321. doi:10.1037/fam0000588

Reed, K., Duncan, J. M., Lucier-Greer, M., Fixelle, C., & Ferraro, A. J. (2016). Helicopter parenting and emerging adult self-efficacy: Implications for mental and physical health. *Journal of Child and Family Studies, 25*(10), 3136–3149.

Restubog, S. L. D., Florentino, A. R., & Garcia, P. R. J. M. (2010). The mediating roles of career self-efficacy and career decidedness in the relationship between contextual support and persistence. *Journal of Vocational Behavior, 77*(2), 186–195.

Rogers, M. E., & Creed, P. A. (2011). A longitudinal examination of adolescent career planning and exploration using a social cognitive career theory framework. *Journal of Adolescence, 34*, 163–172.

Rote, W. M., Olmo, M., Feliscar, L., Jambon, M. M., Ball, C. L., & Smetana, J. G. (2020). Helicopter parenting and perceived overcontrol by emerging adults: A family-level profile analysis. *Journal of Child and Family Studies, 29*(11), 3153–3168.

Russo-Netzer, P., & Shoshani, A. (2020). Authentic inner compass, well-being, and prioritization of positivity and meaning among adolescents. *Personality and Individual Differences, 167*, 110248.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., & Martela, F. (2016). Eudaimonia as a way of living: Connecting Aristotle with self-determination theory. In J. Vittersø (Ed.), *Handbook of eudaimonic well-being* (pp. 109–122). Springer.

Savickas, M. L. (2008). Helping people choose jobs: A history of the guidance profession. In J. A. Athanasou & R. Van Esbroeck (Eds), *International handbook of career guidance* (pp. 97–113). Springer.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, *76*(3), 482.

Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, 30(4), 475–486.

Skorikov, V., & Vondracek, F. W. (1998). Vocational identity development: Its relationship to other identity domains and to overall identity development. *Journal of Career Assessment*, *6*(1), 13–35.

Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence*, *34*(6), 589–604.

Soenens, B., & Vansteenkiste, M. (2011). When is identity congruent with the self? A self-determination theory perspective. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 381–402). Springer.

Soenens, B., Vansteenkiste, M., Vandereycken, W., Luyten, P., Sierens, E., & Goossens, L. (2008). Perceived parental psychological control and eating-disordered symptoms: Maladaptive perfectionism as a possible intervening variable. *Journal of Nervous and Mental Disease*, *196*(2), 144–152.

Son Hing, L. S., Bobocel, D. R., Zanna, M. P., Garcia, D. M., Gee, S. S., & Orazietti, K. (2011). The merit of meritocracy. *Journal of Personality and Social Psychology*, *101*(3), 433.

Stumpf, S. A., Colarelli, S. M., & Hartman, K. (1983). Development of the Career Exploration Survey (CES). *Journal of Vocational Behavior*, *22*(2), 191–226.

Swannell, S. V., Martin, G. E., Page, A., Hasking, P., & St John, N. J. (2014). Prevalence of nonsuicidal self-injury in nonclinical samples: Systematic review, meta-analysis and meta-regression. *Suicide and Life-Threatening Behavior*, *44*, 273–303.

Twenge, J. M., Gentile, B., DeWall, C. N., Ma, D., Lacefield, K., & Schurtz, D. R. (2010). Birth cohort increases in psychopathology among young Americans, 1938–2007: A cross-temporal meta-analysis of the MMPI. *Clinical Psychology Review*, *30*(2), 145–154.

Vella-Zarb, R. A., & Elgar, F. J. (2009). The "freshman 5": A meta-analysis of weight gain in the freshman year of college. *Journal of American College Health*, *58*(2), 161–166.

Vignoli, E. (2009). Inter-relationships among attachment to mother and father, self-esteem, and career indecision. *Journal of Vocational Behavior, 75*, 91–99.

Vignoli, E., Croity-Belz, S., Chapeland, V., de Fillipis, A., & Garcia, M. (2005). Career exploration in adolescents: The role of anxiety, attachment, and parenting style. *Journal of Vocational Behavior*, *67*(2), 153–168.

Yamamoto, Y., & Holloway, S. D. (2010). Parental expectations and children's academic performance in socio-cultural context. *Educational Psychology Review*, *22*(3), 189–214.

Yu, S., & Levesque-Bristol, C. (2020). A cross-classified path analysis of the self-determination theory model on the situational, individual and classroom levels in college education. *Contemporary Educational Psychology*, *61*, 101857.

# Education and Learning

# 29

# Education as Flourishing: Self-Determination Theory in Schools as They Are and as They Might Be

Richard M. Ryan, Johnmarshall Reeve, Haya Kaplan, Lennia Matos,
*and* Sung Hyeon Cheon

## Abstract

In the perspective of self-determination theory the central aim of education should be that of enhancing students' flourishing. Flourishing involves not only the development of cognitive capacities but also capacities for agency, prosocial relationships, and psychological wellness. Strong evidence within self-determination theory, reviewed herein, shows how teaching styles that support students' basic needs for autonomy, relatedness, and competence foster these aspects of flourishing, enhancing the quality of students' engagement, learning, and social relationships. Also highlighted are how students' motivation and agency reciprocally influence teachers' tendency to be need supportive, such that interventions on both sides of the teacher-student relationship can enhance learning climates. Nonetheless, this body of evidence concerns optimizing need supports *within* existing school environments, which too often remain mired in policies, practices, and omnipresent evaluations that are not designed for student flourishing, and which instead often harm both students' and teachers' well-being and motivation. The chapter's conclusion includes a call to broaden the criteria by which schools are evaluated to include *process* as well as *outcome* targets. Creating the best schools we can imagine entails the assessment and cultivation of what really matters (i.e., process targets) to student flourishing in both their present and future lives.

**Key Words:** Key words: agentic engagement, autonomy, autonomy support, psychological needs, SDT-based interventions, students, teachers

We begin this chapter with this premise: *The purpose of education is to promote human flourishing*. "Flourishing" refers to the blossoming of capacities and wellness. It is not an educational outcome or end-state; rather, it is a developmental term to indicate that growth and integrity are occurring in the life of a student. The tell-tale signs that flourishing is occurring as students develop and exercise their values, aspirations, and capacities include the following: *proactive agency*—personal initiative, engagement and perseverance, and a resiliency to bounce back from setbacks; *enhanced functioning*—continuous

skill development and growth in capacities; *prosocial relationships*—the giving and receiving of close, intimate, and caring relationships; and *psychological well-being*—feelings of inclusion and satisfaction and a sense of meaning and purpose.

We focus on flourishing as an educational goal because it has both intrinsic and instrumental value, as fostering growth and wellness is both an inherent good and a societal benefit. Students who flourish in schools contribute more to their communities. This also makes the study of the processes underlying flourishing, and the school-based conditions that support growth and wellness, of central importance.

Self-determination theory (SDT; Ryan & Deci, 2017) is an organismic theory with a central focus on the processes underlying flourishing. Within SDT flourishing is seen as emerging from healthy motivational roots, such as intrinsic motivation and propensities to internalize and integrate social values and practices. Yet these constructive inner processes depend upon healthy environmental supports, including not only supportive and caring relationships but also opportunities and scaffolds for growth and learning and supports for ownership and volition in one's activities. Indeed, a key finding within SDT has been that the expression of these inner motivational resources and propensities is heavily influenced by social-contextual factors. For instance, when teachers relate to students and provide instruction in ways that allow students to experience autonomy, competence, and relatedness need satisfactions, students' growth and wellness tends to blossom (e.g., Deci et al., 1981; Reeve & Cheon, 2021; Zheng, 2022).

Many policymakers do not agree that the purpose of education is to promote flourishing. Instead, they see schooling more narrowly as a means to prepare students for economic roles, especially those requiring higher education. There is thus special pressure on cognitive achievement, particularly in areas thought to support industry, such as science and mathematics. Yet we suggest that it is best to think of such socially desired accomplishments as welcomed byproducts of high-quality education. We prefer a focus on flourishing because attempts to pressure teachers and students to achieve socially valued outcomes (e.g., high achievement test scores) often lead them away from intrinsic sources of motivation, such that their academic engagement gradually becomes increasingly divorced from the inherent propensities that best support both academic performance and personal growth and wellness. Sadly, to counter lower-quality motivation, educators often introduce more environmental pressures and controls to substitute for students' waning internal motivations. This approach to instruction introduces harmful side effects, including not only lower autonomous motivation (i.e., lower interest and value) but also psychological states such as anxiety, guilt, and even self-inflicted attacks on one's self-worth in some students as well as disengagement or defiance in other students. In contrast, a focus on flourishing allows students to stay in close contact with vital engagement-generating motivational assets and provides the educational context students need to develop the skills, capacities, and personal resources they require to attain socially desired accomplishments.

In this chapter we will discuss the ever-expanding literature on SDT in education and its practical implications for teachers and students at every level of education, from preschool to professional training. We begin with a brief description of SDT's view of what it means to support flourishing and healthy development and its manifestations in the classroom. We then briefly review research on teacher-student interactions as they influence student well-being, engagement, and performance. We consider current work in SDT on how teacher styles and students co-determine the classroom climates, specifically how student *agency* influences teacher behavior through a reciprocal process of mutual benefit. Finally, we turn to reconsiderations of common elements of schools and make a call to evaluate educational processes in terms of their support for basic psychological needs and students' flourishing.

## Learning, Wellness, and Healthy Development in Students

Students come to schools in all shapes, sizes, and variations. For most parents, there is a bit of worry in sending one's child off to this social institution. Any loving parent wants the school not only to impart academic skills but also to nurture and care for their child. Yes, they want educators to teach, but also to do no harm. So a question SDT asks of every social context is: How does it meet or frustrate students' inherent capacities to grow and to ensure their wellness and best functioning?

From its outset, SDT-based research identified and demonstrated the importance of nurturing people's inherent developmental propensities. Among the first and still prominent foci of SDT in this regard is *intrinsic motivation*, or motivation based on the inherent satisfactions of acting, learning, and growing (Reeve, this volume). Intrinsic motivation is critical in early child development as its supplies the energy for exploration, manipulation, and assimilation (Ryan & Deci, 2013), and it continues to have importance across the lifespan, especially within educational settings. A meta-analysis by Taylor et al. (2014) highlighted this strong role of intrinsic motivation in fostering school achievement. Yet despite the importance of intrinsic motivation for engagement and learning, research from multiple countries suggests that intrinsic motivation for academic activities tends to decline over the school years (e.g., Gillet, Vallerand, & Lafreniere, 2012; Gottfried et al., 2007; Scherrer & Preckel, 2019). This represents tremendous opportunity loss, for both learning and well-being.

A second organismic propensity in SDT's focus is *internalization*, or the active tendency of individuals to assimilate and integrate the social practices, norms, and values around them. As detailed in organismic integration theory (Pelletier & Rocchi, this volume) the more internalized a practice or value, the more autonomous the motivation to enact it. A now large empirical literature documents the importance of internalization for classroom adjustment and performance, with more autonomous forms of classroom motivation predicting higher-quality engagement and greater effort (León, Núñez, & Liew, 2015), prosocial behavior and caring relationships (Assor et al., 2018; Roth,

Kanat-Maymon, & Bibi, 2010), as well as improved academic attitudes and outcomes. Strongly supporting this claim, a meta-analysis by Howard, Gagné, and Bureau (2017) shows the increasingly positive effects of more internalized, and therefore more autonomous, motivations. Internalized motivation is more able to yield these positive effects, in part because it energizes higher-quality engagement and greater effort than does noninternalized motivation (León et al., 2015).

Highlighting people's inherent motivation and developmental propensities leads to the chapter's second premise: *Classroom practice is at its best when it fully supports both intrinsic motivation and internalization.* Too often the tendency is to think that "support intrinsic motivation" and "support social valuing" are educational antagonists. That is, teachers who encourage students to pursue their personal interests are not the same teachers who encourage students to internalize and adhere to socially valued goals and ways of behaving, and vice versa. However, the theory and SDT research make it clear that classroom practices that promote intrinsic motivation and internalization overlap substantially, even synergistically (Jang, Reeve, & Deci, 2010; Sierens et al., 2009). Teachers who support students' intrinsic motivation are the same teachers who also support students' rule following and responsible self-regulation (Aelterman et al., 2019). This is because these teachers appreciate and value their students' perspective during instruction, offer students a high-quality relationship, and engage in a set of teaching practices that are *autonomy-supportive* as well as *structured.*

### Autonomy-Supportive Teaching

Autonomy-supportive teaching is focused on supporting the volitional engagement of the learner. It entails the adoption of a student-focused attitude and an understanding tone, underpinning the skillful enactment of a range of instructional behaviors that facilitate students' intrinsic motivation and inherent developmental propensities (e.g., take the students' perspective, provide choice, present learning activities in need-satisfying ways; Patall et al., 2018; Reeve & Cheon, 2021). Autonomy-supportive teachers also better support the satisfaction of students' needs for competence and relatedness (Cheon & Reeve, 2013; Cheon, Reeve, & Song, 2016). Consistent with theory, when teachers are autonomy supportive, they are more attuned and receptive to students' perspectives and inputs, and this means they will also be more in touch with their competence struggles or relational concerns.

Autonomy-supportive teachers do several things that together enhance the volitional engagement and need satisfactions of the learner (Reeve et al., 2022). Perhaps most fundamental to supporting autonomy is a basic orientation to appreciate the perspective and experience of the learner (Ryan & Deci, 2020). Autonomy-supportive teachers try to understand, acknowledge, and respond to students' perspectives, interests, and initiative. They also try to encourage students to take ownership of their schoolwork, providing them with meaningful choices and tasks that engage their interests. When they require

something to be done, they provide a meaningful rationale so the student can have a sense of purpose in acting. In contrast, teachers with a more controlling style tend to pressure students to think, feel, or behave in particular ways, and they show less responsiveness to student perspectives (Soenens et al., 2012).

Early research detailing the makeup of autonomy-supportive teaching was reported by Reeve, Bolt, and Cai (1999). They began by assessing teachers' self-reports of their own autonomy support versus controlling styles and attitudes. These teachers were then video-taped during a teaching lesson, and the films were analyzed for various behaviors. Teachers who reported a more autonomy-supportive style were indeed observed to behave differently than their more controlling counterparts: they listened more, voiced fewer directives, attended more to students' interests and questions, resisted giving answers, supported initiative, and conveyed more understanding and acceptance of students' perspectives. In further research, Reeve and Jang (2006) identified specific teacher behaviors that were seen as autonomy supportive or controlling and then related these observed behaviors to the self-reported motivation of students. Their analysis uncovered eight teacher behaviors, all pre-categorized as autonomy supportive, that were positively associated with students' autonomous motivation; they included listening to students, allowing time for independent work, providing opportunities for students to speak, acknowledging improvement or mastery, encouraging effort, offering progress-enabling hints when students appear to struggle, being responsive to comments and questions, and acknowledging students' perspectives. In contrast, teacher behaviors that had been pre-categorized as controlling, such as monopolizing learning materials, issuing directives, and using controlling words such as "should" and "have to," were negatively related with students' identified and intrinsic motivations.

A frequently discussed strategy to support autonomy is the *provision of choice* (Patall, 2013). SDT suggests that when students experience a *sense of choice* in their activities, they feel greater autonomy, as manifest by enhanced intrinsic motivation (e.g., Reeve et al., 2002). Moreover, a sense of choice can facilitate performance (e.g., Murayama et al., 2015) and curiosity (Schutte & Malouff, 2019). Yet it's important to note that not all types of choice are associated with the experience of autonomy or enhance motivation (e.g., see Assor, Kaplan, & Roth, 2002; Katz & Assor, 2007; Moller, Deci, & Ryan, 2006; Waterschoot, Vansteenkiste, & Soenens, 2019). There can be "choices" that don't feel like a choice, as when one has to select between unwanted options; choices that are trivial or meaningless in terms of task options; and choices with subtle pressures embedded in them that can feel controlling. Conversely, one can have only one option and still experience a sense of choice, providing one concurs with the value of that option and trusts the one offering that choice (Bao & Lam, 2008). But even with these caveats, teacher-provided choices generally have a positive effect on learners' motivation (Patall et al., 2016, 2019). Supporting this, a meta-analysis by Patall, Cooper, and Robinson (2008) documented an overall positive effect of choice on intrinsic motivation. This meta-analysis further showed

that alongside providing choice where possible, teachers can support autonomy by taking students' interests into account.

Autonomy-supportive teaching is as adept at facilitating students' volitional internalization as it is their intrinsic motivation. Autonomy-supportive teachers help students discover the value within an activity or way of behaving, and they acknowledge and accept students' resistance to such attitudinal or behavior change (Jang, 2008; Reeve et al., 2002; Savard et al., 2013). Autonomy-supportive teachers do this by seeing the activity or recommended behavior from the student's point of view (e.g., "How do you feel about homework?"). They accept students' negative feelings as a potentially valid reaction and appreciate the barriers they may perceive. Simultaneously, autonomy-supportive teachers explain the very real benefits students can expect from accepting a value or recommended way of behaving (Steingut et al., 2017; Vansteenkiste et al., 2018). They use invitational language to encourage students to take the first step (e.g., "You might consider . . ."), and they are patient as the student works through the internalization process of advancing a relatively ineffective and maladaptive way of thinking and behaving into something that is more effective and more adaptive. In this way, autonomy-supportive teachers help students internalize the autonomous motivation they need to engage in and benefit from perhaps uninteresting but important activities and regulations.

Autonomy support matters on an everyday basis for motivation and engagement. As Núñez and León (2019) showed in a prospective study of Spanish college students, perceiving the teacher to be autonomy-supportive predicts greater engagement, a relation mediated by autonomy need satisfaction. Tsai et al. (2008) used a multilevel modeling strategy to show that daily variations in teacher support for autonomy predicted lesson-to-lesson variations in student interest and motivation. On days when the teacher was more autonomy-supportive, students were more interested than usual in the lesson, a result the researchers found for all three subject areas examined. More recently, Patall et al. (2019) tracked student experiences in science classes across days, finding that in lessons where the instructor engaged in autonomy-supportive behaviors, such as providing choice, offering rationales, or responding to the classes' interests, students reported finding the material more interesting. Indeed, when teachers are perceived as responsive to students' interests and preferences, an added benefit is that students tend to view their teacher as more competent (Jang, Reeve, & Halusic, 2016).

In contrast to these positive effects of autonomy support, controlling teacher behaviors are those that pressure students toward specified outcomes. Controlling teaching is the adoption of an authoritarian attitude and pressuring interpersonal tone in which the teacher prescribes what students should think, feel, and do, irrespective of what students prefer (Aelterman et al., 2019; Assor et al., 2005; Reeve, 2009; Soenens et al., 2012). As shown by De Meyer and colleagues (2016), teachers pressure students by using behavioral control (e.g., punishing, denying rights) or psychological control (e.g., shaming, expressions of disappointment, guilt induction), producing adverse outcomes (Bartholomew et

al., 2018). For example, Assor et al. (2005), doing research in Israeli schools, showed that controlling behaviors predicted lower student autonomy. Liu, Bartholomew, and Chung (2017), using multilevel growth modeling, showed that increases in perceptions of controlling teaching were related to increases in need frustration across the school year. Basic psychological need frustrations, in turn, were associated with greater fear of failure, more contingent self-worth, avoidance of challenges, and lower autonomous motivation for school. Reeve and Tseng (2011) examined biological mediators at work in these effects of controlling teaching. They assigned students to experimental conditions in which teachers were autonomy supportive, controlling, or neutral. Students in the controlling teacher condition had higher cortisol than those in the neutral condition, indicating greater stress. In contrast, those experiencing autonomy-supportive teaching had lower cortisol than those in the neutral or controlling conditions.

**Autonomy support and structure.** SDT strongly distinguishes between the idea of *control* and the idea of *structure*. Whereas controlling behaviors pressure students to behave or achieve, *structure* entails helping the student find a lattice to support them in their developmental climb, as well as clarity in goals and guidelines. Structure provides the helpful *informational* supports and guidance students need to develop skill, perform well, and function adaptively (Aelterman et al., 2019). When providing instruction in a structured way, the teacher communicates an expectation, standard, or behavioral goal for students to strive toward, as well as a rationale for these aims to help support autonomy. More important, the teacher provides the help, guidance, and feedback students need to make progress, feel competent, and develop personal control beliefs (Carpentier & Mageau, 2016; Cheon, Reeve, & Vansteenkiste, 2020; Grolnick & Pomerantz, 2009). Good structure *scaffolds* learning so that students are generally encountering optimal challenges and getting positive and encouraging guidance and feedback.

SDT characterizes the most positive teaching and parenting styles as being high in both autonomy support and structure (e.g., Grolnick et al. 2014; Grolnick & Ryan, 1989; Jang et al., 2010). Yet providing structure can be a delicate art. In SDT's view, good structure naturally scaffolds. A well-structured environment provides opportunities for growth and challenge and supports when obstacles are encountered; goals and expectations are clear because they "make sense" to those enacting them. But with the wrong mindset, providing structure can slide quickly into external control. Setting clear goals and expectations and having clear consequences too often translate into imposing one's external agendas onto learners and using controlling contingencies to enforce them. We thus emphasize that although both autonomy support and structure can yield positive effects on motivation and engagement (e.g., Jang et al., 2010), it is the combination of autonomy support and structure that is most reliably associated with greater internalization, sense of competence, engagement, and performance (e.g., Cheon et al., 2016, 2020; Vansteenkiste et al., 2012). Put differently, the positive effects of structure depend upon how it is delivered (Soenens & Vansteenkiste, 2010).

Research on provision of autonomy support and structure was recently reported by Aelterman et al. (2019). They collected self-reports from a large sample of Belgian school teachers and students using the Situations-in-School Questionnaire, which configures results in a two-dimensional space, with one dimension representing autonomy versus control and another structure versus absence of structure, forming a circumplex model. Their findings make clear that supporting autonomy and providing structure both matter, that autonomy support is not about permissiveness, and that structure is not about control. Instead, providing autonomy support and structure together is an ideal approach to support students' volitional engagement in well-organized learning contexts and activities.

**Autonomy-supportive teaching and students' well-being.** In our original statements about what schools should aim to accomplish, we emphasized that schools should foster wellness and thriving and avoid doing harm. As it happens, the conditions SDT details for fostering autonomous motivation are also the conditions associated with greater wellness and lower distress in schools. For example, in a longitudinal assessment of Chinese learners, Yu et al. (2016) found that teacher autonomy support predicted not only greater engagement over time but also lower symptoms of anxiety and depression. In fact, as students experience more basic need satisfactions for autonomy, competence, and relatedness in class, they become more engaged, and in becoming more engaged, they also experience greater need satisfaction (Reeve & Lee, 2014). A quite robust body of research in educational contexts ranging from elementary schools to postgraduate work shows that when teachers are autonomy supportive, their students exhibit greater engagement, performance, *and* higher well-being.

### Cross-Cultural Evidence for the Benefits of Basic Psychological Need Support

SDT posits that, despite the wide diversity of cultural settings and norms in homes and schools across the globe, autonomy matters to all learners. Evidence supporting this universality proposition is strong. Early research by Hayamizu (1997) and Yamauchi and Tanaka (1998) showed the predictive value of more autonomous motivation for Japanese elementary school students. Those with higher intrinsic motivation and identified regulation showed more interest, deeper learning strategies, and more positive school attitudes than those with more controlling forms of motivation. Researching both Russian and U.S. high schoolers, Chirkov and Ryan (2001) reported that perceived autonomy support from teachers and parents was similarly associated with more autonomous school motivation and higher well-being of adolescents in both samples. Studying adolescents in Nigeria and India, Sheldon, Abad, and Omile (2009) found that in both of these collectivist cultures teachers' autonomy support enhanced students' coursework experiences and well-being. Oga-Baldwin et al. (2017) showed that engagement in learning English by Japanese elementary school students is enhanced by promoting autonomy and intrinsic motivation. Jang et al. (2009) showed that autonomy was predictive of South Korean high school students' satisfying learning experiences. Vansteenkiste et al. (2005) found

that young adults in China who had greater autonomous motivation for studying had greater academic success and higher rates of well-being. Herrera et al. (2021) found that perceived teachers' autonomy support of Peruvian university music students positively predicted need satisfaction and negatively predicted need frustration. In turn, need satisfaction predicted adaptive perfectionism and flourishing, whereas need frustration predicted maladaptive perfectionism. Kayalar (2016) reported on interviews of teachers from several countries, finding commonalities in how they attempt to enhance student agency, including establishing good relationships, giving positive feedback, providing rationales, and other autonomy-, competence-, and relatedness- supportive strategies.

Such evidence bespeaks the universal or etic relevance of supporting students' basic psychological needs. This is not to say that there are no differences in how students are motivated within differing cultures. Indeed, plenty of evidence points to varied values and parental practices between cultures that influence students' quality of motivation. SDT, however, posits a *universality without uniformity*, meaning there can be differences in the way different cultures highlight and meet basic needs (Soenens et al., 2015); that is, there can be emic differences in how needs are managed and satisfied, at least within limits (Reeve, Ryan, & Deci, 2018). Nonetheless, SDT further argues that *autonomy, competence, and relatedness matter in all educational settings*—and these needs are satisfied via an internalized value for and interest in the tasks of achievement that are everywhere enhanced by teachers' autonomy support.

## The Role of the Student: Learner Agency as a Classroom Influence

Teachers' approaches to instruction affect students' motivation, functioning, and wellness. This observation puts the spotlight on the teacher, and justifiably so, given their important roles in the lives of students. However, this teacher-centric perspective on what happens in the classroom risks overlooking the important contributions that students make to their own learning and development. It also suggests that classroom activity runs along a one-way street in which teachers teach while students receive that instruction. It turns out that in reality it's a two-way street: just as what teachers say and do affects students' motivation and learning styles, what students say and do affects their teachers' motivation to teach and the strategies they employ. This recognition suggests that the classroom climate emerges within a dynamic and reciprocal teacher-student relationship.

This influence of students on teachers was evidenced in early SDT laboratory research in which experimentally manipulated levels of how engaged versus disengaged a student was during a learning activity causally affected how a teacher reacted to that student (Pelletier & Vallerand, 1996). When students showed disengagement, teachers reacted by adopting a more controlling approach to teaching. Pelletier, Seguin-Levesque, and Legault (2002) labeled this effect "pressure from below." The pressure was that teachers felt responsible and accountable for their disengaged students' seeming lack of internal motivation. This "It's up to me to do something" pressure pulls teachers into more

controlling teaching that both students and the teacher find unsatisfying. More optimistically, further research showed that the reverse was also true, in that teachers tended to react to highly engaged students by adopting a more autonomy-supportive teaching style (Reeve, 2013). For instance, the more students spoke up to express their interests and let the teacher know what they needed, the more their teachers became autonomy supportive toward them (Matos et al., 2018). This "students affect the teacher" effect yields benefits for students, but it benefits teachers as well. Klassen, Perry, and Frenzel (2012) reported three studies showing that when teachers experienced more satisfaction of the need for relatedness, especially vis-à-vis students, they were more engaged and also evidenced less emotional exhaustion.

It thus seems clear that effects in the teacher-student relationship are two-way. The more passive students are, the less autonomy supportive their teachers tend to become, and the more agentic students are, the more autonomy supportive their teachers tend to become (Reeve et al., 2020). The critical variable is therefore student agency. "Agentic engagement" refers to how proactively and constructively students contribute to the instruction they receive so that it better supports their own motivation and learning (Patall et al., 2019; Reeve, 2013). In being agentic, students speak up more, express their preferences and ideas, and give their teachers something meaningful to work with. By working with their teachers in this collaborative way, more agentic students render learning activities more interesting and more personally relevant for themselves, which allows them to experience more need satisfactions, more intrinsic motivation, and more purpose and to elicit more autonomy-supportive teaching, all of which fuel greater engagement. This in turn is associated with more effective performance (Reeve et al., 2020).

Recently Reeve et al. (2021) demonstrated the effects of student agency on teacher support. In an initial experiment they created teacher-student dyads using same-sex pairs of preservice teachers that were randomly assigned to be agentically engaged or not. Results showed that students in the agentic engagement condition experienced more autonomy support from their teacher and greater satisfaction themselves, although they did not show better performance. In a second study Reeve et al. (2021) replicated these findings by showing that when students demonstrated initiative (acted agentically), they received greater autonomy-supportive teaching and experienced greater need satisfaction, but the result was not better student performance. Also recently, Patall et al. (2021) reported on three field experiments with college students that were designed to promote a more agentic orientation. Results showed that these interventions predicted greater in-class agentic engagement, teacher autonomy support, basic psychological need satisfaction, personal interest in the subject area, and intention to persist in the field, outcomes largely mediated by enhanced agentic orientation.

Such findings support the idea that teaching and learning are reciprocal educational processes, such that student agency opens up opportunities for "support from above." This

bottom-up influence on autonomy-supportive teaching shows that students who want autonomy-supportive teaching can elicit it—and its many benefits.

## SDT-Based Interventions

There is yet another way teachers can become more autonomy supportive: they can acquire these skills and methods in professional development workshops. But teachers may ask:

- Can teachers learn how to become more autonomy supportive?
- If so, what new classroom practices would they learn?
- Is all this professional development worth the effort? That is, once learned, does greater autonomy-supportive teaching actually yield causal and meaningful benefits for students and teachers?

To answer these questions, experimentally based studies are required. In a teacher-focused, SDT-based intervention, a group of teachers (or a whole school) volunteer to participate in a study. Researchers randomly assign half of the teachers to participate in an SDT theory-based workshop at the beginning of the semester and the other half of the teachers in a "practice as usual" control group. Over the course of a semester or academic year, researchers ask students and teachers themselves to complete surveys to see if those who participate in the workshop experience greater benefits than those who do not.

As of the writing of this chapter, researchers have conducted 51 autonomy-supportive teaching interventions, 38 of which used a rigorous randomized control research design (see Reeve & Cheon, 2021). Results from these studies provided affirmative answers to all three of the above questions. When given the opportunity to participate in a theory-based and carefully designed workshop experience, most teachers learn how to become more autonomy supportive; researchers identify which teaching practices are most able to support students' autonomy; and the effort to improve one's classroom motivating style was definitely worth the effort in terms of the benefits it yields for both teachers and students.

What teachers primarily learn during an SDT-based intervention are specific teaching practices that allow them to take their students' perspective (e.g., elicit their views or opinions), support students' intrinsic motivation (e.g., provide choices), and support students' volitional internalization of external regulations (e.g., provide explanatory rationales; Reeve et al., 2022). In most intervention studies, researchers ask trained raters to visit teachers' classrooms at mid-semester to objectively score the extent to which they incorporate autonomy support strategies into their teaching styles. The consistent finding is that raters score teachers trained to be more autonomy supportive as more autonomy supportive than teachers in control groups (Cheon, Reeve, & Ntoumanis, 2018; Lonsdale et al., 2013; Reeve et al., 2004), suggesting the efficacy of the training. More important, students of teachers who participate in the workshop report significant gains not only in their academic motivation, such as need satisfaction, intrinsic

motivation, and internalized motivation (Cheon & Reeve, 2013; Abula et al., 2020; Fin et al., 2019), but also in outcomes such as engagement, self-regulated learning, skill development, academic achievement, and vitality and well-being (Cheon & Reeve, 2013; Cheon et al., 2020; Flunger, Mayer, & Umbach, 2019; Manninen et al., 2020; Niemiec & Muñoz, 2019).

Interestingly, teachers who have participated in autonomy-supportive teaching workshops report numerous benefits themselves compared to teachers who did not participate in a workshop. These benefits include gains in their own psychological need satisfaction (Aelterman et al., 2013; Cheon, Reeve et al., 2018), more autonomous motivation to teach (Cheon et al., 2014), higher passion for teaching (i.e., harmonious passion; Cheon et al., 2020), more teaching efficacy (Cheon et al., 2014), greater job satisfaction and vitality while teaching (Cheon et al., 2014), and more satisfying relationships with their students (Cheon et al., 2020).

Across these 51 intervention studies, 48 (94%) produced a significant intervention effect, and almost all of the successful interventions produced a large effect size for the student and teacher benefits featured in the study (most *ES* > 1.0; Reeve & Cheon, 2021; see also Su & Reeve, 2011). These results show that autonomy-support training yields robust benefits. In fact, interventions that are based in SDT have been strongly empirically supported relative to interventions based in other perspectives (see, e.g., Lazowski & Hulleman, 2016). We believe intervention studies are important scientifically for demonstrating the causal role of need-supportive techniques, as well as important practically in showing that creating a facilitating environment via need supports can be targeted and achieved via training.

## Learning, Wellness, and Healthy Development in Teachers

Teachers, just like their students, have basic psychological needs for autonomy, competence, and relatedness, the fulfillment of which impacts not only their teaching quality but also their professional commitment, job satisfaction, and well-being. SDT specifically maintains that for teachers to more actively support student needs, they themselves must experience need supports.

This was illustrated in a study of teachers in Chinese schools by Nie et al. (2015). These investigators found that when teachers experienced their supervisors and principals as more autonomy supportive, they were more intrinsically motivated to teach. They also reported more psychological wellness and lower distress. Indeed, this is a consistent research finding in that the more school leaders support teachers' autonomy, the more those teachers are engaged and resilient and demonstrate a higher level of well-being (Bassi & Delle Fave, 2012; Liu, Huan, & Miao, 2018; Parker et al., 2012). In related research, Alfayez et al. (2021) showed how principals who were more learner-centered in their orientations had teaching staff who reported more need satisfaction and, in turn, higher well-being.

Yet school policies and leadership styles can interfere with teachers' need satisfaction and lead toward more controlling, and less relationally satisfying, classroom methods. Pelletier et al. (2002), for example, showed how "pressures from above" (e.g., from accountability policies or controlling administrators) were negatively associated with teachers' autonomous motivation to teach, as well as negatively impacting the autonomous motivation of the students in their classrooms. Eyal and Roth (2011) showed similar results, as principals with a supportive leadership style promoted teachers' autonomous motivation to teach that lessened their stress and burnout, whereas principals with a nonsupportive leadership style promoted teachers' controlling motivation to teach and higher stress and burnout. Bartholomew et al. (2014) showed that top-down controlling pressures on teachers were associated with more symptoms of burnout, a relation mediated by basic psychological need frustration. Cuevas et al. (2018) similarly documented how pressure on teachers to boost student achievement outcomes is associated with lower autonomous motivation for teaching and more emotional exhaustion. Clearly, such studies collectively suggest that teachers' autonomy can be frustrated by top-down pressures, leading them, in turn, to be more controlling with their students. This sets in motion a cycle in which students are less engaged and agentic, teachers less autonomy supportive, and both become less need-satisfied and effective.

This dynamic is not confined to teachers; principals too report better functioning and enhanced wellness when they receive autonomy support from their superintendents and less pressure from above (Maxwell & Riley, 2017). Chang, Leach, and Anderman (2015) showed that when principals perceived their superintendents to be more autonomy supportive they also evidenced greater affective commitment to their schools and higher overall job satisfaction. SDT holds that when teachers, staff, and administrators feel controlled "from above," their ability to invest in creative pedagogy and support the autonomy and basic needs of those they teach or supervise is compromised. Such evidence makes clear that effective transformations of schools is not just about changing teachers' classroom behaviors but also involves supporting the basic psychological needs of teachers and all other school personnel.

**Teacher-led learning communities.** Just as students show growth and experience well-being in a need-supportive environment, so do teachers. One of the most reliable sources of need support for a teacher is participation in a *teacher-led learning community*. Professional learning communities are widely acknowledged decentralized frameworks for supporting teachers, developing schools, and promoting teaching and learning (Antinluoma, Ilomäki, & Toom, 2021). Many schools encourage their teachers to come together to create an in-school learning community. A teacher-led learning community occurs as teachers in the same school come together as a group to discuss pedagogical matters, consider curricula, work through professional dilemmas, enhance the teaching-learning process, and problem-solve classroom issues (Lefstein, Vedder-Weiss, & Segal, 2020). These learning communities may or may not include an experienced mentor.

Either way, these learning communities are highly collaborative, and they are based on the principles of partnership and collegiality. They are support systems that provide teachers with a forum to build their knowledge, skills, and practice (Fresko & Nasser-Abu Alhija, 2015), reinvigorate their passion, and support each other (Owen, 2016). When it functions optimally, such a professional learning community supports teachers' psychological needs, and this is particularly true for beginning teachers (Kaplan, Linker Govrin, & Mindlin, 2021). For instance, the learning community offers relatedness support, as it is a community founded on trust and partnership that strengthens bonds and collaborations between experienced and beginning teachers. It offers competence support, as it affords teachers opportunities to learn new skills, receive growth-promoting guidance and feedback, and use both data and teamwork to solve difficult problems and experience success. And it offers autonomy support, as it is a community focused on what teachers most value and deem important, teachers themselves choose what to focus on and how long to focus on it, and it is a voluntary and self-chosen activity.

**The community-building value of autonomy support.** SDT suggests that autonomy-supportive, caring relationships are critical to learning and social development. An atmosphere of need support enhances community. Yet the controlling nature of many educational institutions leaves many participants feeling disrespected or alienated. It is thus unsurprising that in many schools incivility, aggression, bullying, and victimization abound. Though classroom violence and bullying are difficult problems for teachers to successfully address, teachers who participate in an autonomy-supportive teaching workshop are able to reduce these severe instances of students' maladaptive social functioning (Assor et al., 2018; Cheon et al., 2022; Kaplan & Assor, 2012; Roth et al., 2010). Specifically, research studies show that autonomy-supportive teaching reduces classroom violence and bullying by promoting caring (Assor et al., 2018), by listening to and accepting students' concerns (Kaplan & Assor, 2012), by helping students volitionally internalize teacher recommendations for respecting one another (Roth et al., 2010), and by creating a classroom climate that de-emphasizes a status-centric "me vs. you" dominance hierarchy (Cheon et al., 2022).

What all these bullying-reduction interventions had in common was that participation in an autonomy-supportive teaching workshop allowed teachers to develop the skills they needed to foster a more supportive and less conflictual classroom climate. By taking their students' perspective, providing need-supportive instruction, and supporting students' volitional internalizations, these teachers promoted the emergence of a classroom climate rich in supportive peer-to-peer interactions and relationships and scarce in conflictual peer-to-peer interactions and relationships. The more teachers moved the classroom climate away from hierarchical and conflictual norms, expectations, values, group dynamics, and patterns of communication, the more they were able to reduce classroom violence and bullying. More generally, these findings show that autonomy-supportive teaching provides not only student and teacher benefits but also important and

meaningful classroom climate benefits (i.e., more egalitarian and supportive, less hierarchical and conflictive).

## The Schools We Have and the Schools We Can Imagine

The current body of SDT research shows how need supports for both teachers and learners enhance student outcomes. But it is important to recognize that almost all of these studies are taking place within existing educational systems that are not specifically designed to support students' or teachers' psychological needs, let alone create a climate for thriving. There is thus an important sense in which our interventions, and the efforts of individual classroom teachers to modulate their classroom climates, are just tinkering around the edges. Many teachers are, in fact, forced every day to find ways to support learners' psychological needs *despite* institutional obstacles such as mandated curricula, controlling performance directives, grading requirements, and pressure from high-stakes tests. In short, there remain important gaps between dominant policies and practices in our educational institutions and what SDT research and observations reveal about best practice.

### The Schools We Have

Some characteristics of modern schools across the globe have great normative precedence and represent common practices but are nonetheless questionable in terms of their effects on student flourishing and even effective learning. These include structural factors in classrooms and educational policies, issues ranging from class size to mandated curricula, all of which affect teachers' and learners' motivation and performance, sometimes in unintended ways. Exemplary among factors commonly practiced but with potential negative impacts on learners and teachers is the heavy emphasis on "coverage" of mandated curricula paired with a relentless focus on evaluations, grades, and high-stakes tests.

**Grading.** Grading exemplifies the kind of educational practice that is applied without sufficient consideration of its impacts on students' feelings of competence, autonomy, or relatedness. Yet the practice of grading is so ubiquitous in schools that for many people it is hard to even imagine an education not inexorably intertwined with them. Unlike most learning in life, in which experiments, failures, and risks are part of the process, learning in schools takes a different form: most everything a student does is tested and graded. Yet despite the ubiquitous presence of grading, research explicitly supporting the utility of grading within the overall goals and aims of education is scant. Instead, grading has shown clear down-sides for students' experiences and motivation (Krijgsman et al., 2017). Grading engenders ongoing social comparisons, and it stimulates ego involvement and the defensive self-handicapping and resistance it can entail. For many students grading means enduring humiliation, especially for those who are not invariably at the "top end" of the curve.

SDT's perspective on grading sheds light on its often negative effects on students' motivation and self-concepts as learners. The theory argues that feedback about academic

performance can vary in its *functional significance* or meaning to the learner. Feedback can have *informational significance* if it is relevant to efficacy or competence (i.e., if it provides inputs that help the person improve). By enhancing perceived competence, informational inputs tend to enhance intrinsic motivation and internalization. In contrast, feedback can have a *controlling significance* when it is experienced as pressure toward specific behaviors or outcomes (Deci & Ryan, 1980). Although the meaning of grades can vary from student to student, students often view grades as commonly used as a controlling pressure to perform.

To confirm this last claim that grades often have a controlling significance, Grolnick and Ryan (1987) set up an experiment within an elementary school. Students engaged in a typical school reading assignment; some were told that their reading would be graded, while others were told the assignment was not graded. As predicted, the grading condition led to decreased intrinsic motivation and lower conceptual learning (see also Benware & Deci, 1984). Perhaps even more compelling, Klapp (2015) reported a natural experiment of over 8,000 Swedish students who attended primary schools in which performance was either graded or was not. Klapp found a negative relationship between having been graded in primary school on later achievement attained in grades 7–9 and lower odds of finishing secondary education, especially for lower-achieving students. This latter effect is not surprising given that the functional significance of normative grading for the lower-ability students is likely to be one of incompetence and discouragement.

Given that grades as typically applied have the potential to harm students' motivation, self-concept, and learning, especially for those with cognitive challenges, we might ask: Why are they so pervasive? Sadly, too many educators assume that grades are an effective *motivational* strategy. They use grading as a way to activate or pressure students to perform. Yet grades by themselves typically provide little effectance-relevant feedback (Butler, 1987), and the motivation they catalyze tends to be of lower quality. Indeed, this type of pressure often undermines autonomous motivation (e.g., Krijgsman et al., 2017), whereas authentic, competence-enhancing feedback enhances such motivation.

**Performance goals**. There is a large literature concerning *mastery* versus *performance* goals, and their further differentiation into approach and avoidance types. From an SDT viewpoint, performance-avoidance goals are the most detrimental for both school performance and well-being (Elliot, 2005). In our view, such effects again follow from SDT's concept of functional significance. Performance goals, even when approach-oriented, are often experienced as controlling pressures, especially amplified if there is a culture of grading and social comparison in school. Illustrating this, Pulfrey, Buchs, and Butera (2011) showed that expectations of being graded led students to be less autonomously motivated and more prone to adopt performance-avoidance goals.

Vansteenkiste et al. (2010) assessed performance-approach goals and the motives students had for adopting them. The SDT motive types substantially accounted for the effects of goals on outcomes, including achievement (see also Vansteenkiste et al., 2014),

with controlled motivations explaining the negative effects. Gillet et al. (2015) measured achievement goals in two educational settings, as well as autonomous and controlled motives for attaining these goals. Results again revealed that the SDT-framed motives were stronger predictors of well-being than the type of goals themselves. In sum, performance goals often serve as a conduit to pressure, and it is this controlling pressure that is undermining of high-quality motivation and engagement. Thus, the main reason performance goals are not optimal is that they are too often part of a pressuring environment that encourages introjected and external motivations.

**High-stakes tests.** We might ask further why schools are so caught up in these constant evaluations, comparisons, and pressuring motivational tactics. One source is demands by policymakers for "accountability" from teachers and students. To policymakers, standardized scores seem like a tangible and clear target—something that is easy to talk about and "easy" to encourage others to adopt. Adding to the problem, however, is that these accountability targets are often "promoted" via a behavioristic philosophy of using sanctions and rewards on schools, teachers, or students to boost scores on standardized tests, as if lack of incentive is the issue. It is these add-on rewards or sanctions that make a "test" into a "high-stakes test" (HST).

SDT has long predicted that high-stakes testing approaches would harm or undermine best classroom practices (e.g., Ryan & LaGuardia, 1999; Ryan & Brown, 2005). Unfortunately this prediction has been thoroughly borne out by the evidence (Korentz, 2017). HST-based "reforms" have been notably ineffective, if not directly harmful to student flourishing. Reviewing the effects of high-stakes testing, Hout and Elliott (2011) concluded that it leads teachers to limit instruction to the material expected to be tested, or to excessively "teach to the test." Further, because test scores in specific domains tend to be the focus of sanctions and rewards (e.g., STEM-related topics), a widespread practice is to curtail or neglect activities and topics that are interesting and engaging and that enrich development but are not covered by the HSTs. Driven out are hands-on projects, music, arts, civics, and physical education that for many students are the "hooks" that keep them in school. Others report that the focus on tested material leads to decreased ownership of learning by both teachers and students and a lower quality of engagement (Liu, 2022). Cultures of teaching to the test have eroded many teachers' understanding of good teaching, which is about fostering engagement rather than producing correct responses.

Given such effects, it should come as little surprise that improved HST scores do not typically generalize to other standardized tests or achievement indicators (Nichols & Berliner, 2007). By fostering an accountability approach based on test outcomes rather than supporting school reforms that are responsive to the psychological needs of teachers and students (e.g., Early et al., 2016), education policies thus compromise the quality of learning and instruction (Ryan & Deci, 2020).

The oversized influence of standardized testing is a global issue. In the USA, HSTs dominate the curricular focus in most schools, without clear validity or well-articulated

rationales. That tests can be pitched as clear targets for accountability appeals to policy-makers, despite evidence that meaningful gains even on targeted scores have been broadly disappointing (Korentz, 2017). Chinese schools are similarly test-focused, dominated by the National Higher Education Entrance Examination, or *gaokao*. This exam carries high stakes for every student, leading to teaching to the test, often harmful levels of stress, and the undermining of intrinsic motivation for learning (e.g., see Sun et al., 2013; Yu et al., 2018). Although HSTs take different forms in different nations, to the extent that they are formulated to externally pressure teachers and students toward a narrow set of performances, they interfere with more holistic and need-supportive approaches that more fully enhance students' development, interests, capabilities, and wellness.

**Other unvalidated and likely need-frustrating practices**. Grading, exams, and normative comparisons are common features of schools that have little evidence-based support. These practices are anchored in schools and often justified by empty rationales such as a need for "accountability." But accountable to do what? If they are not helping students flourish, why do we retain them? Indeed, we can raise many other issues with a similar lack of justification. Why do we have such large class sizes? Why are classrooms rigidly age-constrained? Why can't there be mixed-age instruction in some areas? Why are normative comparisons more important than criterion-based instructions?

SDT has long provided specific motivational accounts of why HST programs have so pervasively failed to advance even the specific achievement outcomes they target (see Patall & Zambrano, 2019). SDT specifically argues that *outcome-focused* rewards and sanctions reinforce *any* route to the goal, even if it represents bad practice (see Ryan & Brown, 2005). They also distract from aims that might be more important but are not subject to contingencies or evaluation. In contrast, our criteria for judging policies and practices are *process-focused* and concern the extent to which they support autonomous motivation and basic psychological needs in teachers and students. That is, we favor policies that focus on supporting the best practices and processes within classrooms, rather than trying to reward and punish educators and learners for narrowly defined outcomes. HSTs and the pervasiveness of evaluations and normative grading exemplify the problems with outcome-focused strategies as they tend to undermine best practices and, paradoxically, are largely ineffective at fostering even the desired achievement outcomes because they hamper high-quality teacher and student engagement.

When we start to rethink the criteria for quality schools, we wonder how all of these common and yet poorly justified practices have come to dominate the climate of modern schools. Should we not ask of every common practice: What is its effect on students' psychological needs and their ability to flourish? For example, what is the impact of a closed curriculum relative to one where teachers can build on students' interests? Why do we mandate coverage based on strict schedules and age rather than readiness and interest? What would happen if we focused more on cooperative rather than competitive projects? What would be the growth effects of more personalized feedback on ownership

and performance? These and other questions deserve more than superficial responses. Demands for an evidence base should extend to seeing how these and other common practices affect not only achievement test scores but also the learning orientations and well-being of students. When it comes to the schools we have, we need to examine their processes and goals through the lens of how these features help or hinder the flourishing of all students, as each deserves a nurturing climate.

*The Schools We Can Imagine*

The organismic perspective of SDT suggests that the best route to fostering development of students and for supporting the vitality and engagement of teachers is by appreciating and supporting basic psychological needs. Unlike relativistic perspectives, SDT evaluates curricula, teaching strategies, educational leadership styles, and policies based on the extent to which they support or thwart learners' and teachers' full functioning and wellness. Full functioning within SDT refers to a vitality in one's engagement, characterized by volition and interest. It describes the availability and optimal use of our human potentials, both cognitive and motivational. Full functioning and flourishing are also predicated on need satisfactions, as action is autonomous, effective, and socially grounded.

We also know that such full functioning occurs most robustly when educational environments support students' (and staff's and teachers') basic needs for autonomy, competence, and relatedness, and we suggest that these represent criteria for high-quality schooling. In expanding the criteria for what constitutes high-quality schools, SDT thus also provides a broader basis for critical comparisons between teaching styles, school organizations, and even national policies. Some may doubt whether we can reliably assess and enhance these noncognitive characteristics of school climates. But evidence points elsewhere. For example, Reeve and colleagues (2022) have shown that reliable changes in autonomous motivation and engagement can be detected as a result of SDT-based interventions. Moreover, if we can imagine putting even a fraction of the monetary and intellectual resources that we spend on defining and measuring achievement outcomes into measuring and refining high-quality *processes* in schools and classrooms, we would quickly find multiple strategies to triangulate on what is truly important to student flourishing—namely, need-supportive processes.

Beyond evaluation, when we begin to design schools to meet such criteria, many possibilities emerge. For example, building students' autonomy and ownership of learning requires the creation and support of a culture of "student agency" (Kaplan, Bar-Tov et al., 2021) or a "culture of inquiry" (Stichler, 2018). Such cultures can be fostered by curricular opportunities for personalized and student-centered activities, including those that are collaborative and creative. Personalization partly means paying more attention to scaffolding and ensuring that activities are developmentally aligned with each student's current capacities, not just designed for chronological age. A sense of agency grows when self-directed and -regulated learning occurs in such contexts of optimal challenge.

Nurturing schools require highly trained teachers with skills to motivate in deep and rich ways rather than by offering superficial rewards and punishments and "teacher-proof" curricula that discourage innovation. As we look to best experiments in education across the globe, we find that countries such as Finland and Singapore have developed high-quality systems in part by treating teachers as respected professionals, in terms of both pay and providing them the autonomy to innovate and improve in their craft and practices (Liu, 2022). Enabling teachers via continuing educational opportunities and empowering them to creatively engage in classroom instruction are key elements to educational vitality and success.

To focus on flourishing is to engage teachers in the student-centered aim of promoting healthy development, learning, and social inclusion and by establishing nurturing and need-supportive school environments. As we have seen, placing exclusive emphasis on narrow test score outcomes corrupts educational systems. But some may wonder how parents and governments can hold educators "accountable" without comparative tests. In this regard we agree with Liu (2022), Korentz (2017), and other commentators who argue that to effectively improve schools we must have a more balanced approach to evaluation that includes a broader set of outcomes and the perspectives of all stakeholders. This means not only "evaluation from above" by government agencies and via cognitively focused tests, but also empowerment of teachers and school staff to create their own mission and develop capacity for the self-evaluation of that mission. School-based self-evaluations can be part of a reflective practice and provide formative feedback to identify what is working and what needs resourcing. School climate, and specifically the atmosphere of supporting student flourishing, can also be a focus of professional judgments, such as in New Zealand and the Netherlands (Ladd, 2010), where evaluation foci go beyond achievement test scores to strongly weight the school climate and supports for students' growth.

In fact, SDT suggests that focusing on flourishing requires a much, much greater concern with noncognitive outcomes, such as students having a positive experience of growth, inclusion, and self-respect. Ongoing assessment, through both observational and survey methods, of the student experience and need satisfaction within school, and of characteristics associated with students' quality of life, is thus critical to meeting the criteria of flourishing. School, that is, cannot just be seen as a preparation for later life; it represents a good percentage of a young person's life, and matters in its own right. School policies should acknowledge that a school climate that is edifying and supportive reflects qualities that are both measurable and of intrinsic merit. In fact, parents, teachers, and students all have a role in the evaluation of school climates and effectiveness, as the on-the-ground actors most affected by them.

When we focus on flourishing and need satisfaction as criteria for good schooling, we will be investing in practices to enhance interesting curricula, to improve classroom communication strategies, and to provide for personalization in feedback and goals for success.

Instead of the train of disappointing results we have seen from a narrow cognitive focus and HST reforms, we should see increases in what really matters: students *wanting* to be in school, *interested* in learning, and *caring* about each other. These are the signs of flourishing, signs that will be associated with learning *and* wellness. This is not to say that cognitive outcomes are not important, for they are. Instead, it is to say that the process used to reach valued outcomes matters. In fact, we suggest that the process measures matter more in practice than do the outcome measures, because it is the former that enable and best predict the latter. Achievement test scores are too often "downstream" indicators, whereas the leverage for change lies upstream, in the motivational processes and engagement that give rise to learning.

In short, public, professional, and student perspectives are all important sources of input to crafting environments for flourishing. What SDT adds to this picture is an understanding that the positive or negative effects of policies, practices, and evaluations on flourishing will be a function of the extent to which these elements of schooling meet or frustrate the basic psychological needs of participants. In this regard we call for a renewed and critical assessment of all elements of schooling using the criteria of student need satisfaction and flourishing as paramount. The assessment and focus on meeting students' and teachers' basic needs for autonomy, relatedness, and competence will provide a process focus through which better outcomes, including achievement scores, will emerge. Such a refocus serves the additional aims of doing no harm and of broadening the social and intellectual goods and capabilities that schools provide. In this way, we can help educational institutions move toward the ideal that they supply a fair distribution of opportunities to flourish for all: the inner resources to live well, both during school and in life thereafter.

## References

Abula, K., Beckmann, J., He, Z., Cheong, C., Lu, F., & Gropel, P. (2020). Autonomy support in physical education promotes autonomous motivation towards leisure-time physical activity: Evidence from a sample of Chinese college students. *Health Promotion International, 35*(1), e1–e10. doi:10.1093/heapro/day102

Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J., & Reeve, J. (2019). Toward an integrative and fine-grained insight into motivating and demotivating teaching styles: The merits of a circumplex approach. *Journal of Educational Psychology*, *111*, 497–521. http://dx.doi.org/10.1037/edu0000293

Aelterman, N., Vansteenkiste, M., Van Keer, H., De Meyer, J., Van den Berghe, L., & Haerens, L. (2013). Development and evaluation of a training on need-supportive teaching in physical education: Qualitative and quantitative findings. *Teaching and Teacher Education, 29*, 64–75. https://doi.org/10.1016/j.tate.2012.09.001

Alfayez, A. A., Norman, M., Alqahtani, A. S., Altuwaijri, A. I., & Kaur, A. (2021). Principal's learning-centred leadership practices and teacher's wellbeing: A self-determination theory perspective. *Educational Studies*. Advance online publication. https://doi.org/10.1080/03055698.2021.1960150

Antinluoma, M., Ilomäki, L., & Toom, A. (2021). Practices of professional learning communities. *Frontiers in Education, 6*. https://doi.org/10.3389/feduc.2021.617613

Assor, A., Feinberg, O., Kanat-Maymon, Y., & Kaplan, H. (2018). Reducing violence in non-controlling ways: A change program based on self-determination theory. *Journal of Experimental Education*, *86*(2), 195–213. https://www.tandfonline.com/loi/vjxe20

Assor, A., Kaplan, H., Kanat-Maymon, Y., & Roth, G. (2005). Directly controlling teacher behaviors as predictors of poor motivation and engagement in girls and boys: The role of anger and anxiety. *Learning and Instruction, 15*, 397–413. doi:10.1016/j.learninstruc.2005.07.008

Assor, A., Kaplan, H., & Roth, G. (2002). Choice is good, but relevance is excellent: Autonomy-enhancing and suppressing teacher behaviors in predicting student's engagement in school work. *British Journal of Educational Psychology, 72*, 261–278.

Bao, X.-H., & Lam, S.-F. (2008). Who makes the choice? Rethinking the role of autonomy and relatedness in Chinese children's motivation. *Child Development, 79*(2), 269–283.

Bartholomew, K. J., Ntoumanis, N., Cuevas, R., & Lonsdale, C. (2014). Job pressure and ill-health in physical education teachers: The mediating role of psychological need thwarting. *Teaching and Teacher Education, 37*, 101–107. https://doi.org/10.1016/j.tate.2013.10.006

Bartholomew, K. J., Ntoumanis, N., Mouratidis, A., & Katartzi, E. (2018). Beware of your teaching style: A school-year long investigation of controlling teaching and student motivational experiences. *Learning and Instruction, 53*, 50–63. https://doi.org/10.1016/j.learninstruc.2017.07.006.

Bassi, M., & Delle Fave, A. (2012). Optimal experience and self-determination at school: Joining perspectives. *Motivation and Emotion, 36*, 425–438. https://doi.org/10.1007/s11031-011-9268-z

Benware, C. A., & Deci, E. L. (1984). Quality of learning with an active versus passive motivational set. *American Educational Research Journal, 21*(4), 755–765.

Butler, R. (1987). Task-involving and ego-involving properties of evaluation: Effects of different feedback conditions on motivational perceptions, interest, and performance. *Journal of Educational Psychology, 79*(4), 474–482.

Carpentier, J., & Mageau, G. A. (2016). Predicting sport experience during training: The role of change-oriented feedback in athletes' motivation, self-confidence and needs satisfaction fluctuations. *Journal of Sport and Exercise Psychology, 38*(*1*), 45–58. http://dx.doi.org/10.1123/jsep.2015-0210

Chang, Y., Leach, N., & Anderman, E. M. (2015). The role of perceived autonomy support in principals' affective organizational commitment and job satisfaction. *Social Psychology of Education, 18*, 315–336. doi:10.1007/s11218-014-9289-z

Cheon, S. H., & Reeve, J. (2013). Do the benefits from autonomy-supportive PE teacher training programs endure? A one-year follow-up investigation. *Psychology of Sport and Exercise, 14*, 508–518. https://doi.org/10.1016/j.psychsport.2013.02.002

Cheon, S. H., Reeve, J., Lee, Y., & Lee, J.-W. (2018). Why autonomy-supportive interventions work: Explaining the professional development of teachers' motivating styles. *Teaching and Teacher Education, 69*, 43–51. https://doi.org/10.1016/j.tate.2017.09.022

Cheon, S. H., Reeve, J., Marsh, H. W., & Song, Y.-G. (2022). Intervention-enabled autonomy-supportive teaching improves the PE classroom climate to reduce antisocial behavior: A cluster randomized control trial. *Psychology of Sport and Exercise, 60,* 102174.

Cheon, S. H., Reeve, J., & Ntoumanis, N. (2018). A needs-supportive intervention to help PE teachers enhance students' prosocial behavior and diminish antisocial behavior. *Psychology of Sport and Exercise, 35*, 74–88. https://doi.org/10.1016/j.psychsport.2017.11.010.

Cheon, S. H., Reeve, J., & Song, Y.-G. (2016). A teacher-focused intervention to decrease PE students' amotivation by increasing need satisfaction and decreasing need frustration. *Journal of Sport and Exercise Psychology, 38*, 217–235. http://dx.doi.org/10.1123/jsep.2015-0236

Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2020). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. *Teaching and Teacher Education, 90*, 103004. https://doi.org/10.1016/j.tate.2019.103004

Cheon, S. H., Reeve, J., Yu, T. H., & Jang, H.-R. (2014). The teacher benefits from giving autonomy support during physical education instruction. *Journal of Sport and Exercise Psychology, 36*, 331–346. http://dx.doi.org/10.1123/jsep.2013-0231

Chirkov, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy-support in Russian and U.S. adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology, 32*(5), 618–635. https://doi.org/10.1177/0022022101032005006

Cuevas, R., Ntoumanis, N., Fernandez-Bustos, J. G., & Bartholomew, K. J. (2018). Does teacher evaluation based on student performance predict motivation, well-being, and ill-being? *Journal of School Psychology, 68*, 154–162. https://doi.org/10.1016/j.jsp.2018.03.005.

Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13, pp. 39–80). Academic Press.

Deci, E. L., Schwartz, A. J., Sheinman, L., & Ryan, R. M. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology*, *73*(5), 642–650. https://doi.org/10.1037/0022-0663.73.5.642

De Meyer, J., Soenens, B., Aelterman, N., De Bourdeaudhuij, I., & Haerens, L. (2016). The different faces of controlling teaching: Implications of a distinction between externally and internally controlling teaching for students' motivation in physical education. *Physical Education and Sport Pedagogy*, *21*(6), 632–652. https://doi.org/10.1080/17408989.2015.1112777

Early, D. M., Berg, J. K., Alicea, S., Si, Y., Aber, J. L., Ryan, R. M., & Deci, E. L. (2016). The impact of every classroom, every day on high school student achievement: Results from a school-randomized trial. *Journal of Research on Educational Effectiveness*, *9*(1), 3–29. https://doi.org/10.1080/19345747.2015.1055638

Elliot, A. J. (2005). A conceptual history of the achievement goal construct. In A. Elliot & C. Dweck (Eds.). *Handbook of competence and motivation* (pp. 52–72). Guilford Press.

Eyal, O., & Roth, G. (2011). Principals' leadership and teachers' motivation: Self-determination theory analysis. *Journal of Educational Administration*, *49*, 256–275. https://doi.org/10.1108/09578231111129055

Fin, G, Moreno-Murcia, J. A., León, J., Baretta, E, & Junior, R. J. N. (2019). Interpersonal autonomy support style and its consequences in physical education classes. *PLoS ONE 14*(5), e0216609. https://doi.org/10.1371/journal.pone.0216609

Flunger, B., Mayer, A., & Umbach, N. (2019). Beneficial for some or for everyone? Exploring the effects of an autonomy-supportive intervention in the real-life classroom. *Journal of Educational Psychology*, *111*(2), 210–234. https://doi.org/10.1037/edu0000284

Fresko, B., & Nasser-Abu Alhija, F. (2015). Induction seminars as professional learning communities for beginning teachers. *Asia-Pacific Journal of Teacher Education*, *43*(1), 36–48. https://doi.org/10.1080/1359866X.2014.928267

Gillet, N., Lafrenière, M.-A., Huyghebaert, T., & Fouquereau, E. (2015). Autonomous and controlled reasons underlying achievement goals: Implications for the 3 × 2 achievement goal model in educational and work settings. *Motivation and Emotion*, *39*(6), 858–875. https://doi.org/10.1007/s11031-015-9505-y

Gillet, N., Vallerand, R. J., & Lafreniere, M. K. (2012). Intrinsic and extrinsic school motivation as a function of age: The mediating role of autonomy support. *Social Psychology of Education, 15*, 77–95. doi:10.1007/s11218-011-9170-2

Gottfried, A. E., Marcoulides, G. A., Gottfried, A. W., Oliver, P. H., & Guerin, D. W. (2007). Multivariate latent change modeling of developmental decline in academic intrinsic math motivation and achievement: Childhood through adolescence. *International Journal of Behavioral Development*, *31*(4), 317–327. doi:10.1177/0165025407077752

Grolnick, W. S., & Pomerantz, E. M. (2009). Issues and challenges in studying parental control: Toward a new conceptualization. *Child Development Perspectives*, *3*(3), 165–170. https://doi.org/10.1111/j.1750-8606.2009.00099.x

Grolnick, W. S., Raftery-Helmer, J. N., Marbell, K. N., Flamm, E. S., Cardemil, E. V., & Sanchez, M. (2014). Parental provision of structure: Implementation and correlates in three domains. *Merrill-Palmer Quarterly*, *60*(3), 355–384.

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, *52*(5), 890–898. https://doi.org/10.1037/0022-3514.52.5.890

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology, 81*, 143–154. https://doi.org/10.1037/0022-0663.81.2.143

Hayamizu, T. (1997). Between intrinsic and extrinsic motivation: Examination of reasons for academic study based on the theory of internalization. *Japanese Psychological Research*, *39*(2), 98–108.

Herrera, D., Matos, L., Gargurevich, R., Lira, B., & Valenzuela, R. (2021). Context matters: Teaching styles and basic psychological needs predicting flourishing and perfectionism in university music students. *Frontiers in Psychology*, *12*, 623312. doi:10.3389/fpsyg.2021.623312

Hout, M., & Elliott, S. W. (2011). *Incentives and test-based accountability in education*. National Academy Press.

Howard, J. L., Gagné, M., & Bureau, J. S. (2017). Testing a continuum structure of self-determined motivation: A meta-analysis. *Psychological Bulletin*, *143*(12), 1346–1377.

Jang, H. (2008). Supporting students' motivation, engagement, and learning during an uninteresting activity. *Journal of Educational Psychology*, *100*, 798–811. doi:10.1037/a0012841

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure, but autonomy support and structure. *Journal of Educational Psychology*, *102*(3), 588–600. doi:10.1037/a0019682

Jang, H., Reeve, J., & Halusic, M. (2016). A new autonomy-supportive way of teaching that increases conceptual learning: Teaching in students' preferred ways. *Journal of Experimental Education*, *84*(4), 686–701. https://doi.org/10.1080/00220973.2015.1083522

Jang, H., Reeve, J., Ryan, R. M., & Kim, A. (2009). Can self-determination theory explain what underlies the productive, satisfying learning experiences of collectivistically-oriented Korean students? *Journal of Educational Psychology*, *101*(3), 644–661. https://doi.org/10.1037/a0014241

Kaplan, H., & Assor, A. (2012). Enhancing autonomy-supportive I-Thou dialogue in schools: Conceptualization and socio-emotional effects of an intervention program. *Social Psychology of Education*, *15*(*2*), 251–269. doi:10.1007/s11218-012-9178-2

Kaplan, H., Bar-Tov, I., Glassner, A., & Back, S. (2021). Promoting agentic engagement and heutagogy in Tomer Elementary School in Beer Sheva, Israel. In S. Hase & L. M. Blaschke (Eds.), *Unleashing the power of learner agency* (pp. 112-123). EdTech Books. https://edtechbooks.org/up

Kaplan, H., Linker Govrin, D., & Mindlin, M. (2021). A learning community of beginning teachers: A systemic intervention based on self-determination theory to promote autonomous proactive teachers. *Creative Education, 12*, 2657–2686. https://doi.org/10.4236/ce.2021.1211198

Katz, I., & Assor, A. (2007). When choice motivates and when it does not. *Educational Psychology Review*, *19*(4), 429–442.

Kayalar, F. (2016). Teachers' views over the workout strategies for helping students motivate themselves in the classroom. *Universal Journal of Educational Research*, *4*(4), 868–877. https://doi.org/10.13189/ujer.2016.040424

Klapp, A. (2015). Does grading affect educational attainment? A longitudinal study. *Assessment in Education: Principles, Policy and Practice, 22*(3), 302–323. https://doi.org/10.1080/0969594X.2014.988121

Klassen, R. M., Perry, N. E., & Frenzel, A. C. (2012). Teachers' relatedness with students: An underemphasized component of teachers' basic psychological needs. *Journal of Educational Psychology*, *104*(1), 150–165. https://doi.org/10.1037/a0026253

Korentz, D. (2017). *The testing charade: Pretending to make schools better*. University of Chicago Press.

Krijgsman, J., Vansteenkiste, M., Tartwijk, Van, Maes, J., Borghouts, L., Cardon, G., Mainhard, T., & Haerens, L. (2017). Performance grading and motivational functioning in physical education: A self-determination theory perspective. *Learning and Individual Differences, 55*, 210–211. https://doi.org/10.1016/j.lindif.2017.03.017

Ladd, H. F. (2010). Education inspectorate systems in New Zealand and the Netherlands. *Education Finance and Policy*, *5*(3), 378–392.

Lazowski, R. A., & Hulleman, C. S. (2016). Motivation interventions in education: A meta- analytic review. *Review of Educational Research*, *86*(2), 602–640. doi:10.3102/0034654315617832

Lefstein, A., Vedder-Weiss, D. & Segal, A. (2020). Relocating research on teacher learning: Toward pedagogically productive talk. *Educational Researcher*, *49*(5), 360–368. https://doi.org/10.3102/0013189X20922998

León, J., Núñez, J. L., & Liew, J. (2015). Self-determination and STEM education: Effects of autonomy, motivation, and self-regulated learning on high school math achievement. *Learning and Individual Differences, 43*, 156–163. https://doi.org/10.1016/j.lindif.2015.08.017.

Liu, J., Bartholomew, K., & Chung, P. K. (2017). Perceptions of teachers' interpersonal styles and well-being and ill-being in secondary school physical education students: The role of need satisfaction and need frustration. *School Mental Health*, *9*(4), 360–371. https://doi.org/10.1007/s12310-017-9223-6

Liu, L. B., Huan, S., & Miao, P. (2018). Navigating individual and collective notions of teacher wellbeing as a complex phenomenon shaped by national context. *Compare: A Journal of Comparative and International Education*, *48*(1), 128–146. https://doi.org/10.1080/03057925.2017.1283979

Liu, W. C. (2022). *Singapore's approach to developing teachers*. Routledge.

Lonsdale, C., Rosenkranz, R. R., Sanders, T., Peralta, L. R., Bennie, A., Jackson, B., Taylor, I. M., & Lubans, D. R. (2013). A cluster randomized control trial of strategies to increase adolescents' physical activity and

motivation in physical education: Results of the Motivating Active Learning in Physical Education (MALP) trial. *Preventive Medicine, 57*, 696–702. https://doi.org/10.1016/j.ypmed.2013.09.003

Manninen, M., Deng, Y., Hwang, Y., Waller, S., & Yli-Piipari, S. (2020). Psychological need-supportive instruction improves novel skill performance, intrinsic motivation, and enjoyment: A cluster-randomized trial. *International Journal of Sport and Exercise Psychology*. Advance online publication. https://doi.org/10.1080/1612197X.2020.1826999

Matos, L., Reeve, J., Herrera, D., & Claux, M. (2018). Students' agentic engagement predicts longitudinal increases in perceived autonomy-supportive teaching: The squeaky wheel gets the grease. *Journal of Experimental Education*, 86(4), 592–609. https://doi.org/10.1080/00220973.2018.1448746

Maxwell, A., & Riley, P. (2017). Emotional demands, emotional labour and occupational outcomes in school principals: Modelling the relationships. *Educational Management Administration and Leadership*, 45(3), 484–502. https://doi.org/10.1177/1741143215607878

Moller, A. C., Deci, E. L., & Ryan, R. M. (2006). Choice and ego-depletion: The moderating role of autonomy. *Personality and Social Psychology Bulletin*, 32(8), 1024–1036. https://doi.org/10.1177/0146167206288008

Murayama, K., Matusumoto, M., Izuma, K., Sugiura, A., Ryan, R. M., Deci, E. L., & Matsumoto, K. (2015). How self-determined choice facilitates performance: A key role of the metromedial prefrontal cortex. *Cerebral Cortex*, 25(5), 1241–1251. https://doi.org/10.1093/cercor/bht317

Nichols, S. L., & Berliner, D. C. (2007). *Collateral damage: How high-stakes testing corrupts America's schools*. Harvard Education Press.

Nie, Y., Chua, B. L., Yeung, A. S., Ryan, R. M., & Chan, W. Y. (2015). The importance of autonomy support and the mediating role of work motivation for well-being: Self- determination theory in a Chinese work organization. *International Journal of Psychology*, 50(4), 245–255. https://doi.org/10.1002/ijop.12110

Niemiec, C. P., & Muñoz, A. (2019). A need-supportive intervention delivered to English language teachers in Colombia: A pilot investigation based on self-determination theory. *Psychology, 10*, 1025–1042. https://doi.org/10.4236/psych.2019.107067

Núñez, J. L., & León, J. (2019). Determinants of classroom engagement: A prospective test based on self-determination theory. *Teachers and Teaching*, 25(2), 147–159. https://doi.org/10.1080/13540602.2018.1542297

Oga-Baldwin, W. L. Q., Nakata, Y., Parker, P. D., & Ryan, R. M. (2017). Motivating young language learners: A longitudinal model of self-determined motivation in elementary school foreign language classes. *Contemporary Educational Psychology, 49*, 140–150. http://dx.doi.org/10.1016/j.cedpsych.2017.01.010

Owen, S. (2016). Professional learning communities: Building skills, reinvigorating the passion, and nurturing teacher wellbeing and "flourishing" within significantly innovative schooling contexts. *Educational Review*, 68(4), 403–419. https://doi.org/10.1080/00131911.2015.1119101

Parker, P. D., Martin, A. J., Colmar, S., & Liem, G. A. (2012). Teachers' workplace wellbeing: Exploring a process model of workplace wellbeing. *Teaching and Teacher Education, 28*(4), 503–513. https://doi.org/10.1016/j.tate.2012.01.001

Patall, E. A. (2013). Constructing motivation through choice, interest, and interestingness. *Journal of Educational Psychology*, 105(2), 522–534. doi:10.1037/a0030307

Patall, E. A., Cooper, H., & Robinson, J. C. (2008). The effects of choice on intrinsic motivation and related outcomes: A meta-analysis of research findings. *Psychological Bulletin*, 134(2), 270–300. doi:10.1037/0033-2909.134.2.270

Patall, E. A., Pituch, K. A., Steingut, R. R., Vasquez, A. C., Yates, N., & Kennedy, A. A. U. (2019). Agency and high school science students' motivation, engagement, and classroom experiences. *Journal of Applied Developmental Psychology*, 62(1), 77–92. https://doi.org/10.1016/j.appdev.2019.01.004

Patall, E. A., Steingut, R. R., Vasquez, A. C., Trimble, S. S., Pituch, K. A., & Freeman, J. L. (2018). Daily autonomy supporting or thwarting and students' motivation and engagement in the high school science classroom. *Journal of Educational Psychology*, 110(2), 269–288. https://doi.org/10.1037/edu0000214

Patall, E. A., Vasquez, A. C., Steingut, R. R., Trimble, S. S., & Pituch, K. A. (2016). Daily interest, engagement, and autonomy support in the high school science classroom. *Contemporary Educational Psychology, 46*, 180–194. http://dx.doi.org/10.1016/j.cedpsych.2016.06.002

Patall, E. A., & Zambrano, J. (2019). Facilitating student outcomes by supporting autonomy: Implications for practice and policy. *Policy Insights from the Behavioral and Brain Sciences, 6*(2), 115–122. https://doi.org/10.1177/2372732219862572

Patall, E. A., Zambrano, J., Kennedy, A. A., Yates, N., & Vallín, J. A. (2021). Promoting an agentic orientation: An intervention in university psychology and physical science courses. *Journal of Educational Psychology*. Advance online publication. https://doi.org/10.1037/edu0000614

Pelletier, L., Seguin-Levesque, C., & Legault, L. (2002). Pressure from above and pressure from below as determinants of teachers' motivation and teaching behaviors. *Journal of Educational Psychology, 94*, 186–196. doi:10.1037//0022-0663.94.1.186

Pelletier, L. G., & Vallerand, R. J. (1996). Supervisors' beliefs and subordinates' intrinsic motivation: A behavioral confirmation analysis. *Journal of Personality and Social Psychology*, *71*(2), 331–340. https://doi.org/10.1037/0022-3514.71.2.331

Pulfrey, C., Buchs, C., & Butera, F. (2011). Why grades engender performance-avoidance goals: The mediating role of autonomous motivation. *Journal of Educational Psychology*, *103*(3), 683–700. doi:10.1037/a0023911

Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist, 44*, 159–178. https://doi.org/10.1080/00461520903028990

Reeve, J. (2013). How students create motivationally supportive learning environments for themselves: The concept of agentic engagement. *Journal of Educational Psychology*, *105*, 579–595. doi:10.1037/a0032690

Reeve, J., Bolt, E., & Cai, Y. (1999). Autonomy-supportive teachers: How they teach and motivate students. *Journal of Educational Psychology, 91*, 537–548.

Reeve, J., & Cheon, S. H. (2021). Autonomy-supportive teaching: Its malleability, benefits, and potential to improve educational practice. *Educational Psychologist*, *56*(1), 54–77. https://doi.org/10.1080/00461520.2020.1862657

Reeve, J., Cheon, S. H., & Yu, T. H. (2020). An autonomy-supportive intervention to develop students' resilience by boosting agentic engagement. *International Journal of Behavioral Development*, *44*(4), 325–338. doi:10.1177/0165025420911103

Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology*, *98*, 209–218. doi:10.1037/0022-0663.98.1.209

Reeve, J., Jang, H., Carrell, D., Jeon, S., & Barch, J. (2004). Enhancing high school students' engagement by increasing their teachers' autonomy support. *Motivation and Emotion, 28*, 147–169.

Reeve, J., Jang, H., Hardre, P., & Omura, M. (2002). Providing a rationale in an autonomy-supportive way as a motivational strategy to motivate others during an uninteresting activity. *Motivation and Emotion, 26*, 183–207.

Reeve, J., Jang, H.-R., Shin, S. Ahn, J. S., Matos, L., & Gargurevich, R. (2021). When students show some initiative: Two experiments on the benefits of greater agentic engagement. *Learning and Instruction, 80,* 101564. https://doi.org/10.1016/j.learninstruc.2021.101564

Reeve, J., & Lee, W. (2014). Students' classroom engagement produces longitudinal changes in classroom motivation. *Journal of Educational Psychology*, *106*(2), 527–540. doi:10.1037/a0034934

Reeve, J., Ryan, R. M., Cheon, S. H., Matos, L., & Kaplan, H. (2022). *Supporting students' motivation: Strategies for success*. Routledge.

Reeve, J., Ryan, R. M., & Deci, E. L. (2018). Sociocultural influences on student motivation as viewed through the lens of self-determination theory. In G. A. D. Liem & D. M. McInerney (Eds.), *Big theories revisited 2* (pp. 31–60). IAP.

Reeve, J., & Tseng, C.-M. (2011). Cortisol reactivity to a teacher's motivating style: The biology of being controlled versus supporting autonomy. *Motivation and Emotion*, *35*(1), 63–74. https://doi.org/10.1007/s11031-011-9204-2

Roth, G., Kanat-Maymon, Y., & Bibi, U. (2010). Prevention of school bullying: The important role of autonomy-supportive teaching and internalization of prosocial values. *British Journal of Educational Psychology*, *81*(4), 654–666. doi:10.1348/2044-8279.002003

Ryan, R. M., & Brown, K. W. (2005). Legislating competence: The motivational impact of high stakes testing as an educational reform. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence* (pp. 354–374). Guilford Press.

Ryan, R. M., & Deci, E. L. (2013). Toward a social psychology of assimilation: Self-determination theory in cognitive development and education. In B. W. Sokol, F. M. E. Grouzet, U. Muller (Eds.), *Self-regulation and autonomy: Social and developmental dimensions of human conduct* (pp. 191–207). Cambridge University Press.

Ryan, R. M. & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology, 61*, 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Ryan, R. M., & La Guardia, J. G. (1999). Achievement motivation within a pressured society: Intrinsic and extrinsic motivations to learn and the politics of school reform. In T. Urdan (Ed.), *Advances in motivation and achievement: Vol. 11* (pp. 45–85). JAI.

Savard, A., Joussemet, M., Pelletier, L. G., & Mageau, G. A. (2013). The benefits of autonomy support for adolescents with severe emotional and behavioral problems. *Motivation and Emotion, 37*, 688–700. https://doi.org/10.1007/s11031-013-9351-8

Scherrer, V., & Preckel, F. (2019). Development of motivational variables and self-esteem during the school career: A meta-analysis of longitudinal studies. *Review of Educational Research*, *89*(2), 211–258. doi:10.3102/0034654318819127

Schutte, N. S., & Malouff, J. M. (2019). Increasing curiosity through autonomy of choice. *Motivation and Emotion*, *43*(3), 563–570. https://doi.org/10.1007/s11031-019-09758-w

Sheldon, K. M., Abad, N., & Omile, J. (2009). Testing self-determination theory via Nigerian and Indian adolescents. *International Journal of Behavioral Development*, *33*, 451–459. doi:10.1177/0165025409340095

Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B., & Dochy, F. (2009). The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology*, *79*(1), 57–68. https://doi.org/10.1348/000709908X304398

Soenens, B., Sierens, E., Vansteenkiste, M., Dochy, F., & Goossens, L. (2012). Psychologically controlling teaching: Examining outcomes, antecedents, and mediators. *Journal of Educational Psychology*, *104*(1), 108–120.

Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review*, *30*(1), 74–99. doi:10.1016/j.dr.2009.11.001

Soenens, B., Vansteenkiste, M., & Van Petegem, S. (2015). Let us not throw out the baby with the bathwater: Applying the principle of universalism without uniformity to autonomy-supportive and controlling parenting. *Child Development Perspectives*, *9*(1), 44–49. https://doi.org/10.1111/cdep.12103

Steingut, R., Patall, E. A., & Trimble, S. (2017). The effect of rationale on motivation and performance outcomes: A meta-analysis. *Motivation Science, 3*, 19–50. http://dx.doi.org/10.1037/mot0000039

Stichler, J. F. (2018). Creating a culture of inquiry in your organization. *HERD: Health Environments Research & Design Journal*, *11*(4), 7–13. https://doi.org/10.1177/1937586718802671

Su, Y., & Reeve, J. (2011). A meta-analysis of the effectiveness of intervention programs designed to support autonomy. *Educational Psychology Review, 23*, 159–188. https://doi.org/10.1007/s10648-010-9142-7

Sun, J., Dunne, M. P., Hou, W.-Y., & Xu, A.-Q. (2013). Educational stress among Chinese adolescents: Individual, family, school and peer influences. *Educational Review, 65*(3), 284–302. https://doi.org/10.1080/00131911.2012.659657

Taylor, G., Jungert, T., Mageau, G. A., Schattke, K., Dedic, H., Rosenfield, S., & Koestner, R. (2014). A self-determination theory approach to predicting school achievement over time: The unique role of intrinsic motivation. *Contemporary Educational Psychology, 39*, 342–358. http://dx.doi.org/10.1016/j.cedpsych.2014.08.002

Tsai, Y.-M., Kunter, M., Lüdtke, O., Trautwein, U., & Ryan, R. M. (2008). What makes lessons interesting? The role of situational and individual factors in three school subjects. *Journal of Educational Psychology*, *100*(2), 460–472. https://doi.org/10.1037/0022-0663.100.2.460

Vansteenkiste, M., Aelterman, N., De Muynck, G.-J., Haerens, L., Patall, E., & Reeve, J. (2018). Fostering personal meaning and self-relevance: A self-determination theory perspective on internalization. *Journal of Experimental Education, 86*, 30–49. https://doi.org/10.1080/00220973.2017.1381067

Vansteenkiste, M., Lens, W., Elliot, A. J., Soenens, B., & Mouratidis, A. (2014). Moving the achievement goal approach one step forward: Toward a systematic examination of the autonomous and controlled reasons underlying achievement goals. *Educational Psychologist*, *49*(3), 153–174. https://doi.org/10.1080/00461520.2014.928598

Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., Dochy, F., Mouratidis, A., Beyers, W. (2012). Identifying configurations of perceived teacher autonomy support and structure: Associations with

self-regulated learning, motivation and problem behavior. *Learning and Instruction*, *22*(6), 431–439. doi:10.1016/j.learninstruc.2012.04.002

Vansteenkiste, M., Smeets, S., Soenens, B., Lens, W., Matos, L., & Deci, E. L. (2010). Autonomous and controlled regulation of performance-approach goals: Their relations to perfectionism and educational outcomes. *Motivation and Emotion*, *34*(4), 333–353. https://doi.org/10.1007/s11031-010-9188-3

Vansteenkiste, M., Zhou, M., Lens, W., & Soenens, B. (2005). Experiences of autonomy and control among Chinese learners: Vitalizing or immobilizing? *Journal of Educational Psychology, 97*, 468–483. https://doi.org/10.1037/0022-0663.97.3.468

Waterschoot, J., Vansteenkiste, M., & Soenens, B. (2019). The effects of experimentally induced choice on elementary school children's intrinsic motivation: The moderating role of indecisiveness and teacher-student relatedness. *Journal of Experimental Child Psychology, 188*, 104692. https://doi.org/10.1016/j.jecp.2019.104692

Yamauchi, H., & Tanaka, K. (1998). Relations of autonomy, self-referenced beliefs, and self- regulated learning among Japanese children. *Psychological Reports*, *82*(3), 803–816.

Yu, S., Chen, B., Levesque-Bristol, C., & Vansteenkiste, M. (2018). Chinese education examined via the lens of self-determination. *Educational Psychology Review*, *30*(1), 177–214. https://doi.org/10.1007/s10648-016-9395-x

Yu, C., Li, X., Wang, S., & Zhang, W. (2016). Teacher autonomy support reduces adolescent anxiety and depression: An 18-month longitudinal study. *Journal of Adolescence, 49*, 115–123. http://dx.doi.org/10.1016/j.adolescence.2016.03.001

Zheng, F. (2022) Fostering students' well-being: The mediating role of teacher interpersonal behavior and student-teacher relationships. *Frontiers in Psychology*, *12*, 796728. https://doi.org/10.3389/fpsyg.2021.796728

# Self-Determination Theory and Language Learning

Kimberly A. Noels

## Abstract

This chapter reviews the burgeoning research conducted from a self-determination theory (SDT) perspective concerning people's motivation for learning new languages. To guide the review, a conceptual model of motivational processes, grounded in SDT principles, is presented. The model highlights the central role of basic psychological needs in motivational dynamics, including behavioral regulation (or orientations) and engagement, and ultimately the diverse outcomes that follow from language learning. These resultant resources include not only linguistic proficiency but also sociocultural (e.g., relationships with members of the target ethnolinguistic community, a broader cultural perspective) and psychological (e.g., well-being, personal growth) capital. The model emphasizes that language learning takes place across diverse sociopolitical and sociocultural milieu and that, depending on the context, teachers, family members, members of the target-language community, and many others could support (or not) learners' motivation. The chapter ends with directions for future interdisciplinary research on language learning and teaching from a SDT perspective.

**Key Words:** language learning, self-determination theory, motivation, multilingualism, context, language teaching

Humans live in a multilingual world. A simple division of the number of languages believed to currently exist (about 7,000; Ethnologue, 2021) by the number of countries (about 200) makes it clear that people have ample opportunity to encounter diverse languages. Of course, languages are not evenly distributed across all parts of the globe—some regions have greater ethnolinguistic diversity than others—but the point remains that in our daily lives we can regularly interact with those who speak languages other than our own. It is fortunate, then, that humans have the life-long capacity to learn and use new languages to facilitate their social interactions with speakers of other languages.

Despite the ubiquity of language learning (LL) opportunities, LL is far from a straightforward or uniform experience (Ushioda & Dörnyei, 2017). Not only do the kinds of languages that people encounter vary widely, but different languages can enter people's lives at different points and play different roles in their lives. Often new languages are learned through informal interactions with others in the community, but for centuries people

have also turned to formal instruction to more efficiently develop their linguistic capacity (Kelly, 1969; Germain, 1993; Curtis, 2017). The fact that LL takes place across diverse settings at different points in the lifespan brings up the question: Which factors affect the level of proficiency attained in nonnative languages? Scholars point to the influence of the learning context, which varies in its potential for exposure to and interaction with speakers of the target language (Montrul, 2019) and also in the necessity for certain levels and certain kinds of competency in the language (Cook, 1999; Dewaele, 2018). Also important is the learner's own cognitive propensity, or language aptitude, which may be further constrained to some extent by maturation, at least after adulthood (Hartshorne, Tenenbaum, & Pinker, 2018). For those with access to formal instruction, instructors' choice of pedagogical approach can also affect learners' rate of progress (Cook, 2016).

While recognizing the importance of these situational and personal factors, this chapter focuses on the important role of motivation in LL. More particularly, I will review self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2020) as a comprehensive, generative and useful theoretical lens through which to understand why people vary in their reasons for learning languages, and the implications of these reasons for the intensity with which they engage in LL, and ultimately for their development of linguistic and nonlinguistic capacities. After a brief overview of the history of motivational research in LL and the place of SDT within that body of knowledge, I present a model of motivation to guide the review of this growing field of research and to point to new directions for investigation and application.

## A Brief History of the Social Psychology of LL Motivation

The early seminal research on LL motivation is generally attributed to Robert C. Gardner and Wallace E. Lambert, two social psychologists at McGill University, a primarily Anglophone university in the primarily Francophone province of Québec. Their first studies (Gardner & Lambert, 1959, 1972) were conducted during the Quiet Revolution, a period in which the majority Francophone population in Quebec asserted French language and cultural rights over the province's social, political, and economic institutions, which had been largely dominated by Anglophone Canadians. Anglophones responded by either leaving the province or adapting to the new French prominence by learning the language themselves and ensuring that their children would become fluently bilingual, in part by developing French immersion educational programs. In this period of intergroup tension and transition, Gardner and Lambert claimed that the sociopolitical milieu was as important for understanding LL motivation as were the educational dynamics within the language classroom. Gardner (1985, 2010) developed the *socioeducational model* of LL to outline how aspects of the social milieu, particularly beliefs regarding ethnolinguistic group relations, influenced learners' attitudes and motivation, which in turn affected not only the linguistic outcomes of the learning process but also nonlinguistic outcomes, such as friendly relations with the target-language community. He emphasized that these motivational

dynamics take place in both formal (classroom) and informal (community) learning contexts. Many of the motivational models that followed likewise addressed the sociopolitical relations between groups and the processes of adaptation and acculturation that affect ethnolinguistic groups (e.g., Clément, 1980; Giles & Byrne, 1982; Schumann, 1986).

This attention to the learners' orientation toward the target-language community should in no way imply that the socioeducational model overlooked motivation related to formal instruction in the language classroom. Gardner posited that teachers (and parents) were important socializing agents with regard to learners' attitudes toward and motivation for LL. More specifically, he maintained that learners' attitudes toward the teacher and the learning situation, in conjunction with their orientation toward integrating and interacting with members of the target-language community, predicted the intensity with which students engaged in LL. This complex of attitudes, orientations, and intensity defined motivation in this framework, and the dynamics of this integrative motive predicted the kind and level of linguistic and nonlinguistic outcomes that ensued.

This model informed research on LL motivation across diverse societal contexts, and as with any theoretical formulation, limitations were noted and modifications proposed to account for unexpected findings. One important constraint, noted particularly by those who researched and taught English as a foreign language (EFL), was that the integrative orientation might be less relevant to understanding learners' motivation when social interaction in the target language was primarily restricted to the foreign-language classroom, that is, with classmates and often with instructors who were not native speakers of the language. By the turn of the millennium, several alternative theoretical frameworks were proposed that tried to circumvent this limitation by reframing motivational processes in terms of self and/or identity dynamics (e.g., Dörnyei & Ushioda, 2009; Norton, 2000, 2013).

One such framework was SDT (Deci & Ryan, 1985). Although the relevance of intrinsic and extrinsic motivation for LL had received some passing attention earlier on (e.g., Gardner, 1985), programmatic research examining LL through the lens of SDT began at the end of the 1990s. Drawing inspiration from the Échelle de la motivation en éducation (Vallerand et al., 1989), Noels et al. (2000) developed an instrument to assess SDT's forms of behavioral regulation, which were recast as "orientations" following Gardner's (1985) conceptualization (see also Clément & Kruidenier, 1983), and published several studies of LL motivation in English and French Canadian university students (Noels, Clement, & Pelletier, 1999, 2001; see Noels, 2001b for review). From this point forward, empirically grounded research using an SDT lens blossomed, with particularly strong growth in the 2010s.

Despite this conceptual shift toward self-related processes, the socioeducational model leaves an important legacy for contemporary LL research, including that informed by SDT. First, the social context within which motivational dynamics operate is not restricted to the classroom but extends outside, to the sociopolitical relations between ethnolinguistic groups, and in fact to all life domains where multiple languages are

potentially used (e.g., with families, the workplace). Second, the socioeducational model maintained that motivation is multivariate and complex, involving attitudes, orientations, intensity of engagement, and emotional aspects (e.g., anxiety). Although terminology differs across the LL motivation and SDT literatures, each recognizes qualitative (i.e., types) and quantitative (i.e., extent) facets in motivation and views them as part of an interrelated, dynamic system. Consistent with this complex conceptualization, multivariate designs predominated in the empirical literature. Unlike much lab-based psychological research in the 1980s that reduced the examination of motivation to a few select variables, LL motivation's empirical foundation depended very much on field research (generally with students enrolled in language courses), survey methods, and advanced multivariate analysis that integrated many variables in relatively complex structural models. Although there is now a greater diversity in methods utilized, this understanding of motivation as a complex process requiring a suitably sophisticated research approach remains.

## Modeling the Motivational Process in Language Learning

To describe the complexity of LL motivation within an SDT lens, we gleaned aspects of Gardner's (1985, 2010) socioeducational model, as well as the *self-system motivational model of development* (Skinner et al., 2008), to create a socioecological model of self-determination in LL (Noels, 2001b, 2009; Noels et al., 2016; Noels, Lou et al., 2019). As indicated in Figure 30.1, the self-dynamics outlined by SDT that are related to need
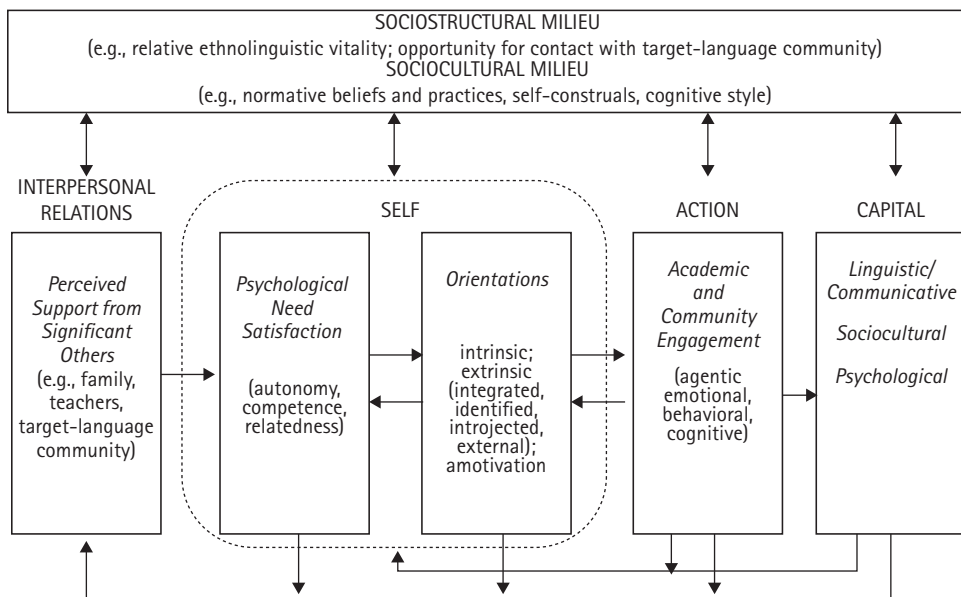


**Figure 30.1** Schematic illustration of the relations between context, interpersonal relations, self-dynamics, action, and capital in language learning motivation

*Source*: Adapted from Noels, Lou et al., 2019

satisfaction and motivational orientations anchor the model. To the extent that learners' needs for autonomy, competence, and relatedness are satisfied, they are likely to sustain any intrinsic motivation they might have and/or adopt a more internalized orientation toward learning and using the new language. To the extent that these psychological dynamics promote an autonomous orientation, learners are likely to actively engage in learning and using the language within the classroom and/or in the community.

Engagement has both quantitative and qualitative facets (Roth, 2019). Not only is intense, energetic, persistent effort necessary to meet the long-term challenge of acquiring a new language, so too is proactive attitude. Taking up Reeve's (2013) notion of agentic engagement, we maintain that language development is enhanced when learners take the initiative to seek out the information and opportunities they need to develop their capacities, whether from material sources such as textbooks, online tools, and/or language labs, or from social sources, such as their teacher or other people in their social network. Moreover, in social interactions this proactive engagement is likely to precipitate a reciprocal process of motivational support, in which what the learner says and does transforms how the interlocutor responds, and in turn, the interlocutor's response transforms the learner (Reeve & Shin, 2020).

The more intensively and persistently one engages in using and/or studying the new language, the more likely one is to develop competency in the language. Linguistic proficiency is often framed as a (usually desirable) outcome of LL, but a richer conceptualization is one that frames language/communicative competence as a form of social capital (Bourdieu, 1986; Darvin & Norton, 2015) or enduring capacities and resources that learners can draw upon to fulfill needs, achieve goals, self-regulate, and develop new learning opportunities (Luthans et al., 2007; Noels, Lou et al., 2019). In this view language/communicative competence is better construed not as an endpoint but as a resource which can reciprocally influence how significant others support the learner and how the self-dynamics, encompassing basic psychological needs, and the orientations (i.e., forms of behavioral regulation), are optimized. Not only can a self-determined and agentic learner acquire linguistic/communicative capital; they can also harness sociocultural capital, such as improved relations with members of other ethnolinguistic groups and the development of new identities, as well as psychological capital, in terms of personal growth, thriving, and well-being.

The motivational system and the capital it generates are ensconced within particular social contexts. We differentiate three aspects of social context: the interpersonal relations with significant others in the learner's social network; the sociostructural milieu, framed in terms of sociopolitical relations between groups; and the sociocultural milieu within which these social and psychological dynamics take place. The interpersonal context pertains to those people with whom the learner directly interacts. For learners enrolled in language courses, the teacher is generally the most relevant person to support (or not) their LL, but others, including the family, classmates, and friends, can also potentially play

a role (Noels, Adrian-Taylor et al., 2019). Learners of heritage languages, however, might engage more regularly with and derive support from their family members than their instructors (assuming they participate in language courses). In communities where the learner can directly interact with members of the target-language community, the target-language speakers can also be part of the social networks that comprise the interpersonal context.

Interpersonal interactions, particularly those with members of the target-language group, are colored by the sociostructural system within which they are embedded. For some, learning another language is a seemingly innocuous decision, perhaps just another required course, although one that may yield multiple benefits (Fox, Corretjer, & Webb, 2019). However, following Lambert's (1981) and Clément's (1980) observations regarding additive and subtractive bilingualism, the experience of LL can be quite fraught, depending on the relative stratification (or "ethnolinguistic vitality") and quality of relations between ethnolinguistic groups. The importance of intergroup relations, highlighted in Gardner and Lambert's (1959, 1972) notion of the integrative orientation, is well articulated in Landry, Allard, and Deveau's (2007, 2010) *cultural autonomy model*, which was designed to explain the maintenance and revitalization of French in minority-language contexts in Canada. This model frames the sociostructural dynamics between ethnolinguistic groups as a form of social determination that is counterbalanced by the minority group member's level of self-determination. More specifically, although ideological and institutional structures exert normative pressures determining the appropriate use of different languages in community life, personal autonomy to counteract these social forces can be derived from those in the social network, particularly the family and school, who support the language user's psychological needs for autonomy, competence, and relatedness and thereby support the use of minority languages.

The sociocultural milieu draws attention to the ways in which cultural systems, including normative beliefs and values, infuse motivational dynamics. "Culture" refers to the intersubjective systems of meaning that are co-constructed by interlocutors and that become the conventions and mores that are distributed throughout social networks (Noels et al., 2014; Noels, 2014). Some key psychological constructs have been posited to be particularly relevant for psychological analyses of culture because these deep-seated psychological beliefs and processes frame the way people think, feel, and behave. For instance, because the self is posited to be the central organizing mechanism of the cognitive system (Markus, 1977), and cultural groups differ in how the self is construed (particularly whether the self is conceptualized as independent of or interdependently related to others; Markus & Kitayama, 1991), it has been argued that motivational dynamics can likewise differ across cultures. This question of cross-cultural generalizability would seem to be particularly important in LL, since learning a new language typically involves engagement in other cultural systems.

Considerable research has investigated the cross-cultural generalizability of SDT. Although there are sometimes mean-level differences across cultural groups in the level of autonomy experienced (e.g., Chirkov & Ryan, 2001; Reeve et al., 2018), the relation between autonomy, competence, and relatedness and academic achievement appears to be culturally universal (Chirkov, 2009; Nalipay, King, & Cai, 2020). There is, however, little culturally comparative research in the LL domain. In their comparative research examining Littlewood's (1999) distinction between proactive and reactive autonomy, Noels and colleagues (2014) hypothesized that Chinese Canadian language learners would differ from their non–Chinese Canadian counterparts by preferring reactive autonomy over proactive autonomy. Contrary to expectation, it was found that both groups preferred reactive autonomy, in which the teacher sets the course for learning and students follow through. The authors point out that this finding is consistent with the observation that autonomy support involves not only providing choices to students so that they can act according to their own goals but also providing informative instruction on their learning progress to develop their sense of competence and establishing a secure involved connection between teacher and student to develop their sense of relatedness. There is certainly more room for cross-cultural and culturally informed research on SDT and LL.

## Survey of Research

As of 2020, there have been over 50 conceptual discussions of intrinsic and extrinsic motivation, more recently from an SDT perspective, as well as approximately 300 relevant empirical journal articles and a similar number of dissertations, with at least half appearing since 2017. A review of the studies published in peer-reviewed journals shows that half of these studies (56%) utilize questionnaire surveys with closed-ended questions and cross-sectional designs, yielding quantitative data (Noels, 2021), which is typically analyzed through descriptive statistics and more or less complex correlational techniques (e.g., bivariate correlations, factor analysis, multiple regression, structural equation modeling and related techniques; see Noels, Vargas Lascano, & Saumure, 2019). Consistent with trends in the broader LL field, qualitative (19%) and mixed methods (26%) are almost as prevalent as quantitative methods. Perhaps reflecting LL researchers' interest in complex dynamic systems theory and developmental science (Ortega & Han, 2017), there is an increasing number of longitudinal studies. There remains, however, a lack of experimental or intervention studies, which would provide more definitive conclusions about hypothesized causal relations and point to possible interventions for enhancing motivation.

As mentioned earlier, contemporary LL research has primarily focused on the dynamics within the classroom, and this trend is evident in SDT research as well. Research participants tend to be adults enrolled in postsecondary institutions (65%) who are learning English (79%) as a foreign language (81%). Although the research is largely limited to adult EFL learners, the national contexts in which SDT research is conducted is strikingly

diverse: the largest body of research comes from Japan (20%), followed by China (10%), the United States (10.5%), and Canada (7.7%); the remaining ~50 nations include New Zealand, Turkey, Malaysia, and Ecuador. This widespread interest in SDT underscores the potential that the LL domain offers for comparative, cross-cultural research examining the universality and cultural specificity of aspects of SDT, provided that instruments with satisfactory psychometric properties across cultures can be developed and sufficiently comparable samples can be obtained (e.g., similar age, target language, pedagogical approach).

Extant SDT and LL research can be categorized into four broad, but not necessarily exclusive, categories (cf. Noels, Lou et al., 2019): (1) psychometric examinations of self-report measurement instruments; (2) analyses of the association between basic psychological needs and orientations; (3) analyses of the relations between orientations, engagement, and outcomes/capital; and (4) investigations of autonomy support perceived in the social context, particularly at the interpersonal level. With regard to measurement, many scholars adapted instruments developed by SDT researchers for other domains (especially education), but others have developed instruments specific to the LL context, including the aforementioned Language Learning Orientation Scale (LLOS; Noels et al., 2000) and instruments adapted for younger learners (e.g., Ardasheva, Tong, & Tretter, 2012). Recently, Alamer (2021b) demonstrated the construct validity of an L2 orientation instrument using a bifactorial exploratory structural equation modeling approach to differentiate the subtypes of intrinsic and extrinsic motivation as well as controlled and autonomous motivation. Noels (2019) reported a similar study that confirmed the distinctiveness of the LLOS subscales, as well as their interrelations following the Guttman simplex continuum.

Examinations of the relations between basic psychological needs and orientations generally show that greater satisfaction of autonomy, relatedness, and competence is associated positively with more autonomous motivation, and negatively with amotivation (e.g., Dincer et al., 2019; Tanaka, 2013; Alamer, 2021a), although sometimes unexpected patterns do arise (e.g., Agawa & Takeuchi, 2016; Comanaru & Noels, 2009). A variety of measures have been used to assess engagement in order to examine its link with orientations (see Noels, Lou et al., 2019 for details), and quite consistently autonomous forms of regulation are associated positively with engagement, whereas amotivation is negatively correlated with engagement. Associations with controlled forms of motivation (i.e., external and introjected regulation) tend to be less consistent, sometimes yielding weakly positive or negative associations and sometimes no association at all. These low or null associations are not unexpected given that more controlled motivation is hypothesized to be a poor and/or inconsistent predictor of engagement.

The implications of motivational orientations and engagement for a wide range of linguistic and nonlinguistic outcomes/capital have been researched. Linguistic proficiency is very often assessed in terms of self-evaluations of competence, for example as an average of ratings of reading, writing, speaking, and/or aural comprehension and/or self-reports

and of course grades or scores on standardized tests. The potential for bias in self-reports of language competence is well known (MacIntyre et al., 1997; Trofimovich et al., 2016), but these self-assessments are particularly problematic in SDT research because perceived competence is hypothesized to be an antecedent to motivational orientations and engagement. Alternative indices would provide a less confounded assessment of the impact of motivation on language competence. Language assessments can be complex, requiring expertise, time, and sometimes money to conduct; thus, they may be prohibitive to many researchers. Language course grades are perhaps a more accessible assessment tool, but because they are also influenced by academically relevant variables such as test anxiety, intelligence, and educational experience, they are not straightforward assessments of language proficiency. Although few studies include relatively objective, holistic language assessments, several focus on specific areas of competence, such as writing (e.g., Tanaka, 2013; Wang & Lee, 2021), vocabulary acquisition (e.g., Tanaka, 2017; Alamer, 2021a), listening (Dong & Liu, 2020), or speaking (e.g., Ehsan et al., 2019), using assessment instruments tailored to those narrower competencies.

Examinations of nonlinguistic capital are more limited, perhaps because the preponderance of recent research has been conducted in EFL contexts, where nonacademic benefits are less of a consideration. Nonetheless, some research shows that greater autonomy is associated with a greater willingness to communicate, more frequent and higher-quality contact, and heightened identity with the target-language group (e.g., Noels, 2005; Goldberg & Noels, 2006; Comanaru & Noels, 2009). Few studies have extensively examined the relation between LL motivation and psychological well-being. Instead most research on the affective implications of autonomous motivation has focused narrowly on anxiety using the language (e.g., Alamer & Almuhim, 2021).

Even given the caveats described, with the consistent findings that more autonomous motivation is associated with greater engagement and development of linguistic and nonlinguistic forms of capital, the question becomes how the social context can best support learners' self-determination. Much of this research has focused on the interpersonal level, and particularly on the role of the language instructor; by and large the results show patterns are consistent with those found in the general education research, whereby perceived support for students' autonomy, informative feedback for building competence, and/or empathic relationships are associated with more autonomous motivation in students (Dincer et al., 2019).

But teachers are not the only people in the language learner's social network who can provide such autonomy support; family members (e.g., parents, spouse, siblings), friends, classmates, and members of the target-language community can also matter. To this point, Noels and colleagues (2019) conducted a comparative study of the motivation of and perceived support received by university-level language students, including those who were learners of modern foreign languages, those studying these same languages as heritage languages (HLs; i.e., learners of a language their parents or grandparents spoke), and those

who were international students learning English as a second language (ESL). The three groups reported equivalent levels and kinds of support from their language teacher; the HL students reported more support from family members; and the ESL learners reported more, and the HL learners reported less, informative feedback from their friends and classmates. The ESL students reported more informative feedback from members of the target-language community than did the other groups. They also reported a lack of support in terms of relatedness from the language community, particularly in the form of discrimination.

### Future Directions for Research

This review highlights the value of SDT as a comprehensive, empirically validated framework that is inspiring a growing body of research that offers conceptual and practical insights into LL and teaching. This literature is increasing at such a pace that meta-analytical studies to synthesize quantitative findings and systematic reviews to summarize qualitative studies would be very welcome additions to the literature. Much of this vast body of research has focused on forms of regulations (i.e., orientations), basic psychological needs, and the role of significant others in motivational processes, but SDT is comprised of other mini-theories that could also inform LL theory and research (McEown & Oga-Baldwin, 2019). This area of research could also move forward through greater methodological and analytical diversification, an expansion in assessment beyond self-reports, and greater consideration of motivation in informal, uninstructed LL.

LL is a long-term, developmental process; applied linguists' uptake of the complex, dynamic systems paradigm to understand LL motivation reflects this premise (Dörnyei, MacIntyre, & Henry, 2015). Methodologically, however, SDT-informed LL research has often fallen short of capturing this developmental assumption in its analytical approach. Much of the quantitative research depends on descriptive and correlational analyses of cross-sectional data, resulting in a piecemeal approach to examining the phenomenon's complexity. Multivariate modeling procedures could better illuminate the nature of relations, both direct and indirect, between multiple variables. Such multivariate analysis could further enhance understanding of LL motivation through the use of longitudinal designs, which could illuminate linear and nonlinear trajectories and causal, reciprocal, and transactional relations over time. A similar critique could be directed at qualitative research, which often is focused on learners' experiences at a single point in time. Cross-sectional snapshots, whether taken through quantitative or qualitative methods, can be informative, especially if taken at strategic time points theorized to be important in the learning process (e.g., at the beginning, middle, and end of a semester or a learning activity; arrival in a new ethnolinguistic community). To address the dynamics of motivation and language development, however, research must incorporate a temporal aspect.

The LL domain differs from SDT research in other domains in having a greater proportion of qualitative research that examines the tenets of SDT, perhaps because of the

greater prominence of interpretive and critical research in applied linguistics than in psychology (Boo, Dörnyei, & Ryan, 2015; Ushioda, 2019). Some have claimed that quantitative research is insufficient for understanding motivational trajectories and that qualitative research methods are more appropriate for understanding the complexity of motivational systems (Dörnyei, 2014; Dörnyei et al., 2015). Perhaps reflecting such claims, the statistical sophistication evident in the field in its early years seems to be, to some degree, eschewed in some contemporary scholarship. An alternative perspective is one in which researchers, perhaps working in teams, utilize a full range of methods and analytic techniques to address important questions through programmatic research. The rich insights gained from qualitative case studies would complement quantitative statistical studies that can examine linear and nonlinear trajectories and relations in larger samples.

Apart from mixed-methods research that more closely aligns with the temporal phenomenon of language development, there is a need to move beyond self-report assessments, whether obtained through quantitative rating scales or qualitative interviews. Self-reports are an essential aspect of motivation; indeed, it is difficult to imagine how a researcher could determine a person's behavioral regulation or orientation without asking that person. But motivational systems also include an action component, which is only partially assessed through self-reports. Moreover, assessments of outcomes/capital, particularly language proficiency, are often made through self-reports of course grades or self-ratings of language competence.

In addition to greater diversity in research designs and measurement approaches, there is a need to diversify the people studied. As has been noted elsewhere (Ushioda & Dörnyei, 2017), the vast majority of research conducted in the past 20 years has been focused on the language classroom, often with English as the target language, with little attention to the fact that many learners acquire new languages, often without instruction, in multilingual communities. This is not to say that classroom research is not necessary; rather a more complete understanding of the motivational dynamics involved in LL necessitates an expansion of research to all social domains and societal contexts where people are called upon to use additional languages. This shift will necessitate, in a sense, a return to some of the issues first raised by Gardner and his colleagues, including attention to intergroup relations and sociopolitical dynamics between ethnolinguistic groups. It could also draw on lines of research that concerns interpersonal relations in multilingual contexts. For instance, an SDT perspective on family language policies (Lanza & Lomeu Gomes, 2020) might enhance understanding of how multilingual and/or minority-language parents support their children's HL acquisition and maintenance. Theory and research concerning language socialization dynamics across various communities of practice (such as sports teams, workplaces, schools, and even the study-abroad homestay; Shiri, 2015) could be informed by a consideration of how these processes are affected by participants' motivational stances and how people within those communities interact in ways that do or do not support the language newcomer's basic psychological needs.

Although SDT offers important new insights to LL research, there is also much in language and communication research that can inform SDT. Given that LL research more extensively uses qualitative methods than is typically used in other areas of SDT research, LL research might provide instructive examples to help fill this gap (Ryan & Deci, 2020). For instance, autonomy support received by learners from significant others involves verbal and nonverbal communication, and the theoretical insights and methodological techniques developed by applied linguists and other language researchers to study social interaction, such as conversation, discursive and narrative analyses, might be usefully employed to examine how talk and nonverbal channels are used to communicate autonomy support and co-construct mutually supportive (or not) relationships, a trend already beginning to emerge (e.g., see Weinstein, Itzchakov & Legate, 2022; Weinstein, Vansteenkiste, & Paulmann, 2019).

Theoretically, many of the themes articulated by SDT also appear in large bodies of LL research grounded in other conceptual frameworks. For instance, the theory resonates in many ways with discussions of complex, dynamic systems (Dörnyei et al., 2015), L2 self-systems (Dörnyei & Ushioda, 2009), investment and identity (Darvin & Norton, 2015), and learner autonomy (Benson, 2007; Benson & Lamb, 2020), among others. Some have tried to highlight the parallels between approaches (e.g., McEown, Noels, & Chaffee, 2014) and some vigorous discussions have articulated similarities and differences (Lee, 2017; Lou et al., 2018). Perhaps one of the more exciting ways to move forward is by juxtaposing SDT's humanistic and organismic paradigm with theories from other paradigms, such as interpretivist and critical theory paradigms, thereby broadening and potentially synthesizing perspectives (cf. MacIntyre, Noels, & Moore, 2010).

## Implications for Language Education

Throughout this review, the reader has been reminded that LL can take place without formal instruction; nevertheless, the language classroom is often an important context in which learning takes place. There are numerous studies and discussions about the value of SDT for informing teaching practices in education generally (e.g., Reeve & Shin, 2020; Reeve et al., 2022), and certainly these are relevant to language teaching as well. More germane is a newer literature that directly considers how SDT can inform language education, including pedagogy, programming, and policy decisions.

Perhaps the aspect of pedagogy that has received the most attention is teachers' communication style, which consistently shows that students who report that their teachers provide warm, autonomy-supportive, and structured feedback also report a greater sense of autonomy, competence, relatedness (Dincer et al., 2019; Noels, 2001a; Oga-Baldwin et al., 2017), and, directly or indirectly, engagement (Jiang & Zhang, 2021). Some research indicates that, in practice, language teachers tend to promote students' motivation solely through relatedness, even though they recognize the potential benefits that fostering students' sense of autonomy and competence might yield (Muñoz & Ramirez, 2015).

Hands-on training programs can effectively augment teachers' autonomy-supportive practices. Kaur, Hashim, and Noman (2015) trained Thai teachers of English to incorporate autonomy-supportive behaviors into their teaching during a seven-week intervention program. Their results showed that this training effectively changed teachers' communication style and, in turn, improved students' interest, effort, relatedness, and integrated regulation.

To help expand teachers' autonomy-supportive practice, several compendia of useful strategies and teaching tips based on SDT principles are available (e.g., Davis & Bowles, 2018; Jones, Llacer-Arrastia, & Newbill, 2009), including discussions of autonomy-supportive advising in self-access centers (Shelton-Strong, 2020; Mynard, in press; Mynard & Shelton-Strong, in press). Some point to the usefulness of computer-assisted LL, blogs, social media, and other online activities in supporting learners' self-determination (e.g., Alamer & Al Khateeb, 2021; Akbari, Pilot, & Simons, 2015; Bailey, Almusharraf, & Hatcher, 2021). To illustrate, Alm (2009) found that, in addition to promoting language awareness and the development of linguistic skills, blog-based reflective writing increased learners' sense of autonomy. Others have proffered novel approaches to assessment that encourage students' self-determination through mediated assessments that facilitate the development of their repertoire of skills and knowledge or through menus with options for performance-based assessments (e.g., Davis & Bowles, 2018; Zoghi & Malmeer, 2013).

Nontraditional approaches to language teaching, such as content and language integrated learning programs, have been suggested to successfully motivate students in part because students' intrinsic interest and valuation of the content area extends to the language component. To wit, Baena-Extremera et al. (2018) maintain that bilingual physical education programs that integrate SDT principles into instruction support students' self-determination not only in sports but also in the use of the nonnative language through the more frequent and less formal target-language interactions between students and teachers. Similarly, González-Becerra (2019) suggests that students who take supplementary foreign-language modules (i.e., Institution Wide Language Programmes) alongside other academic, particularly STEM, specializations appear to be as motivated as students who pursue foreign-language study as their major (cf. Busse & Williams, 2010; Oakes, 2013).

Despite teachers' best efforts to be autonomy-supportive in their communication style, curriculum design, and pedagogical activities, broader systemic structures that determine language policy generally lie outside the scope of teachers' immediate influence. In some jurisdictions, language education is compulsory, and the rationale for its inclusion in the curriculum, often grounded on the cognitive benefits of bilingualism, increased career opportunities, enhanced cultural understanding, and expanded worldviews, can seem remote and not immediately relevant to students who must also juggle extramural commitments and other academic subjects, some of which might be more intrinsically or extrinsically appealing. Parrish, Zhang, and Noels (2021) found that, in compulsory foreign-language programs in the United Kingdom, autonomous motivation declined

across secondary grade levels until later years, when there was a clear difference between students who remained in compulsory programs and those who moved to schools where they could choose to learn a language or not. Although the design does not allow a clear conclusion about whether the difference is solely due to program differences, it does point to the need for more attention to how broad policy decisions indirectly affect students' self-determination.

In addition to examining how teaching styles, pedagogies, programs, and policies promote learners' self-determination, another line of language education inquiry would respond to the recent calls for psychological study of language teachers (Mercer & Koustalas, 2018) by examining how the social context relates to teachers' self-determination and teaching engagement. Following Pelletier, Séguin-Lévesque, and Legault's (2002) findings that point to the dual influence of supervisors and students on teachers' self-determination, Zhang and colleagues (2022) found a parallel pattern with language teachers. Given that many language teachers are also language learners, this domain could yield insights that are relatively unique compared to other domains.

## Conclusion

SDT-informed research on LL is growing very rapidly, with contributions from scholars and practitioners from around the world. We have been able to cover only a small number of studies in this chapter to give a sample of the issues addressed, but it seems reasonable to think, given the plethora of empirical articles, dissertations, and commentaries that have appeared over the past few years, that interest in this perspective will continue to grow. SDT has considerable potential to complement and possibly pull together diverse theoretical perspectives on LL motivation. It also offers clear principles and empirically validated strategies for supporting learners' motivation and language achievement, as well as their well-being and thriving, in the language classroom and beyond. SDT, then, provides an important perspective to gain insight into how humans, as agentic language learners, can acquire the linguistic capacities to thrive and achieve their best lives. In our complex and ever-changing multilingual world, this understanding is an imperative.[1]

## References

Agawa, T., & Takeuchi, O. (2016). Validating self-determination theory in the Japanese EFL context: Relationship between innate needs and motivation. *Asian EFL Journal*, *18*, 7–33. http://doi.org/10.20581/arele.27.0_1

Akbari, E., Pilot, A., & Simons, P. R. J. (2015). Autonomy, competence, and relatedness in foreign language learning through Facebook. *Computers in Human Behavior, 48*, 126–134. https://doi.org/10.1016/j.chb.2015.01.036

Alamer, A. (2021a). Basic psychological needs, motivational orientations, effort, and vocabulary knowledge: A comprehensive model. *Studies in Second Language Acquisition*, *44*(*1*) 164–184. https://doi.org/10.1017/S027226312100005X

---

[1] The author is grateful to Thomas Kube for his editorial assistance.

Alamer A. (2021b). Construct validation of self-determination theory in second language scale: The bifactor exploratory structural equation modeling approach. *Frontiers in Psychology*, *12*, 732016. https://doi.org/10.3389/fpsyg.2021.732016

Alamer, A., & Al Khateeb, A. (2021). Effects of using the WhatsApp application on language learners' motivation: A controlled investigation using structural equation modelling. *Computer Assisted Language Learning, 34,* 1-27. https://doi.org/10.1080/09588221.2021.1903042

Alamer, A., & Almulhim, F. (2021). The interrelation between language anxiety and self-determined motivation: A mixed methods approach. *Frontiers in Education, 6,* 1-12. https://doi.org/10.3389/feduc.2021.618655

Alm, A. (2009). Blogging for self-determination with L2 learner journals. In M. Thomas & M. Warschauer (Eds.), *Handbook of research on web 2.0 and second language learning* (pp. 202–222). Information Science Reference. https://doi.org/10.4018/978-1-60566-190-2.ch011

Ardasheva, Y., Tong, S. S., & Tretter, T. R. (2012). Validating the English Language Learner Motivation Scale (ELLMS): Pre-college to measure language learning motivational orientations among young ELLs. *Learning and Individual Differences*, *22*(4), 473–483. https://doi.org/10.1016/j.lindif.2012.03.001

Baena-Extremera, A., Granero-Gallegos, A., Baños, R., & del Mar Ortiz-Camacho, M. (2018). Can physical education contribute to learning English? Structural model from self-determination theory. *Sustainability*, *10*(10), 3613. https://doi.org/10.3390/su10103613

Bailey, D., Almusharraf, N., & Hatcher, R. (2021). Finding satisfaction: Intrinsic motivation for synchronous and asynchronous communication in the online language learning context. *Education and Information Technologies, 26*, 2563–2583. https://doi.org/10.1007/s10639-020-10369-z

Benson, P. (2007). Autonomy in language teaching and learning. *Language Teaching*, *40*(1), 21–40. https://doi.org/10.1017/S0261444806003958

Benson, P., & Lamb, T. (2020). Autonomy in the age of multilingualism. In M. J. Raya & F. Vieira (Eds.), *Autonomy in language education* (pp. 74–88). Routledge. https://doi.org/10.4324/9780429261336-7

Boo, Z., Dörnyei, Z., & Ryan, S. (2015). L2 motivation research 2005–2014: Understanding a publication surge and a changing landscape. *System, 55*, 145–157. https://doi.org/10.1016/j.system.2015.10.006

Bourdieu, P. (1986) The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood Press.

Busse, V., & Williams, M. (2010). Why German? Motivation of students studying German at English universities. *Language Learning Journal, 38*, 67–85. https://doi.org/10.1080/09571730903545244

Clément, R. (1980). Ethnicity, contact, and communicative competence in a second language. In H. M. Giles, W. P. Robinson, & P. M. Smith (Eds.), *Language: Social psychological perspectives* (pp. 147–154). Pergamon.

Clément, R., & Kruidenier, B. G. (1983). Orientations in second language acquisition: I. The effects of ethnicity, milieu, and target language on their emergence. *Language Learning*, *33*(3), 273–291. https://doi.org/10.1111/j.1467-1770.1983.tb00542.x

Chirkov, V. I. (2009). A cross-cultural analysis of autonomy in education: A self-determination theory perspective. *Theory and Research in Education*, *7*(2), 253–262. https://doi.org/10.1177/1477878509104330

Chirkov, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy-support in Russian and US adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology, 32*, 618–635. https://doi.org/10.1177/0022022101032005006

Comanaru, R., & Noels, K. A. (2009). Self-determination, motivation, and the learning of Chinese as a heritage language. *Canadian Modern Language Review*, *66*(1), 131–158. https://doi.org/10.3138/cmlr.66.1.131

Cook, V. (1999). Going beyond the native speaker in language teaching. *TESOL Quarterly*, *33*(2), 185–209. https://doi.org/10.2307/3587717

Cook, V. (2016). *Second language learning and language teaching*. Routledge. https://doi.org/10.4324/9781315883113

Curtis, A. (2017). *Methods and methodologies for language teaching*. Palgrave Macmillan.

Darvin, R., & Norton, B. (2015). Identity and a model of investment in applied linguistics. *Annual Review of Applied Linguistics*, *35*, 36–56. http://doi.org/10.1017/S0267190514000191

Davis, W. S., & Bowles, F. (2018). Empowerment and intrinsic motivation: A self-determination theory approach to language teaching. *CSCTFL Report*, *15*, 1–19. https://www.researchgate.net/publication/323429822

Dewaele, J. M. (2018). Why the dichotomy "L1 versus LX user" is better than "native versus non-native speaker." *Applied Linguistics*, *39*(2), 236–240. https://doi.org/10.1093/applin/amw055

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.

Dincer, A., Yesilyurt, S., Noels, K. A., & Vargas Lascano, D. I. (2019). Self-determination and classroom engagement of EFL learners: A mixed methods study of the self-system model of motivational development. *SAGE Open*, *9*(2), 1–15. https://doi.org/10.1177/2158244019853913

Dong, Y., & Liu, S. (2020). An investigation into students' agentic engagement in online English listening learning. *Journal of Language Teaching and Research*, *11*(3), 409–417. http://doi.org/10.17507/jltr.1103.09

Dörnyei, Z. (2014). Researching complex dynamic systems: "Retrodictive qualitative modelling" in the language classroom. *Language Teaching*, *47*(1), 80–91. http://doi.org/10.1017/S0261444811000516

Dörnyei, Z., MacIntyre, P. D., & Henry, A. (2015). Introduction: Applying complex dynamic systems principles to empirical research on L2 motivation. In Z. Dörnyei, P. D. MacIntyre, & A. Henry (Eds.), *Motivational dynamics in language learning* (pp. 1–7). Multilingual Matters. https://doi.org/10.21832/9781783092574-003

Dörnyei, Z., & Ushioda, E. (2009). Motivation, language identities and the L2 self: Future research directions. In Z. Dörnyei & E. Ushioda (Eds.), *Motivation, language identity and the L2 self* (pp. 350–356). Multilingual Matters. https://doi.org/10.21832/9781847691293-019

Ethnologue. (2021). How many languages are there in the world? https://www.ethnologue.com/guides/how-many-languages?ip_login_no_cache=%7DG%B5%FD%9B%AD%C8%A9&cache

Ehsan, N., Vida, S., & Mehdi, N. (2019). The impact of cooperative learning on developing speaking ability and motivation toward learning English. *Journal of Language and Education*, *5*(3). 83–101. https://doi.org/10.17323/jle.2019.9809

Fox, R., Corretjer, O., & Webb, K. (2019). Benefits of foreign language learning and bilingualism: An analysis of published empirical research 2012–2019. *Foreign Language Annals*, *52*(4), 699–726. https://doi.org/10.1111/flan.12424

Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitudes and motivation*. Edward Arnold.

Gardner, R. C. (2010). *Motivation and second language acquisition: The socio-educational model*. Peter Lang.

Gardner, R. C., & Lambert, W. E. (1959). Motivational variables in second-language acquisition. *Canadian Journal of Psychology*, *13*(4), 266–272. https://doi.org/10.1037/h0083787

Gardner, R. C., & Lambert, W. E. (1972). *Attitudes and motivation in second language learning*. Newbury House.

Germain, C. (1993). *Évolution de l'enseignement des langues: 5000 ans d'histoire*. Cle international.

Giles, H., & Byrne, J. L. (1982). An intergroup approach to second language acquisition. *Multilingual & Multicultural Development*, *3*(1), 17–40. https://doi.org/10.1080/01434632.1982.9994069

Goldberg, E., & Noels, K. (2006). Motivation, ethnic identity, and post-secondary education language choices of graduates of intensive French language programs. *Canadian Modern Language Review*, *62*(3), 423–447. https://doi.org/10.3138/cmlr.62.3.423

González-Becerra, I. (2019). Language learning among STEM students: Motivational profile and attitudes of undergraduates in a UK institution. *Language Learning Journal, 47*, 385–401. https://doi.org/10.1080/09571736.2017.1320421

Hartshorne, J. K., Tenenbaum, J. B., & Pinker, S. (2018). A critical period for second language acquisition: Evidence from 2/3 million English speakers. *Cognition*, *177*, 263–277. https://doi.org/10.1016/j.cognition.2018.04.007

Jiang, A. L., & Zhang, L. J. (2021). University teachers' teaching style and their students' agentic engagement in EFL learning in China: A self-determination theory and achievement goal theory integrated perspective. *Frontiers in Psychology*, *12*, 704269. https://doi.org/10.3389/fpsyg.2021.704269

Jones, B. D., Llacer-Arrastia, D., & Newbill, P. B. (2009). Motivating foreign language students using self-determination theory. *Innovation in Language Learning and Teaching, 3*, 171–189. https://doi.org/10.1080/17501220802358210

Kaur, A., Hashim, R. A., & Noman, M. (2015). Teacher autonomy support intervention as a classroom practice in a Thai school: A self-determination theory perspective. *Multicultural Education*, *9*(1), 10–27. https://doi.org/10.1108/JME-07-2014-0033

Kelly, L. G. (1969). *25 centuries of language teaching: An inquiry into the science, art, and development of language teaching methodology, 500 b.c.–1969*. Newbury House.

Lambert, W. E. (1981). Bilingualism and language acquisition. *Annals of the New York Academy of Sciences*, *379*(1), 9–22. https://doi.org/10.1111/j.1749-6632.1981.tb41993.x

Landry, R., Allard, R., & Deveau, K. (2007). A macroscopic intergroup approach to the study of ethnolinguistic development. *International Journal of the Sociology of Language, 185*, 225–253. https://doi.org/10.1515/IJSL.2007.032

Landry, R., Allard, R., & Deveau, K. (2010). *Schooling and cultural autonomy: A Canada-wide study in Francophone minority schools*. Canadian Heritage, Canadian Institute for Research on Linguistic Minorities. https://publications.gc.ca/collections/collection_2011/pc-ch/CH3-2-13-2010-eng.pdf

Lanza, E., & Lomeu Gomes, R. (2020). Family language policy: Foundations, theoretical perspectives and critical approaches. In A. Schalley & S. Eisenchlas (Ed.), *Handbook of home language maintenance and development: Social and affective factors* (pp. 153–173). De Gruyter Mouton. https://doi.org/10.1515/9781501510175-008

Lee, M. K. (2017). To be autonomous or not to be: Issues of subsuming self-determination theory into research on language learner autonomy. *TESOL Quarterly*, *51*(1), 220–228. https://doi.org/10.1002/tesq.343

Littlewood, W. (1999). Defining and developing autonomy in East Asian contexts. *Applied Linguistics*, *20*(1), 71–94. https://doi.org/10.1093/applin/20.1.71

Lou, N. M., Chaffee, K. E., Vargas Lascano, D. I., Dincer, A., & Noels, K. A. (2018). Complementary perspectives on autonomy in self-determination theory and language learner autonomy. *TESOL Quarterly*, *52*(1), 210–220. https://doi.org/10.1002/tesq.403

Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology*, *60*(3), 541–572. https://doi.org/10.1111/j.1744-6570.2007.00083.x

MacIntyre, P. D., Noels, K. A., & Clément, R. (1997). Biases in self-ratings of second language proficiency: The role of anxiety. *Language Learning*, *47*(2), 265–287. https://doi.org/10.1111/0023-8333.81997008

MacIntyre, P. D., Noels, K. A., & Moore, B. (2010). Perspectives on motivation in second language acquisition: Lessons from the Ryoanji Garden. In M. T. Prior, Y. Watanabe, & S. K. Lee (Eds.), *Selected proceedings of the 2008 Second Language Research Forum*. Cascadilla Proceedings Project.

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology*, *35*(2), 63–78. https://doi.org/10.1037/0022-3514.35.2.63

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*(2), 224–253. https://doi.org/10.1037/0033-295X.98.2.224

McEown, M., Noels, K., & Chaffee, K. (2014). At the interface of the socio-educational model, self-determination theory and the L2 motivational self-system models. In K. Csizér & M. Magid (Ed.), *The impact of self-concept on language learning* (pp. 19–50). Multilingual Matters. https://doi.org/10.21832/9781783092383-004

McEown, M. S., & Oga-Baldwin, W. Q. (2019). Self-determination for all language learners: New applications for formal language education. *System*, *86*, 102124. https://doi.org/10.1016/j.system.2019.102124

Mercer, S., & Kostoulas, A. (Eds.). (2018). *Language teacher psychology*. Multilingual Matters. https://doi.org/10.21832/9781783099467

Montrul, S. (2019). How learning context shapes heritage and second language acquisition. In M. Dressman & R. W. Sadler (Eds.), *The handbook of informal language learning* (pp. 57–74). Wiley-Blackwell. https://doi.org/10.1002/9781119472384.ch4

Muñoz, A., & Ramirez, M. (2015). Teachers' conceptions of motivation and motivating practices in second-language learning: A self-determination theory perspective. *Theory and Research in Education*, *13*(2), 198–220. https://doi.org/10.1177/1477878515593885

Mynard, J. (in press). Self-determination theory: A proposed framework for self-access language learning. *Journal of the Psychology of Language Learning*.

Mynard, J., & Shelton-Strong, S. (in press). *Autonomy support beyond the language learning classroom: A self-determination theory perspective*. Multilingual Matters.

Nalipay, M. J. N., King, R. B., & Cai, Y. (2020). Autonomy is equally important across East and West: Testing the cross-cultural universality of self-determination theory. *Journal of Adolescence*, *78*, 67–72. https://doi.org/10.1016/j.adolescence.2019.12.009

Noels, K. A. (2001a). Learning Spanish as a second language: Learners' orientations and perceptions of their teachers' communication style. *Language Learning*, *51*(1), 107–144. https://doi.org/10.1111/0023-8333.00149

Noels, K. A. (2001b). New orientations in language learning motivation: Towards a model of intrinsic, extrinsic and integrative orientations. In Z. Dörnyei & R. Schmidt (Eds.), *Motivation and second language acquisition* (pp. 43–68). University of Hawai'i Second Language Teaching and Curriculum Centre.

Noels, K. A. (2005). Orientations to learning German: Heritage background and motivational processes. *Canadian Modern Language Review*, *62*(2), 285–312. https://doi.org/10.3138/cmlr.62.2.285

Noels, K. A. (2009). The internalization of language learning into the self and social identity. In Z. Dörnyei & E. Ushioda (Eds.), *Motivation, language identity and the L2 self* (pp. 295–313). Multilingual Matters. https://doi.org/10.21832/9781847691293-016

Noels, K. A. (2014). Culture and intergroup communication. In M. Yuki & M. Brewer (Eds.), *Culture and group processes* (pp. 217–240). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199985463.003.0010

Noels, K. A. (2019). *Understanding the motivation to learn new languages: An interdisciplinary exchange between SDT and second language acquisition research*. Paper presented at the 7th International Conference on Self-Determination Theory, May 21–24, Egmond aan Zee, The Netherlands.

Noels, K.A. (2021). Survey of research on Self-Determination Theory and language learning. Retrieved September 17, 2022 from https://era.library.ualberta.ca/items/425edc71-65ae-44ee-adaa-004557ec7537

Noels, K. A., Adrian-Taylor, S. M., Saumure, K. D., & Katz, J. W. (2019). Motivation and the support of significant others across language learning contexts. *Journal for the Psychology of Language Learning, 1*, 106–114. https://doi.org/10.52598/jpll/1/1/7

Noels, K. A., Chaffee, K. E., Lou, N. M., & Dincer, A. (2016). Self-determination, engagement, and identity in learning German: Some directions in the psychology of language learning motivation. *Fremdsprachen Lehren und Lernen*, *4*5(2), 12–29. https://elibrary.narr.digital/article/99.125005/flul201620012

Noels, K. A., Chaffee, K. E., Michalyk, M., & McEown, M. S. (2014). Culture, autonomy and the self in language learning. In K. Csizér & M. Magid (Eds.), *The impact of self-concept on language learning* (pp. 131–154). Multilingual Matters. https://doi.org/10.21832/9781783092383-009

Noels, K. A., Clément, R., & Pelletier, L. G. (1999). Perceptions of teachers' communicative style and students' intrinsic and extrinsic motivation. *Modern Language Journal*, *83*(1), 23–34. https://doi.org/10.1111/0026-7902.00003

Noels, K., Clément, R., & Pelletier, L. (2001). Intrinsic, extrinsic, and integrative orientations of French Canadian learners of English. *Canadian Modern Language Review, 57*(3), 424–442. https://doi.org/10.3138/cmlr.57.3.424

Noels, K. A., Lou, N. M., Vargas-Lascano, D. I., Chaffee, K. E., Dincer, A., Zhang, Y. S. D, & Zhang, X. (2019). Self-determination and motivated engagement in language learning. In M. Lamb, K. Cziser, A. Henry, & S. Ryan (Eds.). *The Palgrave handbook of motivation for language learning* (pp. 71–93). Palgrave MacMillan. https://doi.org/10.1007/978-3-030-28380-3_5

Noels, K. A., Pelletier, L. G., Clément, R., & Vallerand, R. J. (2000). Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning, 50*(1), 57–85. https://doi.org/10.1111/0023-8333.00111

Noels, K. A., Vargas Lascano, D. I., & Saumure, K. (2019). The development of self-determination across the language course: Trajectories of motivational change and the dynamic interplay of psychological needs, orientations, and engagement. *Studies in Second Language Acquisition, 41*(4), 82–85. https://doi.org/10.1017/S0272263118000189

Norton, B. (2000). *Identity and language learning: Gender, ethnicity and educational change*. Longman/Pearson Education.

Norton, B. (2013). *Identity and language learning: Extending the conversation* (2nd ed.). Multilingual Matters. https://doi.org/10.21832/9781783090563

Oakes, L. (2013). Foreign language learning in a "monoglot culture": Motivational variables amongst students of French and Spanish at an English university. *System, 41*(1), 178–191. https://doi.org/10.1016/j.system.2013.01.019

Oga-Baldwin, W. Q., Nakata, Y., Parker, P., & Ryan, R. M. (2017). Motivating young language learners: A longitudinal model of self-determined motivation in elementary school foreign language classes. *Contemporary Educational Psychology, 49*, 140–150. https://doi.org/10.1016/j.cedpsych.2017.01.010

Ortega, L., & Han, Z. (Eds.). (2017). *Language learning and language teaching. Vol. 48: Complexity theory and language development: In celebration of Diane Larsen-Freeman*. John Benjamins. https://doi.org/10.1075/lllt.48

Parrish, A., Zhang, X., & Noels, K. A. (2021). *Self-determination across the secondary-school years: How teachers and curriculum policy affect language learners' motivation*. Manuscript under review.

Pelletier, L. G., Séguin-Lévesque, C., & Legault, L. (2002). Pressure from above and pressure from below as determinants of teachers' motivation and teaching behaviors. *Journal of Educational Psychology*, *94*(1), 186–196. https://doi.org/10.1037/0022-0663.94.1.1868u8

Reeve, J. (2013). How students create motivationally supportive learning environments for themselves: The concept of agentic engagement. *Journal of Educational Psychology*, *105*(3), 579–595. https://doi.org/10.1037/a0032690

Reeve, J., Ryan, R. M., Cheon, S. H., Matos, L., & Kaplan, H. (2022). *Supporting students' motivation: Strategies for success*. Routledge. https://doi.org/10.4324/9781003091738

Reeve, J., Ryan, R. M., & Deci, E. L. (2018). Sociocultural influences on student motivation as viewed through the lens of self-determination theory. In G. A. D. Liem & D. M. McInerney (Eds.), *Big theories revisited 2* (pp. 15–40). Information Age.

Reeve, J., & Shin, S. H. (2020). How teachers can support students' agentic engagement. *Theory into Practice*, *59*(2), 150–161. https://doi.org/10.1080/00405841.2019.1702451

Roth, G. (2019). Beyond the quantity of motivation: Quality of motivation in self-determination theory. In K. Sassenberg & M. Vliek (Eds.), *Social psychology in action* (pp. 39–49). Springer. https://doi.org/10.1007/978-3-030-13788-5_3

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, *61*, 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Schumann, J. H. (1986). Research on the acculturation model for second language acquisition, *Journal of Multilingual & Multicultural Development*, *7*, 379–392. https://doi.org/10.1080/01434632.1986.9994254

Shelton-Strong, S. J. (2020). Advising in language learning and the support of learners' basic psychological needs: A self-determination theory perspective. *Language Teaching Research, 26(5)*, 963-985. https://doi.org/10.1177/1362168820912355

Shiri, S. (2015). The homestay in intensive language study abroad: Social networks, language socialization, and developing intercultural competence. *Foreign Language Annals*, *48*(1), 5–25. https://doi.org/10.1111/flan.12127

Skinner, E. A., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology*, *100*(4), 765–781. https://doi.org/10.1037/a0012840

Tanaka, M. (2013). Examining kanji learning motivation using self-determination theory. *System*, *41*(3), 804–816. https://doi.org/10.1016/j.system.2013.08.004

Tanaka, M. (2017). Examining EFL vocabulary learning motivation in a demotivating learning environment. *System*, *65*, 130–138. https://doi.org/10.1016/j.system.2017.01.010

Trofimovich, P., Isaacs, T., Kennedy, S., Saito, K., & Crowther, D. (2016). Flawed self-assessment: Investigating self- and other-perception of second language speech. *Bilingualism: Language and Cognition*, *19*(1), 122–140. https://doi.org/10.1017/S1366728914000832

Ushioda, E. (2019). Researching L2 motivation: Re-evaluating the role of qualitative inquiry, or the "wine and conversation" approach. In A. Al-Hoorie & P. D. MacIntyre (Eds), *Contemporary language motivation theory* (pp. 194–211). Multilingual Matters. https://doi.org/10.21832/9781788925204-014

Ushioda, E., & Dörnyei, Z. (2017). Beyond global English: Motivation to learn languages in a multicultural world: Introduction to the special issue. *Modern Language Journal*, *101*(3), 451–454. https://doi.org/10.1111/modl.12407

Vallerand, R. J., Blais, M. R., Brière, N. M., & Pelletier, L. G. (1989). Construction et validation de l'échelle de motivation en éducation (EME). *Revue canadienne des sciences du comportement*, *21*(3), 323–349. https://doi.org/10.1037/h0079855

Wang, L., & Lee, I. (2021). L2 learners' agentic engagement in an assessment as learning-focused writing classroom. *Assessing Writing*, *50*, 1–16. https://doi.org/10.1016/j.asw.2021.100571

Weinstein, N., Itzchakov, G., & Legate, N. (2022). The motivational value of listening during intimate and difficult conversations. *Social and Personality Psychology Compass*, *16*(2), e12651. https://doi.org/10.1111/spc3.12651

Weinstein, N., Vansteenkiste, M., & Paulmann, S. (2019). Listen to your mother: Motivating tones of voice predict adolescents' reactions to mothers. *Developmental Psychology, 55*(12), 2534–2546. https://doi.org/10.1037/dev0000827

Zhang, X., Noels, K. A., & Sugita-McEown, M. (2022). The importance of an autonomy-supportive workplace and engaged students for ESL instructors' self-determined motivation and teaching engagement. *Journal of the Psychology of Language Learning*, *4*(1), 1–25. https://doi.org/10.52598/jpll/4/1/7.

Zoghi, M., & Malmeer, E. (2013). The effect of dynamic assessment on EFL learners' intrinsic motivation. *Journal of Language Teaching and Research*, *4*(3), 584–592. https://doi.org/10.4304/jltr.4.3.584-591

# Motivation and Self-Regulation in Music, Musicians, and Music Education

Paul Evans

## Abstract

When self-determination theory (SDT) researchers study musicians, they find psychological needs-satisfying experiences and intrinsic motivation in abundance. But learning music is difficult and poses unique challenges to needs-satisfying experiences, including long, slow learning curves, performance anxieties, and pressure from parents and teachers. At more advanced levels of training, stress, competitiveness, perfectionism, high-stakes evaluations, and financial pressures can all influence intrinsic motivation and persistence. Pervading all music learning contexts is the need to practice, which itself requires considerable motivational resources to sustain regularly and with attention and engagement. This chapter discusses music as both an evolved means for the satisfaction of basic psychological needs and a medium for the expression of self and social identity. It reviews research studies in music education, showing the importance of basic psychological needs and autonomous motivation for practice, self-regulated learning, enjoyment, and long-term persistence in music learning across a range of contexts, including childhood music experiences, lessons in music studios, school music education experiences, and advanced training in higher education. Across these levels of experience with music SDT research reveals the intrinsic benefits of music and helps explain the varied outcomes observed in music education.

**Key Words:** music, music education, practice, deliberate practice, self-regulated learning, music studio, conservatory

## Introduction

Music is a domain that we associate almost automatically with the fulfillment of basic psychological needs and intrinsic motivation. Everyone enjoys music: in the absence of a congenital or acquired disorder, the capacity to perceive, respond to, and derive pleasure from music is ubiquitous among humans. Even without any specialized training, most people are able to hum, sing, or whistle a tune from memory, by imitation, or even by improvisation, and they do so for the sheer fun of it. In this way, music is a prototype of intrinsically motivated behavior. Specialized music learning can afford even more opportunities: the enjoyment of composing and performing music, communicating music through performance to an audience, or participating in musical groups or ensembles.

But music can also be experienced in ways that frustrate basic psychological needs. People can hum or sing but might be reluctant to do so in front of others, stemming from a sense of incompetence. Many children participate in music lessons in which their only motivation is pleasing or complying with parents. Music learning in school can often seem irrelevant, especially for adolescents who, outside of the classroom, are discovering and exploring new types of music with their friends. Music teachers and music programs can be demanding and controlling, with predictable effects on the well-being of their students.

As with any other social context, intrinsic motivation and needs fulfillment in musical activities depend on the qualities or contingencies of the social environment. But any understanding of music learning and motivation must acknowledge that intrinsic motivation and psychological needs fulfillment lie at the heart of the musical capacities conferred on our species by evolution. Music is a medium of intrinsic motivation, a means of satisfying basic psychological needs, a vector of social values and ideas, and a catalyst for pleasure, enjoyment, stimulation, self and identity development, prosocial behavior, communication, and cooperation. In this chapter, I review music learning in light of these facts. To do this, I first set the stage for understanding music as an intra- and interpersonal activity that is a deeply evolved and intrinsically satisfying aspect of human experience. I follow this with a developmental perspective, describing the kinds of music activities that emerge at different stages of the lifespan and how they are relevant to learning, needs fulfillment, and internalization. The main part of this chapter discusses self-determination theory (SDT) research carried out in the social contexts and activities where music education happens: classrooms and music ensembles in schools, advanced music programs in universities, regular lessons with teachers in music studios, community music programs and leisure activities, and the routine practice activities that musicians undertake to improve performance.

## Music in Human Life

What is music, anyway? For a phenomenon so universal and so important to human life, it is surprising that a definition of "music" is difficult to pin down with precision. Dictionaries generally converge on definitions about organized sound for artistic or aesthetic purposes. But cross-culturally, there are few parameters common to all the world's music, complicating any potential definition. Some of these complications concern whether sound is necessary, aspects of what "organization" of that sound might entail, whether music is inextricable from dance or movement, and whether enjoyment or aesthetic response is a necessary feature. (For a review, see Trehub, Becker, & Morley, 2015.) Composers in the 20th century, as in other domains such as visual arts and literature, enjoyed experimenting with these issues (such as the famous example of *4'33"* by composer John Cage, whose only "music" is the titular duration).

Despite this, some music universals seem to exist: mothers all over the world use lullabies to help their infants sleep (Brown, 2017; Mehr et al., 2019); people recognize music of other cultures as music and even show reasonable agreement on the emotional qualities "conveyed" by music from other cultures; and almost all people can perceive and produce music (at least in the absence of the disorder known as congenital amusia; Peretz, 2016). In negotiating these two perspectives—diversity and universality—Nettl (2001) opened his entry for "music" in the authoritative *Grove Music Encyclopedia* by defining it as "the principal subject of the publication at hand, whose readers will almost certainly have strong ideas of the denotative and connotative meanings of the word." This pragmatic definition offers a useful starting point for operationalizing music for the purposes of this chapter.

The ability to produce and perceive music appears to be an evolved human capacity, and this provides some basis for considering how it might be fundamentally and directly linked to intrinsic motivation and psychological needs satisfactions. Music is uniquely human: while some nonhuman animals appear to exhibit music-like capacities (such as the "songs" of whales and birds), the search for even such basic musical abilities as entrainment to an auditory beat or recognition of relative pitch intervals in nonhuman animals has been relatively fruitless (Snowdon, Zimmermann, & Altenmüller, 2015). Music may have evolved as an elaboration of the musical features of language (such as prosody, the tonal contours of human speech; Patel, 2008) or may even have preceded language as a form of communication (consider, by analogy, that it also precedes language ontogenetically, illustrated in the exaggerated prosody used by parents to "speak" to their preverbal infants; e.g., Tsang, Falk, & Hessel, 2017). There are also signs that music is adaptive: it facilitates social cohesion and communication, encoding and retrieval of memory, improved mood, reduced depression and anxiety, and sexual selection (Snowdon et al., 2015). While some still argue that music may be just a byproduct of human speech abilities (Patel, 2008), or merely "auditory cheesecake" (Pinker, 1997, p. 534), its universality and ubiquity clearly suggest that music has some evolutionary significance unique to humans.

The experience of music is associated with pleasure, affect, and mood, which are relevant to needs fulfillment and intrinsic motivation. It evokes pleasure in a variety of ways, ranging from the intellectual or cognitive pleasure associated with appreciating musical form (Dutton, 2009) to the neural responses associated with pleasure, modulation of stress, and pain relief (Zatorre, 2015). People listen to music for a range of reasons, and various studies have converged on the idea that people deliberately use music for some kind of self-regulatory purpose. The findings suggest a range of reasons: self-awareness, social relatedness, and arousal and mood regulation (Schäfer et al., 2013); emotional mood regulation, cognitive appreciation, and for incidental background music (reasons which may also interact with personality; Chamorro-Premuzic & Furnham, 2007); for mood management, to pass the time, to facilitate interpersonal relationships, to instantiate a

sense of personal identity (Lonsdale & North, 2011). Clinicians have harnessed music for its ability to treat depression (Leubner & Hinterberger, 2017; Stewart et al., 2019).

As a deeply embedded feature of human nature, our capacities for music and its relevance to the self actively develop through the lifespan, energize intrinsic motivation, and are characterized by psychological needs fulfillment. Yet the importance of music also gives rise to a proliferation of contexts where music and music learning occur throughout human life—contexts that moderate the satisfying experiences of music and music learning to the extent that they fulfill basic psychological needs. The following sections explore these experiences with two approaches: first, with a developmental perspective that highlights the relevance of music experiences in relation to stages across the lifespan; second, by looking at the major social contexts where music learning occurs.

## Musical Development

SDT is, among other things, a developmental theory that focuses on the impact of needs satisfaction on integration throughout the lifespan (see Soenens & Vansteenkiste, this volume). Similarly, a developmental perspective is valuable for understanding the various ways music is instantiated across the lifespan (Hargreaves & Lamont, 2017). In this section I briefly review various features of music in different life stages, including the changing affordances of needs satisfaction and dynamics of internalization.

### Music in Prenatal, Infant, and Early Childhood Development

The earliest activity that could be regarded as musical activity, and even music learning, occurs at birth, or possibly even before. The human fetus has functioning auditory perception from as early as 20 weeks gestational age, with motor responses to sound reliably observable at 32 to 38 weeks. Unlike visual perception, auditory perception performs at around adult levels from birth (Parncutt, 2015). Infants may recall implicit memories for particular musical stimuli, as in the case where, even after several months, they respond reliably to musical patterns heard only prenatally. Indeed, infants respond with remarkable sophistication to music and can distinguish between subtle differences in musical parameters such as tonality, rhythmic patterns, tempo, and phrasing. These perceptual abilities develop rapidly throughout early childhood (Trehub & Degé, 2015). Infants do not make functional distinctions between speech and song, but are much more responsive to song (Tsang et al., 2017). For this reason, mothers tend to interact with their infants with something in between—a playful, sing-song type of communication often called "motherese" (Trevarthen & Malloch, 2017).

Could these musical interactions with infants (or even the fetus) be considered the first means of basic psychological needs satisfaction in life? The purpose of such interactions is a form of emotional communication, and their main function—parent-child bonding—positions music as a means of relatedness (Hargreaves & Lamont, 2017). Infants actively elicit these interactions as acts of agency and autonomy, and when they

are refused or unappreciated the result may even be a type of "shame" and withdrawal (Trevarthen, 2005). It may be no coincidence that in introducing the concept of competence motivation, White (1959) featured a musical instrument when he recalled in detail Jean Piaget's observations of one of his infant children interacting with a rattle and deriving great pleasure from causing it to make a sound. Musical perception and activity are thus active from birth, develop rapidly in infancy, and may form among the earliest experiences in life of relatedness, autonomy, and competence.

Musical development in early childhood focuses increasingly on musicality as a product of interactions with the social environment, where it becomes subject to processes of internalization. For example, Western infants are equally sensitive to violations of musical pitch structures (scales and tuning systems) drawn from Western and non-Western music traditions, but their perceptual abilities are soon trimmed and limited to the structures of the music they are exposed to. For this reason, the processes of internalization that characterize musical development in childhood have been termed musical "enculturation" (Trehub & Degé, 2015).

Even at this early stage of life, musical enculturation processes can be seen as an educational context subject to significant social influences. One example of this is music education programs for toddlers, which have the potential to engage both children and their parents in enjoyable music-making and social opportunities but could just as easily become controlling depending on the motivation of the parents or educators. In describing the proliferation of these programs, Trehub and Degé (2015) noted their potential to be misguided by motivations of the providers, who often limit musical genres to those believed to be "sophisticated," to set unrealistic expectations for music learning, or to prescribe activities without regard for the developmental stages of the children involved. Another example is Baby Einstein, originally a series of educational videos prominent in the 1990s and 2000s, characterized by, among other things, a classical soundtrack purported to stimulate intellectual development. These programs apparently do no such thing and may even be a distraction that impedes language development (Ferguson & Donnellan, 2014). Evidence suggests that rather than focusing on unrealistic educational expectations, parents should focus on music involvement that is autonomously motivated, minimizes stress where possible, and provides enjoyable and stimulating musical experiences for their own sake (Parncutt, 2015; Trehub & Degé, 2015).

*Music in Adolescence and Adulthood*

In adolescence, self and social identity development are major developmental processes, and music plays a key role. The process of enculturation (described above in relation to early childhood) continues during adolescence, but the enculturation process is more specific and nuanced; as music listening and the awareness of music's connection to social identity grows, adolescents become more aware of the ways that the music they listen to and produce distinguish them from other generations or social groups (North &

Hargreaves, 1999). This may even become a conscious process, whereby actively choosing musical preferences and aligning oneself with a particular musical style or genre becomes a way of signaling social group membership and consolidating one's identity (Greenberg & Rentfrow, 2017).

Adolescents tend to believe musical preferences and activities reveal information about their own and others' identities more than other kinds of activities (e.g., TV, books, clothes; Rentfrow & Gosling, 2003). In an illustrative study (Tarrant, North, & Hargreaves, 2001), adolescent males believed a hypothetical out-group (students at another school) would like stereotypically preferred music (e.g., indie, dance) less, and stereotypically unpopular music (e.g., jazz, classical) more than their in-group, and these effects were greater for students lower in ego-contingent self-esteem. These findings illustrate the intertwining of social identity with music preferences and, in this case, the possible moderating effect of introjected regulation. The increase in listening to music in adolescence, its active use to regulate mood, the curation of musical preferences and taste, and the role of music in social group identity all point to music being more than just an enjoyable activity during adolescence: it is a *developmental resource* (Miranda et al., 2015), intertwined with the processes of internalization and identity formation.

These aspects of musical development in adolescence extend into adulthood. Adolescents and adults encounter music frequently in daily life, and even use music actively for a range of purposes, primarily for self-regulation of mood and affect (Lonsdale & North, 2011). Among the most preferred music for adults is the music they listened to in adolescence (Bonneville-Roussy, Rentfrow et al., 2013). Within this finding, however, some minor developmental changes are observable; for example, adolescents express a higher preference for "intense" music, while adults are more likely to endorse "sophisticated" and "mellow" music (Bonneville-Roussy, Rentfrow et al., 2013). Adults use music as a self-regulatory mechanism, and their listening is associated with global happiness, but moderated by the extent to which that listening is autonomously motivated (Morinville, Miranda, & Gaudreau, 2013).

### Music and Aging

The ability to perceive and even to produce music often remains largely intact until well into old age. In music therapy, clinicians harness the power of music for therapeutic purposes, and aging has been a developmental context where this has been particularly effective. Meta-analytic evidence for treating dementia suggests that music therapy can be an effective intervention to reduce behavioral symptoms and anxiety (Ueda et al., 2013) and to improve cognitive function and quality of life (Moreno-Morales et al., 2020). Outside of the clinical context, music leisure activities can be ways to support psychological well-being during aging and even during neurological rehabilitation for stroke and dementia (Särkämö, 2018).

From an SDT perspective, aging can be a period in which needs fulfillment become increasingly challenging, through general decreases in vitality, decreased physical mobility, which limits activities that might have been previously enjoyed, and feelings of external control of medical and care regimes. But musical capacities often do not decline as much as other cognitive and physical activities, and SDT research has shown that music may be a useful means of needs satisfaction during this period. In a qualitative study of a community music program in the northeastern USA, older adults described their experiences with an emphasis on needs satisfactions—particularly the relationships between musicians, the value of all players regardless of their skill level, and the experience of autonomy in the musical activities themselves (Murray, 2017). Another community music context was studied by Davidson and Garrido (2019), who worked with six community choir groups in Australia, comprised of more than 200 adults, all at least 70 years of age. Their interviews were interpreted according to the satisfaction of basic psychological needs, highlighting that music was a way to build and maintain relatedness, to reminisce and reflect on life, and to feel competence and control in a life where autonomy can feel compromised. Older men (ages 52–70) in a community ensemble in Hong Kong generated similar themes, reporting that their well-being was supported along multiple pathways characterized by the fulfillment of basic psychological needs (Wong, 2020).

In sum, there is an important role for music across the lifespan: it is among the first abilities to emerge after birth; is prevalent throughout childhood, adolescence, and adulthood; and is among the last remaining abilities even in the presence of significant neurological decline. At each of these stages, basic psychological needs satisfaction is associated with the social contexts in which the music occurs and is also directly connected with music itself.

**Social Contexts of Music Learning**

Music can be perceived and produced without any special learning or deliberate skill development. But in all of the world's cultures, a relatively small number of people choose to develop specialized music skills. Proficiency in music (and artistic skills more generally) is universally admired, and that admiration itself can be deeply moving and pleasurable (Dutton, 2009). But learning music, like learning in any other highly technical and skill-laden domain, requires effortful attention in activities that are sequenced and structured, usually with substantial input from a knowledgeable teacher or mentor. Thus, music learning presents challenges in relation to developing skills while maintaining autonomy satisfaction in the face of activities that could be experienced as difficult or even boring (Evans, 2015; Evans & Ryan, 2022). In what follows I look across a range of social contexts where music learning can happen, and illustrate some of the ways in which needs fulfillment and intrinsic motivation are so crucial.

*Learning an Instrument*

One of the most common ways to engage in music education is to learn an instrument, and this often begins in childhood. Experiences of musical instruments can begin as early as two or three years of age, most commonly with adaptations of instruments like toy pianos and percussion instruments. Before long, children can begin to learn on even full-size pianos and adapted versions of other instruments like guitars or bowed string instruments, and by six or seven years of age may even be physically ready for brass and woodwind instruments, which require a developed embouchure and a set of teeth (McPherson, Davidson, & Evans, 2015).

Formal learning on an instrument (e.g., regular lessons with a music teacher) begins in part with choosing an instrument, which itself is impacted by a range of intrinsic and extrinsic factors. One factor may be the perceived difficulty: on keyboard instruments, the ability to produce a sound or even learn a short tune relatively easily provides competence-fulfilling experiences, whereas on other instruments it might take several weeks of regular practice and guidance before being able to produce even a single tone. Children are often drawn to the sound of a particular instrument (McPherson, 2005), as in the case of the cellist Jacqueline du Pré, who described being enamored at age four by the sound of a cello on the radio. The choice may be influenced by other factors, such as gender stereotypes (e.g., Hallam, Rogers, & Creech, 2008), perceived difficulty, practical aspects such as portability, and influential others, such as older peers or images of famous musicians. In a study of early adolescents, Sloboda et al. (1996) found that those who showed the highest levels of music learning had previously tried a number of instruments and eventually settled on one, often for pragmatic reasons. Thus instrument selection might not be such a high-stakes decision; the best approach might be flexible, emphasizing intrinsic interest and needs satisfaction in early experiences.

Sustained involvement in learning an instrument requires considerable motivational resources, and several SDT studies have upheld the need for autonomous motivation to sustain long-term involvement (Comeau et al., 2019; Evans & McPherson, 2015; Renwick, 2008). Understanding the demands of the activity and what it can provide to the student might be necessary. In a longitudinal study (McPherson, 2001), researchers asked children starting out in a school music program to articulate their views about how far into the future they would be playing their instrument. Those who expressed a long-term view of playing music were practicing more and had acquired greater musical skills after three years, and after 10 years they had sustained involvement in music learning for almost two years longer, on average, than those who took a short-term view (Evans & McPherson, 2015). A structured curriculum may provide a way to more clearly form a long-term identity as a musician and persist through difficulties, as suggested by research on classical music curricula and assessment programs (e.g., Australian Music Examinations Board; Trinity College London; and other systems common in the United Kingdom,

Canada, Australia, and other Commonwealth countries). Renwick (2008) studied 677 children in this type of curriculum and found that autonomous motivation was associated with persistence, higher-quality practice, and enjoyment.

Like other activities that take place outside of school, music requires extensive parental support, ranging from economic support for purchasing an instrument, paying for lessons, and transport, to involvement in the lessons themselves, helping to regulate practice, and encouraging interest and persistence (McPherson, 2009). A common motivational strategy for encouraging children to practice and keep up progress on their instrument is to provide monetary rewards. Unsurprisingly from an SDT standpoint, these rewards turn out to be ineffective (Comeau et al., 2019; Faulkner, Davidson, & McPherson, 2010; Renwick, 2008). A broader range of parental strategies for motivating children's learning was studied by Comeau et al. (2019). Based on reports from both children and their parents, the pattern of correlations with the continuum of internalization supported SDT predictions in relation to pressure to practice, interest in practice, interest in creativity and composition activities, provision of rewards, and the amount of practice undertaken by the child. Another study (Liu et al., 2015) considered the parents' own motivations for providing music training for their children in terms of a combination of self-regulation (e.g., "I want to develop my child's interest in music") and goal contents (e.g., "I want my child to get awards or become famous"). It found that the students' performance ability was predicted by engagement in music lessons, which in turn was predicted by the parents' intrinsic motivations for providing music training. It also found that the benefits of intrinsic motivation and engagement were undermined when parents had extrinsic motivations and goals for providing music training.

Teachers also play a crucial social role in the progression of children's music learning, yet their role is surprisingly underinvestigated in SDT research. Lifespan studies outside of SDT suggest a progression from childhood teachers who are warm, caring, funny, and emphasize playful aspects of music, to teachers whose focus is more on the shared goal of developing technical and performance skills (Davidson et al., 1998; Sosniak, 1985). An illustrative case study (Renwick & McPherson, 2002) of a clarinet student showed the importance of choice provided by the teacher: the student had heard a jazz version of a piece she had been learning and asked her teacher to show her how to play it. Videos of her practice sessions showed that her practice of the jazz version was much longer, was more strategic, and showed greater cognitive engagement compared with the original piece and with other pieces assigned by her teacher. As with parents, the teacher's own motivation may also play a role, as illustrated in a novel experiment (Wild, Enzle, & Hawkins, 1992) in which participants were told either that a teacher had volunteered or that they were paid, and then took a piano lesson with the teacher (who was blind to the experimental condition). In the volunteer condition, students showed more novel exploration on the instrument after the lesson had finished, compared with the paid condition, demonstrating an undermining effect.

*Music Education in School Settings*

Given the significance of music in people's lives, it might be assumed that music is the most enjoyable subject to learn about in school. Unfortunately, this does not seem to be the case. In a study of over 20,000 students in eight countries (McPherson & O'Neill, 2010), music was ranked last or second to last in importance and usefulness among other school subjects. This cross-cultural finding is compelling, because it suggests that the low value of music might not be attributable to a particular local curriculum or even teaching tradition, but possibly something common to music in formal schooling systems across the world.

There are several possibilities why this may be the case. First, the provision of music education in schools tends to be underresourced and underfunded. Elementary (primary) teachers are often underprepared or not trained at all to deliver a music curriculum (Jeanneret & DeGraffenreid, 2012). Their specialized expertise, along with other costly aspects of music programs, may be set aside by many schools for cheaper alternatives, justified by a broader view of music as less academic or important than other subjects. Enjoyable and effective music programs do exist in some places, with a clear relationship to socioeconomic status, highlighting issues of equity (e.g. Pascoe et al., 2005). Second, for adolescents especially, the music that becomes an important part of their personal and social identity may not be the music that is part of the school curriculum, so intrinsic motivation is low, and they simply may not identify with the music curriculum. Third, many people believe high musical ability to be the result of some kind of innate and relatively immutable talent (Howe, Davidson, & Sloboda, 1998), so when it comes time for students to choose school subjects that align with their educational interests and career pursuits, the investment of effort and motivation in music might be seen as futile. Whatever the cause, students do not recognize school music education as either important or enjoyable, suggesting that their motivation for music learning will fall short of the criterion for self-determined motivation.

Although music may not be valued or enjoyed as highly as other subjects overall, there is nonetheless substantial variation between students, classrooms, and schools. SDT researchers studying school music programs have tended to be music educators themselves, and one of their main interests is why students intend to continue with music learning when it becomes optional or extracurricular, or conversely, to drop out. When studying this issue, persistence (vs. dropout) is operationalized as the student's intention to pursue music, often through self-reporting on their agreement with items such as "I would choose to continue studying this subject when it becomes optional." One of the most consistent findings in SDT research is that the experience of self-determination (examined either as relative autonomy for music learning or via the fulfillment of basic psychological needs) predicts intention to pursue music. This finding has been demonstrated in band programs in a U.S. middle school (Schatt, 2017), in a U.S. high school (Legutki, 2010), in a large orchestra program across an entire U.S. high school district (Liu, 2016), in a
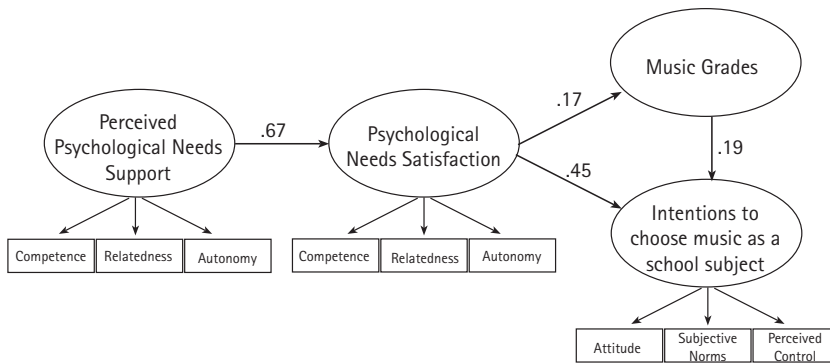
**Figure 31.1** Statistics represent estimates of effect sizes (standardised beta coefficients)

*Source*: Adapted from Freer & Evans 2019. Copyright 2019 Freer & Evans

band program across six primary (elementary) schools in Australia (Evans, McPherson, & Davidson, 2013), in classroom music programs in a large high school in Australia (Freer & Evans, 2018; Kingsford-Smith & Evans, 2019), and in classroom music programs across 12 high schools in Australia (Freer & Evans, 2019). Figure 31.1 shows an example of one of these studies (Freer & Evans, 2019) in which students' intentions to pursue music were strongly associated with need fulfillment, and weakly with achievement, suggesting that in this context, decisions about whether or not to pursue music are informed more by the student's prior experience of studying music than by their perceptions of success or achievement in the subject. Some of these survey studies include brief, open-ended questions, and the anecdotal responses can be illuminating: Students report playing music, feeling connected with others, and learning new skills as the most enjoyable aspects (Legutki, 2010), and when asked why they quit or drop out, their answers suggest psychological needs frustrations: "I love music, but I did not feel I had the best skills to perform"; "I felt like [participating in the band program] isolated me socially"; "I didn't feel like it was relevant or tied in to my life" (Evans et al., 2013). Indeed, the problem of the low valuing of music education by students may be directly addressed with an SDT framework: students' value of music learning in school is associated with experiences of autonomy (Legutki, 2010; Liu, 2016) and basic psychological needs satisfaction (Evans, 2009; Freer & Evans, 2019; Legutki, 2010).

As in with other educational settings, particularly through school age, the teacher has a considerable impact in music education. As noted previously, most teachers tasked with teaching music in elementary school have practically no training at all in music or music teaching (Jeanneret & DeGraffenreid, 2012). It is thus no wonder that competence frustration becomes an issue for these teachers, who can have considerable anxiety in preparing to teach music lessons. Qualitative studies with teachers in the United Kingdom (Garrett, 2019) and Brazil (Figueiredo, 2019) found this to be the case, and needs-supportive professional learning played a role in rectifying these concerns. In a study conducted across

Australian high schools (Freer, 2014), the quality of the elementary school music program (largely determined by whether it is delivered by a specialist teacher) appeared to have lasting effects on student motivation; even when students enjoyed their high school program, their intentions to continue were never as high as for those students who had a high-quality elementary school experience. Beyond training and teaching abilities, the teacher's motivating style may of course also impact student motivation, as in the case of a U.S. experimental study (Coppola, 2021), where an actor posed as either a "humble" or "arrogant" band director for middle school, high school, and university students; all groups preferred the humble director and rated them as more likable but showed no differences in perceived knowledgeability. More relevant to SDT, two studies have directly measured perceptions of teacher autonomy support and, consistent with theory, found strong predictive relationships with autonomy satisfaction and intentions to continue (as shown in Figure 31.1; Freer & Evans, 2019; Legutki, 2010).

In summary, school music education can be a paradox: music is deeply important to children and adolescents, yet it seems to be the lowest-valued school subject. SDT offers a theoretical framework for understanding this, and empirical results suggest directions toward potential solutions. Basic psychological needs satisfaction in the music classroom, and autonomous regulation for music learning, are consistently associated with students' valuing of music education, their engagement in music practice, and their intentions to continue. The teacher's motivating style is a key issue, and further research could explore the implications for music curriculums.

*Music in Higher Education*

Musicians pursuing specialized careers, especially classical musicians, composers, musicologists, and ethnomusicologists, receive their advanced training in higher education institutions. The types of institutions vary but include schools of music in major universities and colleges, or independent schools or institutes of music, sometimes called *conservatories* (U.S.), *conservatoires* (U.K. and Europe), or *conservatoriums* (Australia). Some of these institutions are highly selective and cater to only the most talented of musicians who have spent many years through childhood and adolescence developing musical abilities, but even among the less selective, entry is usually by audition. The traditions, curriculums, and teaching practices of these institutions can, for many reasons, be resistant to change (consider the root *conserv-* used to name them). Although conservatory environments are often characterized by salient threats relating to stress, anxiety, motivation, and well-being, surprisingly the empirical evidence suggests that these descriptions may not be fully representative or performers' experiences.

TEACHING

Students specializing in music performance in higher education usually work with a studio teacher, who is the most proximal teacher involved in the development of their

performance ability. The teaching usually occurs in a kind of master-apprentice relationship (Burwell, 2012). The nature of the teaching varies between individuals, but typically students meet individually with their teacher for around an hour each week, focusing on preparing a repertoire for upcoming performances or assessment. The teacher prescribes or recommends specific practice activities for the student to prepare for the next lesson. As noted earlier, this style of teaching is not unlike what would happen in a studio for a child or adolescent, but the nature of the relationship changes: whereas a child's lessons might focus on more playful aspects of music, and an adolescent might work with a teacher who helps to develop their skills and technique, a higher education student would be more likely to trust the teacher's authoritative expertise, establish a mutual understanding of the goals of preparing for a career, and work with the teacher to forge a creative and professional identity (Davidson et al., 1998; Sosniak, 1985).

As with other areas of education, SDT research has studied the role of the teacher as an antecedent to student motivation, using a range of methods. Among students in the United Kingdom, the USA, and Australia, controlling teaching was not reported in high volume, but it did have a small (negative) effect on autonomous motivation, as shown in Figure 31.2 (Miksza, Evans, & McPherson, 2021a). Among students in Peru, perceived autonomy support from the teacher predicted needs satisfaction, flourishing, and adaptive perfectionism, while needs frustration predicted maladaptive perfectionism (Herrera et al., 2021). And in the United Kingdom (Bonneville-Roussy, Hruska, & Trower, 2020), there was general agreement between students and teachers on high levels of autonomy support, characterized by trust, perspective taking, and empathy. In the qualitative part of this mixed-methods study, teachers readily attributed aspects of controlled motivation
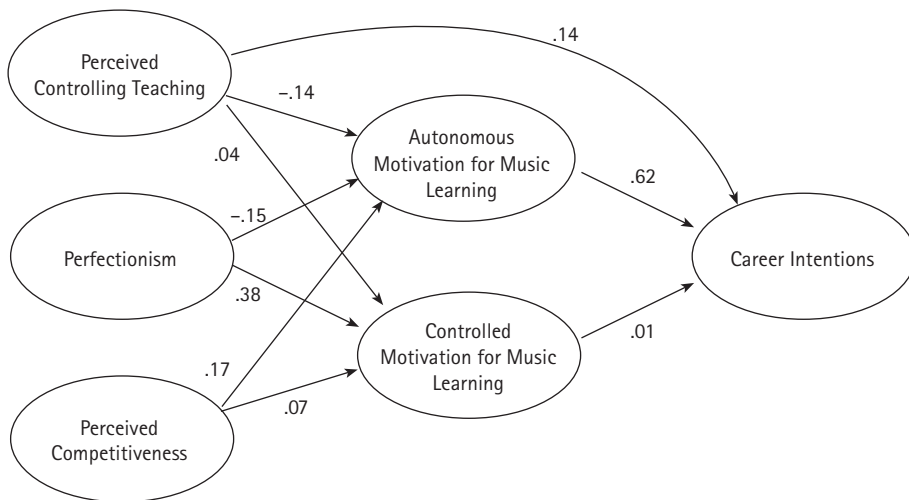


**Figure 31.2** Autonomous motivation in university students predicted their intentions to pursue a career in music

*Source*: Adapted from Miksza, Evans, & McPherson, 2021a. Copyright 2019 Miksza, Evans, & McPherson

to the institution rather than to their own practices. Indeed, several other qualitative studies have illuminated the nature of autonomy support from teachers. From students in a U.S. music program, Blackwell et al. (2020) selected those who reported either very high or very low *subjective vitality* (Ryan & Frederick, 1997) immediately following their studio lessons. Analysis of video recordings of the lessons showed that the high-vitality students had teachers who provided more structure, held higher expectations, asked more questions, provided more feedback (but were less critical), and physically demonstrated greater rapport with the student. Another detailed qualitative study (Alexander, 2015) was undertaken with university music students who were learning to play trumpet as a secondary instrument (i.e., proficient musicians and performers on their primary instrument, but learning to play trumpet from scratch); it found that psychological needs satisfaction was associated with persistence in the face of difficulty, engagement in learning, and well-being. Findings from a study of 12 music educators (Krause & Davidson, 2018) in North America, Europe, and Australia suggest that the teachers explicitly held goals and strategies that foster lifelong involvement and engagement in progressing toward a professional performance career, and that these were easily interpreted through the categories of competence, relatedness, and autonomy.

## WELL-BEING

Higher education environments in general are characterized by many threats to psychological needs satisfaction: frequent, high-stakes assessment and examinations, the need for high levels of self-regulation to manage class schedules and study routines, the challenges of planning for a future career, and often the need to balance study with part-time work and with living arrangements (Evans & Ryan, 2022). Music programs are no exception to this, and well-being threats may be compounded by the nature of performance, which can induce music performance anxiety (Osborne, 2022; Osborne & McPherson, 2019), highly competitive entry requirements that make social comparisons salient, practice routines that increase the risk of physical injury (Araújo et al., 2020), perfectionistic tendencies (Diaz, 2018), and generally high levels of stress (Koops & Kuebel, 2019). But results of empirical studies suggest that these might not impact students as much as is commonly assumed. Against comparison samples or population norms, music students have overall higher well-being (Araújo et al., 2017; Ascenso, Perkins, & Williamon, 2018), higher quality of life (Philippe et al., 2019), moderate physical fitness (Araújo et al., 2020), and high satisfaction with their choice of degree program (Hsu & Chi, 2021). Apparently, stereotypical ideas about the overworked, anxious, competitive, and perfectionistic artist may not be accurate.

Despite not translating to major well-being issues, the presence of stress in music programs remains a concern, and SDT may be a useful framework for understanding how to manage or mitigate it. The high levels of stress found by Koops and Keubel (2019), for example, were related to external locus of control, and by Coşkun-Şentürk and Çırakoğlu

(2018) to guilt/shame proneness. Miksza et al. (2021b) found that stress had a negative effect on subjective vitality and hypothesized that several candidate factors (peer relationships, perfectionism, and adaptability) might moderate the negative effects of stress. None of these moderation hypotheses was supported, suggesting that while they are themselves associated with stress (negatively in the case of perfectionism), they may not themselves reduce (or exacerbate) stress (cf. Martin & Evans, 2022). This implies that for institutions, attending to sources of stress rather than supporting students to manage the stress imposed by their programs may be a more effective approach. An exception to this might be the types of coping strategies used: in a study of motivation and coping with the stress of assessment (Bonneville-Roussy et al., 2017), autonomous motivation was associated with engagement coping, and controlled motivation with disengagement coping. These coping strategies in turn had adaptive effects (for engagement coping) or maladaptive effects (for disengagement coping) on future career intentions, performance examination results, and affect. Notably, multiple group analysis revealed stark gender differences in effect sizes that warrant further attention.

Perfectionism is another concern in music programs. As shown in Figure 31.2, perfectionism is often associated with controlled motivation (and negatively with autonomous motivation; Miksza et al., 2021a). In a study of a number of selective music programs in Norway (Haraldsen et al., 2019), perfectionistic concerns were high, and controlling conditions exacerbated the negative effects of perfectionistic concerns on introjected regulation, extrinsic regulation, and anxiety. In a similar type of school in Germany (Stoeber & Eismann, 2007), researchers found that perfectionistic concerns were most strongly related to identified regulation. In this study students were younger than in most of the higher education studies, and their identified regulation was positively associated with parental and teacher pressure. The study cited earlier by Herrera et al. (2021) found negative associations between perfectionism and needs satisfaction. Together, these studies suggest that although perfectionistic concerns are salient for university students, the social supports of their environment can either support healthy integration or exacerbate the negative consequences of these tendencies.

PASSION

As might be expected in a domain where people identify strongly and are pursuing demanding study and careers, passion is a salient construct (Bonneville-Roussy & Vallerand, 2018; Vallerand & Paquette, this volume). Passion is a self-defining activity that one enjoys and values, in which one invests significant time and energy, and that can be conceptualized as harmonious (characterized by autonomous motivation, in which behavior is volitional, flexible, and in control of the person) or obsessive (characterized by controlled motivation, in which behavior is rigid, contingent, and sometimes overpowering). These types of passion for music are associated differentially with adaptive and maladaptive outcomes. The dual-process nature of passion was highlighted in a study of participants in a summer

camp for international-level students and professionals (Bonneville-Roussy, Lavigne, & Vallerand, 2011), in which harmonious passion predicted mastery goals and was associated with higher-quality practice and engagement in a larger number of public performances, whereas obsessive passion was associated with performance goals and a lower number of public performances. Passion may be associated with music-specific aspects of well-being (such as music performance anxiety), and as a self-defining construct it is also associated with general well-being, as in a study across four conservatoires in the United Kingdom (Bonneville-Roussy & Vallerand, 2020).

As shown in other aspects of motivation throughout this section, the teacher's own motivation and passion can be influential in their students' outcomes. Bonneville-Roussy, Hruska, and Trower (2020) found that teachers' harmonious passion (characterized by autonomous motivation), but not obsessive passion (characterized by controlled motivations), exerted a large effect on students' intentions to continue their education to become a professional musician. This was replicated in a further two studies, including one with measures taken over three time points and with the outcome of educational persistence objectively measured by students' actual enrollment in the course at the end of the semester (Bonneville-Roussy, Vallerand et al., 2013).

CAREER INTENTIONS

Many students study in these institutions in preparation for a music career. In the classical music industry, traditional roles (as a member of an orchestra or as a career soloist) are increasingly unlikely; instead, *portfolio* careers are more common, where career-oriented musicians embrace a range of music and music education roles (Bennett, 2016; Rowley, Reid, & Bennett, 2021). Managing such performance careers in a way that results in a realistic schedule, regular income, and ongoing opportunities for development presents a difficult challenge. SDT research has confirmed that the strength of career intentions is associated with needs-supportive teaching (Krause & Davidson, 2018), autonomous and controlled motivation (Miksza et al., 2021a; see Figure 31.2), responses to stress associated with autonomous and controlled motivation (Bonneville-Roussy et al., 2017), and harmonious passion in both teachers and students (Bonneville-Roussy et al., 2020). But given the nature of performance careers, there is a clear need for research in SDT to understand not just the overall intention to pursue a musical career but the degree to which students are able to internalize a more concrete future identity (Evans & McPherson, 2015) and flexibly and pragmatically adapt to the realities of portfolio careers (Evans & Ryan, 2022; Martin & Evans, 2022).

*Music as a Leisure Activity or Hobby*

In structured leisure activities, proficiency, technical skill development, and peak artistic performance are not the goals or priorities they are in lessons and formal music learning programs. Leisure activities often take the form of local community programs for choirs,

bands, orchestras, or other types of small or large ensembles. Competence perceptions are less likely to be challenged in these contexts, while as social activities, relatedness fulfillment is most obviously salient, and as voluntary activities, autonomous engagement is probably the default.

SDT studies illustrate the benefits of participating in music leisure activities. The particular kind of activity may not matter, as a study of Australian adults found (Krause, North, & Davidson, 2019). Indeed, in that study, well-being (indicated by subscales for mood, esteem, socializing, cognition, and self-actualization) showed that the overall amount and frequency of engagement, and even the self-reported importance of music to the individual, made negligible predictions; rather, well-being benefits from the activity were derived from the extent to which the activity fulfilled basic psychological needs and was autonomously motivated. This was supported in a longitudinal study (Koehler & Neubauer, 2020) of over 1,000 musicians in community band, orchestra, and choir programs in Germany. On days when these musicians reported making music, whether as part of the community program or otherwise, they reported greater positive affect and lower negative affect, and these effects were mediated by the extent to which music-making satisfied (or frustrated) basic psychological needs. Additional correlational evidence is observed in a study of community bands across the state of Kentucky in the USA, where psychological needs satisfaction in the activity was associated with participants' valuing of music, their belief in the provision of music education for children, and their overall well-being (Dale, 2018). These activities demonstrate that in a context where overall motivation is likely relatively autonomous, activities can still vary according to the extent they fulfill basic psychological needs, moderating the potential benefits of participating.

## Music Practice

Pervading the above music learning contexts is the activity of practice. For anyone wanting to improve their music performance ability, regular and sustained practice is one of the major factors within their control. Much of the research on music practice concerns how much *time* students spend practicing on their instrument, with the assumption that time spent practicing is indicative of motivation and best predicts accumulated music performance ability. Practice time appears to be associated with intrinsic motivation (but not ego orientation or competitiveness) in U.S. high school band students (Schmidt, Zdzinski, & Ballard, 2006) and with the fulfillment of basic psychological needs in high school orchestra students (Evans & Liu, 2019, Figure 5). Comeau, Huta, and Liu (2015) found motivation for practice was influenced by cultural values: their findings, interpreted through the lenses of Confucian-heritage and Western cultures, showed that a sample of Chinese (Hong Kong) music learners showed a stronger "work ethic," had greater intrinsic (but also external) regulation, and practiced more than a North American sample, which displayed greater identified and introjected regulation. The sheer accumulation of practice itself might sustain motivation for music learning, probably because of its contribution to

improving musical ability, which is itself enjoyable. In studying children across their first three years of learning, McPherson and Davidson (2002) found that those who were still actively involved after three years had earlier reported greater practice at one month, three months, and nine months from when they commenced learning.

Time spent practicing is clearly important, but focusing on practice time alone is limited; it is well-known within SDT for example, that the amount of a behavior gives limited insight into the quality of the behavior and its motivation, suggesting also that the outcomes of practice behavior depend on the way behavior is motivated (Evans & Ryan, 2022). Indeed, recent meta-analytic research on deliberate practice has shown that the amount of practice time alone has a weak predictive relationship with performance outcomes (Macnamara, Hambrick, & Oswald, 2014). In theorizing about the nature of practice and how it improves skills in any domain, Ericsson, Krampe, and Tesch-Römer (1993; Lehmann, Gruber, & Kopiez, 2018) recognized that for practice to improve performance, it needs to be *deliberate practice*—an activity designed with the explicit goal of improving performance, informed by an expert coach or teacher, and which by definition is effortful, demands time and economic resources, and requires considerable motivation. High-quality music practice is therefore a structured, effortful activity, so simply measuring time-on-task might conflate deliberate practice with activities that are informal, unstructured, going through the motions, or playing through already familiar music for fun.

SDT research on motivation and music practice has upheld the need to focus on these qualitative dimensions of music practice to understand not only how it is experienced but also how it develops performance. In Figure 31.3, for example, practice time was positively predicted by psychological needs satisfaction, but also (weakly) by psychological needs frustration, suggesting that simply measuring the total amount of practice
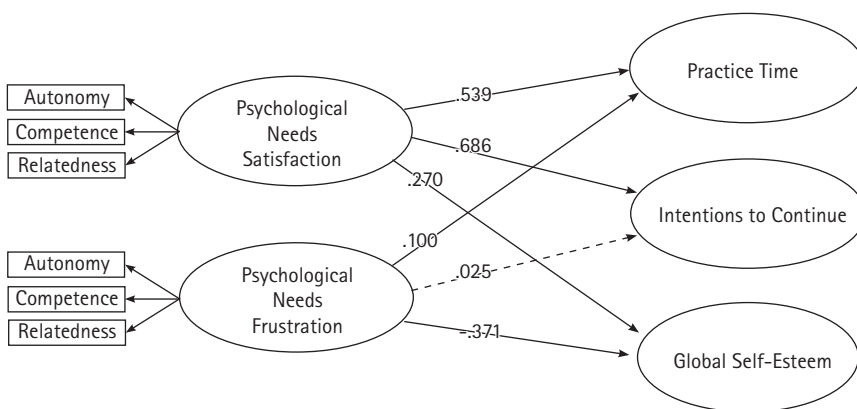


**Figure 31.3** In a high school orchestra program (*N* = 704), psychological needs satisfaction was associated with students' practice behavior, intentions to continue participating in the orchestra program, and global self-esteem

*Source*: Adapted from Evans & Liu, 2018. Copyright 2019 National Association for Music Education

time undertaken may not be indicative of its being energized by high-quality motivation. Some studies have examined the more qualitative aspects of the experience of practice, as in a study of children learning to play the piano (Comeau et al., 2019); here, the amount of practice was weakly associated with identified regulation, while the quality of practice (indicated by interest in more effortful practice, even when it is mundane) showed a strong association with intrinsic and identified regulation, and to some extent with introjected regulation. Among students in higher education, those higher in autonomy satisfaction, competence satisfaction, and intrinsic motivation reported more frequent experiences during practice of *flow*, an experience of sustained, intense absorption and concentration in a task (Valenzuela, Codina, & Pestana, 2017). In students from Australia and New Zealand, relative autonomy predicted reports of more frequent practice, but also of more frequent practice that was rewarding or productive, and greater interest in choosing a music repertoire that was challenging and would extend their ability (Evans & Bonneville-Roussy, 2016).

Other studies of practice quality have examined the self-regulatory behaviors used to plan, monitor, and reflect on performance during practice sessions (McPherson, Miksza, & Evans, 2017). In a case study mentioned earlier, a student's observed practice behavior was considerably more planned, strategic, and reflective while working on a self-selected piece of music compared with music prescribed by the child's teacher (Renwick & McPherson, 2002). Similar results were found in a mixed-methods study (Renwick, 2008), where among 677 young music learners, internalized regulations were associated with practice being more effortful, strategic, and reflective, supported by observed qualitative differences in practice behavior between intrinsically and extrinsically motivated students. A study of Canadian students (Bonneville-Roussy & Bouffard, 2015) showed that practice that was more goal-directed, attentive, effortful, and strategic was predicted by perceived competence, and while controlling for the relationship between practice time and practice quality, practice quality predicted music performance, and practice time was negative.

Collectively, the research on practice and motivation in SDT demonstrates several ways in which high-quality music practice is driven by high-quality motivation, but also ways in which SDT may be a meaningful way forward for extending deliberate practice research. As Ericsson's earliest conceptualizations of deliberate practice suggest, motivation is a necessary but limited resource (Ericsson et al., 1993), and SDT has proven to be a robust framework for explaining how motivation can fuel or constrain both the amount and quality of practice. Studies of SDT in relation to practice quality and performance outcomes clearly support the need to move beyond studying practice time exclusively and to overcome a simplistic, zero-sum approach to motivation and practice in which performance improvement is possible only with a substantial motivational cost. Clearly, where motivation for practice is more autonomously internalized, it can be experienced as an enjoyable, need-fulfilling activity, and it may be that only under such conditions does practice lead to meaningful gains in performance.

## Reflections and Future Directions

This chapter aimed to review research on SDT in the context of music learning and to use SDT as a lens to understand the importance of music in human development, self-regulation, and wellness. Before suggesting future directions for research, I should briefly acknowledge some limitations of this review. I argued that music is a human universal, yet clearly the majority of research and examples I cited are relatively narrow in range. They reflect, among other things, a focus on Western industrialized societies, the researchers and research contexts already examined by SDT, and my own research experience in this area and my education in Western classical music. Relatedly, the review is also somewhat selective, and I have reserved comment on study quality (such as aspects of sample representativeness, statistical power, measurement, experimental control, and generalizability).

Among the clearest findings for SDT in music are from studies that have examined motivation and behavior in specific music contexts, especially in schools, learning an instrument in music studios, and in higher education. SDT's motivation continuum predicts a range of relevant values and behaviors in these contexts. Relative autonomy in music education is predicted by autonomy support from teachers and parents (including negatively by rewards and ego threats) and psychological needs satisfaction, and it predicts behavior such as practice time and, to a greater extent, practice quality, as well as persistence, self-regulation, and intentions to continue with music learning.

Goal contents theory (Bradshaw, this volume) seems a highly relevant yet underexamined approach in music. Some of the research cited in this chapter referred to the contents of goals for musicians preparing for music careers, for parents in providing music education to their children, and, to a limited extent, for practice motivation directed either toward mastery or toward outperforming others. Direct measurement of the goals of parents and other socializers, characterized as relatively intrinsic or extrinsic, may be a useful way to observe the experiences of music education for children. More broadly, music is an industry closely associated with fame, wealth, and celebrity, which is especially true of the popular music industry but also, to some extent, the classical music industry. Fame (and extrinsic goal contents more generally) involve a foregrounding of ego, evident in, for example, images and depictions of famous musicians and celebrations of unusually prodigious talent. These factors surely play a role in shaping career paths and aspirations, in the salience of social comparisons of ability and prominence, and perhaps even in the experience of music performance anxiety.

Related to this point, the role of introjected regulation in music in everyday life may be worth examining, as in the case of many people who are shy about singing in public, possibly because the proliferation of perfect-sounding recorded music has biased their standards. Consider that singing comes from deep within the physical self, and its emotional and communicative qualities may be perceived to expose self-relevant information. This area seems like a fruitful endeavor for the study of introjected regulation.

Across many of the findings, gender differences, sometimes quite large, have been observed. This is not surprising, as casual observations of musical culture show how gender, fame, performance, and issues of inequality are intertwined, and that music seems to both perpetuate these inequalities and express the experience of them. (Consider the role of popular music in the sexual revolution of the 1960s and 1970s, or that two of the world's most prominent symphony orchestras, the Berlin and Vienna Philharmonics, permitted women to participate only in the past 40 and 20 years, respectively.) SDT research could contribute to a sophisticated understanding of gender-based differences in the experiences of perceived needs support and internalization in music contexts, as well as the potential moderating effects gender might have on some of the relationships already clearly established.

Practice is an activity that pervades most music learning contexts (Miksza, 2022). As noted throughout this chapter, the amount of practice time accumulated has been a major focus of research, yet clearly there are other aspects that have greater explanatory value, particularly the frequency and quality of music practice. Some SDT studies have investigated the quality of practice in terms of enjoyment and flow, but remarkably few have linked that to motivation or studied the impacts of practice quality on performance. Theory in this area is well-developed (e.g., McPherson et al., 2017), and measurement is promising (Miksza, 2007, 2012). A consolidation of this area and the relationship between quality of motivation and quality of practice would be a promising avenue for research. It would contribute substantially to SDT, as practice requires substantial motivational resources, and the amount and quality of practice behavior seem to be closely linked to salient motivational forces in the self and the social environment, such as the relationship with the teacher, perceived ability to practice effectively, the presence of high-stakes assessments or examinations, and proximity to public performances.

Music, it appears, is important for everyone. Humans of all ages and from every culture find in music a profound means of basic psychological need satisfaction, an activity that develops and reflects the self, and a mechanism for social connection and development. Music is also a creative and technical performance domain, where skills and capacities can be refined to awe-inspiring levels of technical sophistication. In this sphere of music performance, motivational factors loom large, because attaining expertise requires both a long journey of learning and practice, as well as the simultaneous preservation of one's intrinsic motivation for the art itself.[1]

## References

Alexander, D. L. (2015). *Intrinsic motivation in a collegiate secondary music instrument class* (Unpublished doctoral dissertation). University of Rochester.

---

[1] I am grateful for thoughtful suggestions and insights provided by Gary E. McPherson and John Napier during the preparation of this chapter.

Araújo, L. S., Wasley, D., Perkins, R., Atkins, L., Redding, E., Ginsborg, J., & Williamon, A. (2017). Fit to perform: An investigation of higher education music students' perceptions, attitudes, and behaviors toward health. *Frontiers in Psychology*, *8*. https://doi.org/10.3389/fpsyg.2017.01558

Araújo, L. S., Wasley, D., Redding, E., Atkins, L., Perkins, R., Ginsborg, J., & Williamon, A. (2020). Fit to perform: A profile of higher education music students' physical fitness. *Frontiers in Psychology*, *11*, 1–18. https://doi.org/10.3389/fpsyg.2020.00298

Ascenso, S., Perkins, R., & Williamon, A. (2018). Resounding meaning: A PERMA wellbeing profile of classical musicians. *Frontiers in Psychology*, *9*(November), 1–14. https://doi.org/10.3389/fpsyg.2018.01895

Bennett, D. (2016). Developing employability in higher education music. *Arts and Humanities in Higher Education*, *15*(3–4), 386–395. https://doi.org/10.1177/1474022216647388

Blackwell, J., Miksza, P., Evans, P., & McPherson, G. E. (2020). Student vitality, teacher engagement, and rapport in studio music instruction. *Frontiers in Psychology*, *11*(May), 1–12. https://doi.org/10.3389/fpsyg.2020.01007

Bonneville-Roussy, A., & Bouffard, T. (2015). When quantity is not enough: Disentangling the roles of practice time, self-regulation and deliberate practice in musical achievement. *Psychology of Music*, *43*(5), 686–704. https://doi.org/10.1177/0305735614534910

Bonneville-Roussy, A., Evans, P., Verner-Filion, J., Vallerand, R. J., & Bouffard, T. (2017). Motivation and coping with the stress of assessment: Gender differences in outcomes for university students. *Contemporary Educational Psychology*, *48*, 28–42. https://doi.org/10.1016/j.cedpsych.2016.08.003

Bonneville-Roussy, A., Hruska, E., & Trower, H. (2020). Teaching music to support students: How autonomy-supportive music teachers increase students' well-being. *Journal of Research in Music Education*, *68*(1), 97–119. https://doi.org/10.1177/0022429419897611

Bonneville-Roussy, A., Lavigne, G. L., & Vallerand, R. J. (2011). When passion leads to excellence: The case of musicians. *Psychology of Music*, *39*, 123–138. https://doi.org/10.1177/0305735609352441

Bonneville-Roussy, A., Rentfrow, P. J., Xu, M. K., & Potter, J. (2013). Music through the ages: Trends in musical engagement and preferences from adolescence through middle adulthood. *Journal of Personality and Social Psychology*, *105*(4), 703–717. https://doi.org/10.1037/a0033770

Bonneville-Roussy, A., & Vallerand, R. J. (2018). The role of passion in the development of expertise: A conceptual model. In D. Z. Hambrick, G. Campitelli, & B. N. Macnamara (Eds.), *The science of expertise: Behavioral, neural, and genetic approaches to complex skill* (pp. 376–398). Routledge.

Bonneville-Roussy, A., & Vallerand, R. J. (2020). Passion at the heart of musicians' well-being. *Psychology of Music*, *48*(2), 266–282. https://doi.org/10.1177/0305735618797180

Bonneville-Roussy, A., Vallerand, R. J., & Bouffard, T. (2013). The roles of autonomy support and harmonious and obsessive passions in educational persistence. *Learning and Individual Differences*, *24*, 22–31. https://doi.org/10.1016/j.lindif.2012.12.015

Brown, D. E. (2017). *Human universals*. McGraw-Hill.

Burwell, K. (2012). Apprenticeship in music: A contextual study for instrumental teaching and learning. *International Journal of Music Education*, 276–291. https://doi.org/10.1177/0255761411434501

Chamorro-Premuzic, T., & Furnham, A. (2007). Personality and music: Can traits explain how people use music in everyday life? *British Journal of Psychology*, *98*(2), 175–185. https://doi.org/10.1348/000712606X111177

Comeau, G., Huta, V., & Liu, Y. (2015). Work ethic, motivation, and parental influences in Chinese and North American children learning to play the piano. *International Journal of Music Education*, *33*(2), 181–194. https://doi.org/10.1177/0255761413516062

Comeau, G., Huta, V., Lu, Y., & Swirp, M. (2019). The Motivation for Learning Music (MLM) questionnaire: Assessing children's and adolescents' autonomous motivation for learning a musical instrument. *Motivation and Emotion*, 705–718. https://doi.org/10.1007/s11031-019-09769-7

Coppola, W. J. (2021). Students' social perceptions of humility and arrogance among band directors. *Journal of Research in Music Education*, 682–698. https://doi.org/10.1177/0022429420981675

Coşkun-Şentürk, G., & Çırakoğlu, O. C. (2018). How guilt/shame proneness and coping styles are related to music performance anxiety and stress symptoms by gender. *Psychology of Music*, *46*(5), 682–698. https://doi.org/10.1177/0305735617721338

Dale, D. (2018). *Community bands of Kentucky: Participation, engagement and the fulfillment of basic psychological needs* (Unpublished doctoral dissertation). Boston University.

Davidson, J. W., & Garrido, S. (2019). Singing and psychological needs. In G. F. Welch, D. M. Howard, & J. Nix (Eds.), *The Oxford handbook of singing* (pp. 902–918). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199660773.013.017

Davidson, J. W., Moore, D. G., Sloboda, J. A., & Howe, M. J. A. (1998). Characteristics of music teachers and the progress of young instrumentalists. *Journal of Research in Music Education*, *46*(1), 141–160. https://doi.org/10.2307/3345766

Diaz, F. M. (2018). Relationships among meditation, perfectionism, mindfulness, and performance anxiety among collegiate music students. *Journal of Research in Music Education*, *66*(2), 150–167. https://doi.org/10.1177/0022429418765447

Dutton, D. (2009). *The art instinct*. Oxford University Press.

Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, *100*, 363–406. https://doi.org/10.1037/0033-295X.100.3.363

Evans, P. (2009). *Psychological needs and social-cognitive influences on participation in music activities* (Unpublished doctoral dissertation). University of Illinois at Urbana-Champaign.

Evans, P. (2015). Self-determination theory: An approach to motivation in music education. *Musicae Scientiae*, *19*(1), 65–83. https://doi.org/10.1177/1029864914568044

Evans, P., & Bonneville-Roussy, A. (2016). Self-determined motivation for practice in university music students. *Psychology of Music*, *44*(5), 1095–1110. https://doi.org/10.1177/0305735615610926

Evans, P., & Liu, M. Y. (2019). Psychological needs and motivational outcomes in a high school orchestra program. *Journal of Research in Music Education*, *67*(1), 83–105. https://doi.org/10.1177/0022429418812769

Evans, P., & McPherson, G. E. (2015). Identity and practice: The motivational benefits of a long-term musical identity. *Psychology of Music*, *43*(3), 407–422. https://doi.org/10.1177/0305735613514471

Evans, P., McPherson, G. E., & Davidson, J. W. (2013). The role of psychological needs in ceasing music and music learning activities. *Psychology of Music*, *41*(5), 600–619. https://doi.org/10.1177/0305735612441736

Evans, P., & Ryan, R. M. (2022). Intrinsic and extrinsic motivations for music performance. In G. E. McPherson (Ed.), *The Oxford handbook of music performance* (pp. 576–603). Oxford University Press.

Faulkner, R., Davidson, J. W., & McPherson, G. E. (2010). The value of data mining in music education research and some findings from its application to a study of instrumental learning during childhood. *International Journal of Music Education*, *28*(3), 212–230. https://doi.org/10.1177/0255761410371048

Ferguson, C. J., & Donnellan, M. B. (2014). Is the association between children's baby video viewing and poor language development robust? A reanalysis of Zimmerman, Christakis, and Meltzoff (2007). *Developmental Psychology*, *50*(1), 129–137. https://doi.org/10.1037/a0033628

Figueiredo, E. A. de F. (2019). Associations between training, employment, and motivational styles of Brazilian instrumental music teachers. *International Journal of Music Education*, *37*(2), 198–209. https://doi.org/10.1177/0255761419839170

Freer, E. G. (2014). *Motivation and elective music intentions: A study of self-determination theory in high school music* (Unpublished doctoral dissertation). University of New South Wales.

Freer, E. G., & Evans, P. (2018). Psychological needs satisfaction and value in students' intentions to study music in high school. *Psychology of Music*, *46*(6), 881–895. https://doi.org/10.1177/0305735617731613

Freer, E. G., & Evans, P. (2019). Choosing to study music in high school: Teacher support, psychological needs satisfaction, and elective music intentions. *Psychology of Music*, *47*(6), 781–799. https://doi.org/10.1177/0305735619864634

Garrett, B. (2019). Confronting the challenge: The impact of whole-school primary music on generalist teachers' motivation and engagement. *Research Studies in Music Education*, *41*(2), 219–235. https://doi.org/10.1177/1321103X18814579

Greenberg, D. M., & Rentfrow, P. J. (2017). The social psychological underpinnings of musical identities. In R. MacDonald, D. J. Hargreaves, & D. Miell (Eds.), *Handbook of musical identities* (pp. 304–321). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199679485.003.0017

Hallam, S., Rogers, L., & Creech, A. (2008). Gender differences in musical instrument choice. *International Journal of Music Education*, *26*(1), 7–19. https://doi.org/10.1177/0255761407085646

Haraldsen, H. M., Halvari, H., Solstad, B. E., Abrahamsen, F. E., & Nordin-Bates, S. M. (2019). The role of perfectionism and controlling conditions in Norwegian elite junior performers' motivational processes. *Frontiers in Psychology*, *10*, 1–12. https://doi.org/10.3389/fpsyg.2019.01366

Hargreaves, D. J., & Lamont, A. (2017). *The psychology of musical development*. Cambridge University Press. https://doi.org/10.1017/978110728186

Herrera, D., Matos, L., Gargurevich, R., Lira, B., & Valenzuela, R. (2021). Context matters: Teaching styles and basic psychological needs predicting flourishing and perfectionism in university music students. *Frontiers in Psychology*, *12*, 1–9.https://doi.org/10.3389/fpsyg.2021.623312

Howe, M. J. A., Davidson, J. W., & Sloboda, J. A. (1998). Innate talents: Reality or myth? *Behavioral and Brain Sciences*, *21*(3), 399–407; discussion 407–442. https://doi.org/10.1017/S0140525X9800123X

Hsu, Y., & Chi, Y. H. (2021). Academic major satisfaction and regret of students in different majors: Perspectives from self-determination theory. *Psychology in the Schools*, *April*, 1–13. https://doi.org/10.1002/pits.22563

Jeanneret, N., & DeGraffenreid, G. M. (2012). Music education in the generalist classroom. In G. E. McPherson & G. F. Welch (Eds.), *The Oxford handbook of music education* (Vol. 1, pp. 398–416). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199730810.013.0024_update_001

Kingsford-Smith, A., & Evans, P. (2019). A longitudinal study of psychological needs satisfaction, value, achievement, and elective music intentions. *Psychology of Music*, *49*(3), 030573561986828. https://doi.org/10.1177/0305735619868285

Koehler, F., & Neubauer, A. B. (2020). From music making to affective well-being in everyday life: The mediating role of need satisfaction. *Psychology of Aesthetics, Creativity, and the Arts*, *14*(4), 493–505. https://doi.org/10.1037/aca0000261

Koops, L. H., & Kuebel, C. R. (2019). Self-reported mental health and mental illness among university music students in the United States. *Research Studies in Music Education, 43(3)*, 129–143. https://doi.org/10.1177/1321103X19863265

Krause, A. E., & Davidson, J. W. (2018). Effective educational strategies to promote life-long musical investment: Perceptions of educators. *Frontiers in Psychology*, *9*, 1–9. https://doi.org/10.3389/fpsyg.2018.01977

Krause, A. E., North, A. C., & Davidson, J. W. (2019). Using self-determination theory to examine musical participation and well-being. *Frontiers in Psychology*, *10*, 1–12. https://doi.org/10.3389/fpsyg.2019.00405

Legutki, A. R. (2010). *Self-determined music participation: The role of psychological needs satisfaction, intrinsic motivation, and self-regulation in the high school band experience* (Unpublished doctoral dissertation). University of Illinois at Urbana-Champaign.

Lehmann, A. C., Gruber, H., & Kopiez, R. (2018). Expertise in music. In K. A. Ericsson, R. R. Hoffman, A. Kozbelt, & A. M. Williams (Eds.), *The Cambridge handbook of expertise and expert performance* (2nd ed., pp. 535–549). Cambridge University Press. https://doi.org/10.1017/9781316480748.028

Leubner, D., & Hinterberger, T. (2017). Reviewing the effectiveness of music interventions in treating depression. *Frontiers in Psychology*, *8*, 1–21. https://doi.org/10.3389/fpsyg.2017.01109

Liu, L., Harris Bond, M., Guan, Y., Cai, Z., Sun, J., Yu, Q., Fu, R., & Wang, Z. (2015). Parents' music training motivation and children's music learning achievement: An investigation in the Chinese context. *Psychology of Music*, *43*(5), 661–674. https://doi.org/10.1177/0305735614532703

Liu, M. Y. (2016). *Psychological needs and music engagement intentions: A self-determination theoretical perspective on the motivation to continue in music* (Unpublished doctoral dissertation). Boston University.

Lonsdale, A. J., & North, A. C. (2011). Why do we listen to music? A uses and gratifications analysis. *British Journal of Psychology*, *102*(1), 108–134. https://doi.org/10.1348/000712610X506831

Macnamara, B. N., Hambrick, D. Z., & Oswald, F. L. (2014). Deliberate practice and performance in music, games, sports, education, and professions: A meta-analysis. *Psychological Science*, *25*, 1608–1618. https://doi.org/10.1177/0956797614535810

Martin, A. J., & Evans, P. (2022). Buoyancy, resilience, and adaptability. In G. E. McPherson (Ed.), *The Oxford handbook of music performance* (pp. 630–651). Oxford University Press.

McPherson, G. E. (2001). Commitment and practice: Key ingredients for achievement during the early stages of learning a musical instrument. *Bulletin of the Council for Research in Music Education*, *147*, 122–127.

McPherson, G. E. (2005). From child to musician: Skill development during the beginning stages of learning an instrument. *Psychology of Music*, *33*, 5–35.

McPherson, G. E. (2009). The role of parents in children's musical development. *Psychology of Music*, *37*(1), 91–110. https://doi.org/10.1177/0305735607086049

McPherson, G. E., & Davidson, J. W. (2002). Musical practice: Mother and child interactions during the first year of learning an instrument. *Music Education Research, 4*(1), 141–156. https://doi.org/10.1080/1461380022011982

McPherson, G. E., Davidson, J. W., & Evans, P. (2015). Playing an instrument. In G. E. McPherson (Ed.), *The child as musician: A handbook of musical development* (2nd ed., pp. 403–423). Oxford University Press.

McPherson, G. E., Miksza, P., & Evans, P. (2017). Self-regulated learning in music practice and performance. In D. H. Schunk & J. A. Greene (Eds.), *Handbook of self-regulation of learning and performance* (2nd ed., pp. 181–193). Routledge.

McPherson, G. E., & O'Neill, S. A. (2010). Students' motivation to study music as compared to other school subjects: A comparison of eight countries. *Research Studies in Music Education*, *32*(2), 101–137. https://doi.org/10.1177/1321103X10384202

Mehr, S. A., Singh, M., Knox, D., Ketter, D. M., Pickens-Jones, D., Atwood, S., Lucas, C., Jacoby, N., Egner, A. A., Hopkins, E. J., Howard, R. M., Hartshorne, J. K., Jennings, M. V, Simson, J., Bainbridge, C. M., Pinker, S., O'Donnell, T. J., Krasnow, M. M., & Glowacki, L. (2019). Universality and diversity in human song. *Science, 366, 1–17*. https://doi.org/10.1126/science.aax0868

Miksza, P. (2007). Effective practice: An investigation of observed practice behaviors, self-reported practice habits, and the performance achievement of high school wind players. *Journal of Research in Music Education*, *55*, 359–375. https://doi.org/10.1177/0022429408317513

Miksza, P. (2012). The development of a measure of self-regulated practice behavior for beginning and intermediate instrumental music students. *Journal of Research in Music Education*, *59*, 321–338. https://doi.org/10.1177/0022429411414717

Miksza, P. (2022). Practice. In G. E. McPherson (Ed.), *The Oxford handbook of music performance* (pp. 153–172). Oxford University Press.

Miksza, P., Evans, P., & McPherson, G. E. (2021a). Motivation to pursue a career in music: The role of social constraints in university music programs. *Psychology of Music*, *49*(1), 50–68. https://doi.org/10.1177/0305735619836269

Miksza, P., Evans, P., & McPherson, G. E. (2021b). Wellness among university-level music students: A study of the predictors of subjective vitality. *Musicae Scientiae*, *25*(2), 143–160. https://doi.org/10.1177/1029864919860554

Miranda, D., Blais-Rochette, C., Vaugon, K., Osman, M., & Arias-Valenzuela, M. (2015). Towards a cultural-developmental psychology of music in adolescence. *Psychology of Music*, *43*(2), 197–218. https://doi.org/10.1177/0305735613500700

Moreno-Morales, C., Calero, R., Moreno-Morales, P., & Pintado, C. (2020). Music therapy in the treatment of dementia: A systematic review and meta-analysis. *Frontiers in Medicine*, *7*(May), 1–11. https://doi.org/10.3389/fmed.2020.00160

Morinville, A., Miranda, D., & Gaudreau, P. (2013). Music listening motivation is associated with global happiness in Canadian late adolescents. *Psychology of Aesthetics, Creativity, and the Arts*, *7*(4), 384–390. https://doi.org/10.1037/a0034495

Murray, S. S. (2017). *Basic psychological needs and the New Horizons musician: A cross-case analysis of six older adults participating in a New England New Horizons music ensemble* (Unpublished doctoral dissertation). Boston University.

Nettl, B. (2001). Music. In D. L. Root (Ed.), *Grove music online*. Oxford University Press. https://doi.org/10.1093/gmo/9781561592630.article.40476

North, A. C., & Hargreaves, D. J. (1999). Music and adolescent identity. *Music Education Research*, *1*(1), 75–92. https://doi.org/10.1080/1461380990010107

Osborne, M. S. & Kirsner, J. (2022). Music performance anxiety. In G. E. McPherson (Ed.), *Oxford handbook of music performance* (pp. 2014–231). Oxford University Press.

Osborne, M. S., & McPherson, G. E. (2019). Precompetitive appraisal, performance anxiety and confidence in conservatorium musicians: A case for coping. *Psychology of Music*, *47*(3), 451–462. https://doi.org/10.1177/0305735618755000

Parncutt, R. (2015). Prenatal development. In G. E. McPherson (Ed.), *The child as musician* (2nd ed., pp. 3–30). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198744443.003.0001

Pascoe, R., Leong, S., MacCallum, J., Mackinlay, E., Marsh, K., Smith, B., Church, T., & Winterton, A. (2005). *National review of school music education: Augmenting the diminished*. Canberra: Australian Government.

Patel, A. D. (2008). *Music, language, and the brain*. Oxford University Press.

Peretz, I. (2016). Neurobiology of congenital amusia. *Trends in Cognitive Sciences*, *20*(11), 857–867. https://doi.org/10.1016/j.tics.2016.09.002

Philippe, R. A., Kosirnik, C., Vuichoud, N., Williamon, A., & von Roten, F. C. (2019). Understanding wellbeing among college music students and amateur musicians in western Switzerland. *Frontiers in Psychology*, *10*, 1–11. https://doi.org/10.3389/fpsyg.2019.00820

Pinker, S. (1997). *How the mind works*. W. W. Norton.

Rentfrow, P. J., & Gosling, S. D. (2003). The do re mi's of everyday life: The structure and personality correlates of music preferences. *Journal of Personality and Social Psychology*, *84*(6), 1236–1256.

Renwick, J. M. (2008). *Because I love playing my instrument: Young musicians' internalised motivation and self-regulated practising behaviour* (Unpublished doctoral dissertation). University of New South Wales.

Renwick, J. M., & McPherson, G. E. (2002). Interest and choice: Student-selected repertoire and its effect on practising behaviour. *British Journal of Music Education*, *19*(2), 173–188. https://doi.org/10.1017/S02650 51702000256

Rowley, J., Reid, A., & Bennett, D. (2021). Holding multiple musical identities. In A. Creech, D. A. Hodges, & S. Hallam (Eds.), *Routledge international handbook of music psychology in education and the community* (pp. 367–380). Routledge. https://doi.org/10.4324/9780429295362-31

Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*(3), 529–565.

Särkämö, T. (2018). Music for the ageing brain: Cognitive, emotional, social, and neural benefits of musical leisure activities in stroke and dementia. *Dementia*, *17*(6), 670–685. https://doi.org/10.1177/14713 01217729237

Schäfer, T., Sedlmeier, P., Städtler, C., & Huron, D. (2013). The psychological functions of music listening. *Frontiers in Psychology*, *4*, 1–33. https://doi.org/10.3389/fpsyg.2013.00511

Schatt, M. D. (2017). Middle school band students' self-determination to practice. *Psychology of Music*, *46*, 208–221. https://doi.org/10.1177/0305735617705008

Schmidt, C. P., Zdzinski, S. F., & Ballard, D. L. (2006). Motivation orientations, academic achievement, and career goals of undergraduate music education majors. *Journal of Research in Music Education*, *54*(2), 138–153. https://doi.org/10.1177/002242940605400205

Sloboda, J. A., Davidson, J. W., Howe, M. J. A., & Moore, D. G. (1996). The role of practice in the development of performing musicians. *British Journal of Psychology*, *87*, 287–309.

Snowdon, C. T., Zimmermann, E., & Altenmüller, E. (2015). Music evolution and neuroscience. *Progress in Brain Research*, *217*, 17–34. https://doi.org/10.1016/bs.pbr.2014.11.019

Sosniak, L. A. (1985). Phases of learning. In B. S. Bloom (Ed.), *Developing talent in young people* (pp. 409–438). Ballantine.

Stewart, J., Garrido, S., Hense, C., & McFerran, K. (2019). Music use for mood regulation: Self-awareness and conscious listening choices in young people with tendencies to depression. *Frontiers in Psychology*, *10*, 1–12. https://doi.org/10.3389/fpsyg.2019.01199

Stoeber, J., & Eismann, U. (2007). Perfectionism in young musicians: Relations with motivation, effort, achievement, and distress. *Personality and Individual Differences*, *43*(8), 2182–2192. https://doi.org/10.1016/j.paid.2007.06.036

Tarrant, M., North, A. C., & Hargreaves, D. J. (2001). Social categorization, self-esteem, and the estimated musical preferences of male adolescents. *Journal of Social Psychology*, *141*(5), 565–581. https://doi.org/10.1080/00224540109600572

Trehub, S. E., Becker, J., & Morley, I. (2015). Cross-cultural perspectives on music and musicality. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *370*(1664), 1–9. https://doi.org/10.1098/rstb.2014.0096

Trehub, S. E., & Degé, F. (2015). Reflections on infants as musical connoisseurs. In G. E. McPherson (Ed.), *The child as musician* (2nd ed., pp. 31–51). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198744443.003.0002

Trevarthen, C. (2005). Stepping away from the mirror: Pride and shame in adventures of companionship. Reflections on the nature and emotional needs of infant intersubjectivity. In C. S. Carter, L. Ahnert, K. E. Grossmann, S. B. Hrdy, M. E. Lamb, S. W. Porges, & N. Sachser (Eds.), *Attachment and bonding: A new synthesis* (pp. 55–84). MIT Press.

Trevarthen, C., & Malloch, S. (2017). The musical self. In R. MacDonald, D. J. Hargreaves, & D. Miell (Eds.), *Handbook of musical identities* (pp. 155–175). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199679485.003.0009

Tsang, C. D., Falk, S., & Hessel, A. (2017). Infants prefer infant-directed song over speech. *Child Development*, *88*(4), 1207–1215. https://doi.org/10.1111/cdev.12647

Ueda, T., Suzukamo, Y., Sato, M., & Izumi, S. I. (2013). Effects of music therapy on behavioral and psychological symptoms of dementia: A systematic review and meta-analysis. *Ageing Research Reviews*, *12*(2), 628–641. https://doi.org/10.1016/j.arr.2013.02.003

Valenzuela, R., Codina, N., & Pestana, J. V. (2017). Self-determination theory applied to flow in conservatoire music practice: The roles of perceived autonomy and competence, and autonomous and controlled motivation. *Psychology of Music*, *46*(1), 030573561769450. https://doi.org/10.1177/0305735617694502

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, *66*(5), 297–333. https://doi.org/10.1037/h0040934

Wild, T. C., Enzle, M. E., & Hawkins, W. L. (1992). Effects of perceived extrinsic versus intrinsic teacher motivation on student reactions to skill acquisition. *Personality and Social Psychology Bulletin*, *18*(2), 245–251. https://doi.org/10.1177/0146167292182017

Wong, A. (2020). Musical engagement and psychological need satisfaction in later life: Experiences from community older musicians in Hong Kong. In B. Ng & G. Ho (Eds.), *Self-determination theory and healthy aging* (pp. 75–92). Springer. https://doi.org/10.1007/978-981-15-6968-5_5

Zatorre, R. J. (2015). Musical pleasure and reward: Mechanisms and dysfunction. *Annals of the New York Academy of Sciences*, *1337*(1), 202–211. https://doi.org/10.1111/nyas.12677

# 32

# Self-Determination Theory in Health Professions Education Research and Practice

Rashmi A. Kusurkar

## Abstract

Self-determination theory (SDT) is currently one of the most popular theories in health professions education (HPE). Over the past decade, SDT has witnessed an exponential growth in HPE, which includes all studies that produce practitioners in the healthcare field: the professions of medicine, nursing, dentistry, physical therapy, and so on. This chapter provides an overview of research and practice using SDT in HPE, while identifying gaps in the current HPE literature, avenues for new research questions, and new applications. This attempt is critical and not exhaustive; it includes the most important but not all the relevant literature. Investigations of associations between motivation and academic performance have resulted in inconsistent findings. Outcomes of basic psychological needs satisfaction and frustration have scope for further investigation. The new research possibilities include the level of autonomy support provided in clinical supervision and the association between motivation and professional identity formation, among other topics.

**Key Words:** health professions education, motivation, basic psychological needs, health professions education students, motivational profiles

Self-determination theory (SDT) is a macro-theory of human motivation that is applicable across education, sports, leisure, parenting, healthcare and other domains. Its focus is not merely on the quantity of motivation but also its quality, which stems in part from the reasons behind an individual's intentions or actions. SDT also describes motivation as dynamic and dependent on the satisfaction of three basic psychological needs: autonomy (feeling of ownership, endorsement, and choice), competence (feeling of capability and growth), and relatedness (feeling of belonging and connection; Deci & Ryan, 2000; Ryan & Deci, 2000a).

## SDT in Health Professions Education Research and Practice

SDT was largely absent from the health professions education (HPE) literature until 2010. The first overview article using the SDT framework to explain phenomena in HPE appeared in early 2011 (Kusurkar, Ten Cate et al., 2011). This was followed by the

publication of a theoretical guide on the potential applications of SDT in medical education, but these recommendations were not yet empirically established (Ten Cate et al., 2011). An overview article highlighted that student motivation had been largely ignored while designing medical curricular reforms and that this was a concrete gap in the HPE literature (Kusurkar et al., 2012). This was followed by a rapid uptake of the SDT framework in different topics in HPE.

Currently SDT is one of the most popular motivation theories in HPE research and practice (Kusurkar & Ten Cate, 2013). In this chapter we focus on those studies in which HPE has been researched using a complete SDT framework. The idea was to be critically selective, not exhaustive. Studies that did not include the full SDT continuum or positioned intrinsic versus extrinsic (included all four regulations of extrinsic motivation together as one), without taking into account the nuance and the important position of identified regulation in the continuum and the process of internalization of motivation, were deliberately excluded.

HPE includes all educational studies that give rise to professionals whose graduation enables them to work in the healthcare field: medicine, dentistry, veterinary medicine, nursing, pharmacy, physical therapy, occupational therapy, midwifery, medical social work, dietetics, nutrition, and so on. Along with content expertise, HPE students need to develop profession-specific and generic skills (communication, collaboration, etc.) and also need to develop a professional identity and imbibe professional values and norms. This means their education needs to prepare them for practice armed with all these skills and competencies. HPE has evolved as a special domain within education, has its own set of scientific journals and researchers, and has been described as a knowledge-producing field (Van Enk & Regehr, 2018). The topics dealt with in HPE are also typically broader and deeper than the overall educational field. Thus, this chapter deals with the work conducted using SDT within HPE and does not include research conducted on healthcare outcomes or patient motivation. A table of the data extracted from the included studies is available on request, as are summary tables of results from studies of SDT within HPE.

## Research and Evidence

The empirical work on SDT in HPE includes a few overviews, many single studies, and some summaries of PhD theses.

### Research Reviews

To date, four SDT-based reviews have been published in the HPE literature.

*Student Motivation in Medical Education.* Kusurkar, Ten Cate et al. (2011) performed a review of studies conducted on student motivation in medical education, which were not necessarily based on SDT, but their findings were analyzed for this review using the SDT framework. Motivation was associated with outcomes like academic success and performance, learning and study behavior, choice of medicine as a career, specialty choice,

and intention to continue medical study. Motivation was also associated with influencing factors that could not be manipulated (such as age and gender) and factors that could be manipulated, which were classified under three themes: autonomy, competence, and relatedness. Autonomy included autonomy support for students by teachers or in the curriculum and direct patient responsibility that seemed to positively influence student motivation. Competence included feelings of self-efficacy, being selected in medical school admissions, standard-based assessment, feeling competent through gaining knowledge and skills, and high perceived task value, which were related to positive effects on motivation. Relatedness included early patient contact in the study and was associated with a feeling of well-being.

*Determinants, mediators, and outcomes of self-determined motivation.* A review of the literature focused on SDT-based HPE studies reported determinants, mediators, and outcomes of self-determined motivation. Student characteristics like persistence, self-directedness, cooperativeness, self-transcendence, readiness to start, and willingness to sacrifice were positively associated with self-determined motivation, whereas psychopathology was negatively associated with it. Autonomy-supportive learning climate, timely and constructive feedback, and selection procedures for medical school admissions were associated with self-determined motivation, while year of curriculum showed inconclusive results. Self-determined motivation was positively associated with reflection in learning, academic self-concept, adaptation to university, harmonious passion, positive emotions, academic engagement, class attendance, and deep learning approach. Self-determined motivation was negatively related with burnout, anxiety, depression, negative emotions, and stress (Orsini, Binnie, & Wilson, 2016).

*Autonomy support of students in general education for application to HPE students.* Orsini, Evans, and Jerez (2015) conducted a literature review on autonomy support of undergraduate students in general education in order to determine how basic psychological needs can be encouraged in the clinical teaching environment among HPE students. They identified the following. (1) Support for autonomy: identifying what students want, providing different learning approaches, explaining the value of uninteresting tasks, encouraging active participation, providing choices, giving concrete responsibility for learning, giving freedom, refraining from offering external rewards. (2) Support for competence: giving optimal challenges, giving guidance with structure, valuing the work of students, and giving positive and constructive feedback. (3) Support for relatedness: giving students respect, providing emotional support, and acknowledging students' expressions of negative effect.

*Autonomy support of students in medical education.* Williams and Deci (1998) concluded that autonomy-supportive learning climates are positively associated with student learning and psychological well-being. All the reviews described above have found evidence for association of autonomy, competence, and relatedness with positive motivational, learning, performance, and well-being outcomes. Given such promising results,

in the remainder of this chapter we take a closer look at the evidence base within HPE regarding the SDT literature.

*Empirical Studies*

MOTIVATION, LEARNING, AND ACADEMIC PERFORMANCE

In general, in the studies conducted on motivation, learning, and academic performance, the association of motivation with desirable learning attitude and behavior has been consistently established, but there is no clear conclusion on the association of motivation with academic performance. Four types of studies can be distinguished: using motivational profiles, examining relative autonomous motivation (RAM), examining autonomous motivation (AM) and controlled motivation (CM), and using qualitative methods.

*Studies employing motivational profiles.* Kusurkar, Croiset et al. (2013) found four clusters/motivational profiles among medical students: high intrinsic high controlled (HIHC), low intrinsic high controlled (LIHC), high intrinsic low controlled (HILC), and low intrinsic low controlled (LILC).[1] The HILC profile was positively associated with deeper study strategy, higher self-study hours, higher academic performance and lower exhaustion than the LIHC and LILC profiles. Orsini, Binnie, and Tricio (2018) found the same four motivational profiles among dental students as Kusurkar, Croiset et al. (2013). Yet it was students with high intrinsic motivation in their profiles (HIHC and HILC), regardless of their CM scores, who reported greater need satisfaction, deeper learning approach, and higher self-esteem and vitality.

Four profile solutions have, in fact, been found by a number of investigators. Sobral (2004) included amotivation as a variable along with AM and CM in his cluster analysis of medical students' motivation. Four clusters with decreasing levels of AM, CM, and amotivation were found. The cluster with the highest scores on AM and CM and lowest scores on amotivation was positively associated with learning for understanding and intention to continue studies, and negatively with learning for reproducing. There were no associations with GPA. Tjin A Tsoi et al. (2016b) found four motivational profiles among pharmacists similar to those identified by Kusurkar, Croiset et al. (2013), namely high autonomous low controlled, high autonomous high controlled, low autonomous high controlled, and low autonomous low controlled. These profiles showed differences in their associations with gender, ownership of business, and practice setting. Van der Burgt, Kusurkar, Wilschut et al. (2018) also found four motivational profiles among medical specialists, but there were no low AM scores. Thus the profiles were high autonomous moderate controlled motivation, moderate autonomous moderate controlled, moderate autonomous low controlled, and high autonomous low controlled. These profiles showed differences in their associations with gender, years of experience and type of specialization.

---

[1] Intrinsic motivation was used instead of autonomous motivation because the identified regulation measurement using the Academic Motivation Scale did not work to give reliable results.

In summary, four motivational profiles have been consistently found among different HPE groups, In general, the high autonomous/intrinsic low controlled motivation profile has been consistently linked with the best learning outcomes and well-being, and the low autonomous/intrinsic low controlled has been consistently linked with the least favorable outcomes. The association of high CM in a profile has been associated with good learning outcomes only if it is combined with a high autonomous/intrinsic motivation.

*Studies examining RAM.* Hommes et al. (2012) found that social networks were not directly associated with medical students' RAM (using the Academic Motivation Scale), but social integration was significantly associated with motivation. RAM was not associated with student learning, either directly or indirectly. Kusurkar, Ten Cate et al. (2013) found that RAM (measured using the Academic Motivation Scale) was positively related with academic performance, a relation mediated by deep versus surface learning strategies and higher effort, among medical students. Orsini, Binnie, & Jerez (2019) found that RAM was positively associated with self-esteem, vitality, and deep study strategy and negatively with surface study strategy among dental students. Deep study strategy was positively associated with academic performance, and surface study strategy negatively. Caris et al. (2018), found that RAM was positively associated with participation in e-learning. Sockalingam et al. (2016) found that lifelong learning among psychiatry residents was significantly correlated with RAM. Tjin A Tsoi et al. (2016a) found that RAM explained 7.8% of variance in pharmacists' participation in continuing education activities. Participant interviews brought to light that the prevailing continuing education system was outdated and did not offer enough choices in challenge and difficulty level to the participants.

*Studies employing AM and CM.* Isik et al. (2017, 2018) found that non-Western ethnic minority students had higher AM than the majority Dutch students in preclinical and clinical education in the Netherlands. Isik et al. then explored whether study strategy mediated between AM and CM and academic performance, and if these relations differed between students from different ethnic groups. Structural equation modeling analysis results showed that AM was positively associated with GPA through achieving strategy for the ethnic majority students only (possibly due to the small sample size for ethnic minority students). Feri, Soemantri, and Jusuf (2016) found that AM was positively associated with medical students' academic performance. Visser et al. (2018) investigated the association of the Readiness for Interprofessional Learning among medical students with professional identity, empathy, and motivation; AM as well as CM were positively associated with Teamwork & Collaboration, a subscale of the Readiness index.

*Qualitative methods.* Isik and colleagues conducted two qualitative studies (one focus group study and one interview study) on ethnic minority medical students in the Netherlands to understand their ethnicity-based experiences in the learning environment and how they could be supported to perform to their optimal potential. (Isik, Wouters, Verdonk et al. 2021; Isik, Wouters, Croiset et al. 2021) They reported that students'

negative experiences were related to discrimination in the learning environment, lack of ethnic minority role models, lack of belongingness, lack of a medical network, differences in cultural communication and language, and examiner bias in clinical assessments. The students made the following suggestions for improving the learning environment: increase awareness about diversity and other religions, provide support groups, increase the number and visibility of ethnic minority role models, and facilitate support in networking. Davis et al. (2019) investigated factors that made medical students interested in learning when placed in primary care clerkships. They found that placements in which students were treated as part of the healthcare team and could practice procedural skills independently and where the level of challenge in learning was optimal motivated them intrinsically. Students were not motivated when they did not feel valued, or where there was a discrepancy between their personal learning objectives and the available learning opportunities. Sockalingam et al. (2017) found that psychiatry residents think extrinsic motivators (exams, supervisor meetings and expectations, etc.) overshadow intrinsic motivators (enjoyment of learning and discovery) for learning during residency because students give them more importance. Practice requirements for certification and rigidity of training also detracted from making personally developed and intrinsically driven lifelong learning plans. Faculty and practicing psychiatrists emphasized that providing high-quality patient care was their motivation for engaging in lifelong learning. Thus it seems that extrinsic motivators reduce intrinsic motivation for learning.

Overall, quantitative studies on motivation, learning, and performance indicate that AM in comparison with CM is associated with positive learning, performance, and well-being outcomes, but the findings are not fully consistent across studies. The qualitative studies highlighted not only the underlying mechanisms of known associations in the SDT literature, but also in some cases revealed how and why variables have not been previously studied, as well as those that were specifically supporting or thwarting needs in the context studied. In addition, motivation, need satisfaction, and thriving of ethnic minority students within medical training is a fairly novel topic and should be explored in further research.

## DEVELOPMENT OF MOTIVATION ACROSS THE YEARS OF HPE

Investigating the development of motivation during the arc of professional education would ideally be done using longitudinal data. However, at this point the primary research base consists of cross-sectional data from different HPE years, from which we must try to draw conclusions on how motivation changes across these years. This trend definitely needs to change, in part because motivation does indeed appear to change over the course of HPE. For example, Del-Ben et al. (2013) found that intrinsic motivation, identified regulation, and introjected regulation decreased among medical students from the beginning to the end of the year. External regulation and amotivation did not change significantly. Academic performance at both time points was not correlated with academic

motivation. Orsini, Binnie, Fuentes et al. (2016) found an increase in RAM and amotivation of dental students during their transition from preclinical (Year 2) to clinical (Year 3) phase of their dental study. The authors attributed the increase in RAM to students being more autonomously motivated due to patient contact, and the rise in amotivation to the shock of practice, that is the feeling of incompetence that students can have when they first come in contact with patients. Da Silva et al. (2018) found that medical students from Year 1 had significantly lower amotivation, external regulation, and introjected regulation, and higher identified regulation and intrinsic motivation as compared to Year 6 students. Yet because this study was not longitudinal but cross-sectional, strong conclusions about the development of motivation over the course of medical training cannot be drawn. Finally, Tjin A Tsoi, De Boer, Croiset, Kusurkar et al. (2018) in a 21-month longitudinal study of Dutch pharmacists found that RAM decreased over time. This time coincided with the introduction of obligatory continuing education credits per year by the Dutch Pharmacists Association to keep the license for practicing pharmacy, which may have had a controlling functional significance, negatively impacting autonomy.

These studies suggest both change in motivation with education and the potential to link such change with factors in educational programs and climates. Nonetheless, there are too few longitudinal studies on development of motivation using the SDT framework in HPE. This is a gap that needs to be addressed using both qualitative and quantitative methods.

### BASIC PSYCHOLOGICAL NEEDS AND THEIR OUTCOMES

Recent studies involving SDT in HPE are being conducted on basic psychological needs satisfaction and their outcomes. In HPE studies there is good evidence to support the importance of the satisfaction of autonomy and competence needs, but more limited quantitative evidence for the importance of the satisfaction of the relatedness need and its associations with other variables. On the other hand, qualitative research studies have found strong evidence for relatedness satisfaction being a predictor of motivation and other associated variables. Quantitative studies have found evidence for "basic psychological needs frustration leading to undesirable consequences" and "basic psychological needs satisfaction leading to positive consequences," a pattern referred to in SDT as the dark and bright sides of motivation, respectively (Haerens et al., 2015; Ryan & Deci, 2000b). Yet more quantitative studies are required in HPE specifically to find support for the role and importance of relatedness, as well as the bright side of the "needs-motivation-consequences" pathway using methods like structural equation modeling or path analysis.

*Studies using quantitative methods*. Medical students whose competence need was satisfied in the learning environment were found to have mastery approach goals, while students whose competence need was not satisfied in the learning environment tended to have mastery avoidance goals (Babenko & Oswald, 2019). Good quality and quantity of feedback and an autonomy-supportive learning environment were associated with higher

RAM and lower amotivation among dental students, and the effect was mediated by the satisfaction of their basic psychological needs (Orsini, Binnie, Wilson, et al., 2018). Also, positive course experience components were positively associated with basic psychological needs satisfaction and negatively with frustration (Orsini, Tricio et al., 2019). Basic psychological need satisfaction was surprisingly positively associated with harmonious as well as obsessive passion, but had a stronger association with obsessive passion. Meanwhile frustration was associated positively with obsessive passion and negatively with harmonious passion. Moreover, Orsini, Binnie, and Tricio (2018) found that dental students with high intrinsic motivation in their profiles (HIHC and HILC) reported greater need satisfaction regardless of their CM scores.

Among Dutch pharmacy postgraduate trainees, Westein et al. (submitted) found that the perceived quality of the educational environment had a direct positive association with basic psychological needs satisfaction and a direct negative association with basic psychological needs frustration. Basic psychological needs frustration was positively associated with CM. In yet another study among pharmacists, basic psychological needs frustration was found to be positively associated with CM, and it was also negatively associated with vitality, which was positively associated with lifelong learning attitude (Tjin A Tsoi, De Boer, Croiset, Koster et al., 2018). CM was not related to lifelong learning attitude. Basic psychological needs frustration had only an indirect negative effect on lifelong learning attitude through its negative effect on vitality. No evidence was found for a model linking basic psychological needs satisfaction to lifelong learning attitude or vitality (Tjin A Tsoi, De Boer, Croiset, Koster et al., 2018). Thus, there was evidence only for the dark part of the basic psychological needs pathway.

Turning to yet more studies assessing needs, Van der Burgt et al. (2019) found that satisfaction of autonomy was positively associated with autonomous work motivation among medical specialists, which in turn was positively associated with attitude toward lifelong learning. Satisfaction of competence was negatively associated with controlled work motivation. Satisfaction of competence was also positively and directly associated with attitude toward lifelong learning. Relatedness did not seem to have any associations in the final model. Neufeld and Malin (2019) found that autonomy and relatedness satisfaction had a direct positive association with medical student well-being, while competence satisfaction had an indirect effect through resilience. Neufeld, Mossière, and Malin (2020) subsequently found that basic psychological need frustration was associated with higher perceived stress among medical students. Higher mindfulness, resilience, and need satisfaction were associated with lower perceived stress. Adding perceived need frustration to the model weakened the association between mindfulness, resilience, and perceived stress, suggesting partial mediation.

Perlman et al. (2019) studied preregistration nurses from Australia to determine if the support for autonomy, competence, and relatedness has predictive influence on the stigmatizing behaviors of undergraduate nursing students. Satisfaction of autonomy, competence, and relatedness was significantly negatively related with stigmatization attitude

against mentally ill patients/people. In regression analyses, only autonomy and competence predicted lower stigmatization attitude.

In a study on burnout and engagement among PhD students in medicine, Kusurkar et al. (2021) reported three clusters based on the burnout scores from low to high. Cluster 1, with low scores on burnout, was associated with low engagement scores. Cluster 2, with moderate burnout scores, was associated with even lower engagement. Cluster 3, with the highest burnout scores, was associated with the lowest motivational, engagement, need satisfaction, feeling part of a team, quality of sleep, and work-life balance scores. Through a structural equation modeling analysis a good fit was found for the "basic psychological needs frustration directly associated with burnout" model. CM did not fit into the model or mediate the relations between basic psychological needs frustration and burnout.

In summary, basic psychological needs satisfaction was associated with positive outcomes, whereas basic need frustration was associated with negative outcomes in HPE. This pattern of findings thus shows evidence for both bright and dark paths hypothesized within SDT.

*Studies using a qualitative method.* Steinauer et al. (2019), analyzed reflective essays written by medical students on challenging patient interactions. They reported that students experienced greater challenges with patient interactions when there was a lack of competence, autonomy, and relatedness. They also linked the three needs in a way in which getting autonomy in handling patients would make them feel competent and establish relatedness.

Visser et al. (2019) conducted interviews with medicine, nursing, pharmacy, and physical therapy students and supervisors in an interprofessional education ward. Students in this program found authentic tasks that gave them direct responsibility for patients were motivating and contributed to their autonomy and to feeling valued. They also found informal contact with the students from the other professions, which stimulated a feeling of relatedness, important in motivating them for interprofessional education. Competence was satisfied through students' creation of patient care plans. Having a structure for the interprofessional education meetings provided students with a feeling of competence. The need for developing competence in one's own profession sometimes interfered with being motivated for interprofessional education. The supervisors corroborated the findings from the students.

Ommering et al. (2020) reported that factors such as personal development, contribution to new knowledge or to patient care, being interested in different aspects of research, collaborating with others, and desire for challenge motivated medical students to conduct research. Factors such as perceived difficulty, negative or insignificant results, data collection and statistical analysis, low support, low autonomy, and poor collaboration were identified as demotivating. Negative perceptions related to research, sometimes easily addressable, such as complexity of analysis, were reported to have a negative influence on motivation.

Van der Burgt, Kusurkar, Croiset et al. (2018) and Van der Burgt et al. (2020) used two qualitative studies to examine work environment factors that motivate or demotivate medical specialists during their working day. Working with colleagues was found to be a motivating as well as a demotivating factor. Having control over one's own time planning through feelings of autonomy was motivating. The combination of patient care and teaching was experienced as motivating. Time pressure was a big factor that influenced motivation negatively because it put constraints on patient care. Poor workplace arrangements in the form of paucity of physical space, poor ventilation or light, and insufficient opportunities to relax or exercise while in the hospital were mentioned as influencing the situational motivation negatively. The burden of administrative and management tasks, which the specialists are not trained for, also influenced motivation negatively. Factors that negatively influenced situational motivation were perceived as surmountable as long as they did not occur frequently or all the time. If they did occur frequently the contextual motivation could be negatively impacted.

Van der Burgt et al. (2021) explored how medical specialists coped with daily stressors at work. They reported that medical specialists constructed different narratives to cope with stressful situations. These narratives were related to reinstating a feeling of autonomy (e.g., in planning one's work agenda) and building relatedness at work or in personal life to counter the frustration of their basic psychological needs.

Ten Hoeve et al. (2018) explored the personal and professional demands novice nurses are confronted with and what supports can help in the transition to professional nurses. Out of 1,321 reported experiences, 28% were about relatedness, 19% about competence, and 8% about autonomy. Positive experiences in relatedness (with patients, physicians, colleagues, and supervisors), competence, and autonomy in carrying out tasks and responsibilities helped the transition from being a novice to becoming a professional nurse. Negative experiences in these needs had the opposite effect.

Such qualitative studies on basic psychological needs have added deeper insight into the mechanisms underlying the associations of the needs with other variables in HPE. Specifically they link need satisfactions and frustrations to different training and educational factors. Such linkages show how basic needs can be assessed and used to help evaluate HPE programs.

SELECTION FOR ADMISSION TO HPE

A weighted lottery procedure to decide who gets admitted to a medical school was unique to the Netherlands; no other country in the world engaged in this practice. In 2017, the Netherlands moved to 100% selection owing to public dissatisfaction with the weighted lottery. Wouters et al. (2014, 2016; Wouters, Croiset et al., 2017a, 2017b; Wouters, Isik et al., 2017) conducted several studies to investigate the effects of selection on the motivation of medical students and the applicant pool using the SDT framework. Selection did not seem to result in a medical student population with more AM

as compared to weighted lottery (Wouters et al., 2016; Wouters, Croiset et al., 2017a, 2017b). Wouters et al. (2014) concluded that the use of motivation statements in a high-stakes situation may incite socially desirable answers and recommended against using such statements in selection processes. Selection seemed to give students a feeling of autonomy over their admissions process/outcome, and being selected made them feel competent and stimulated a feeling of relatedness through belonging to a special group. It also seemed to result in higher AM and CM immediately after the selection process, but this effect wore off over time (Wouters et al., 2016). High school students mentioned interest in science and helping people, both related to AM, to be the main reasons for pursuing a medical career, but parental pressure, and prestige, related to CM, were also mentioned. AM was enhanced through experiences with healthcare and patients. The existence of a selection process was demotivating, but did not prevent students from applying. Intrinsic motivation was enhanced by interaction with medical professionals in their network. Unequal access to healthcare experiences as well as support in the selection process gave rise to unequal access to medical school admissions. This seemed to have a negative influence on underrepresented students' motivation for applying to medical school (Wouters, Isik et al., 2017). This work generated important debates around the need to use selection processes for medical school admissions and led to national-level policy changes, in which the government recently reversed the regulation permitting 100% selection to a hybrid weighted lottery and selection admissions system.

Research on effects of selection on motivation seems to be another novel topic in the SDT literature. This work could be extended outside the HPE domain.

## MOTIVATION OF TEACHERS IN HPE

In general, there have been far fewer studies on teacher motivation as compared to student motivation in professional training contexts. More investigation into basic psychological needs, motivation, and outcomes of motivation among teachers in HPE is required. Dybowski and Harendza, (2015) developed and validated a new SDT-based questionnaire, the Physician Teaching Motivation Questionnaire, for measuring the motivation physicians have for teaching students. They established concurrent validity by computing its correlations with the Multidimensional Work Motivation Scale. They added a new subscale called "career motivation" as they found this particularly relevant for the medical profession. The three items measuring this concept were "I teach because I need the lessons to accomplish my occupational objectives"; "I teach because it is advantageous to my occupation"; and "I teach because it could promote my career." Dybowski, Sehner, and Harendza (2017) found that teaching motivation and teaching self-efficacy among German medical school teachers were not associated with medical students' rating of teaching quality, while teachers' perceptions of students' competencies and students' interest in the topic were positively associated with students' rating of teaching quality. Orsini et al. (2020) found that teachers' perception of autonomy support at work and their

perception of students' RAM were positively associated with teachers' basic psychological need satisfaction, which was in turn associated with student-centered teaching. O'Sullivan and Irby (2015) and O'Sullivan et al. (2016) explored motivations and professional identity formation in clinician/basic scientist faculty developers for conducting faculty development activities in two qualitative, interview-based studies. Of the five themes identified regarding motivation to be a faculty developer, the authors associated only mastery and relatedness with SDT, while each of the five motivations can be arranged along the SDT continuum.

Teacher motivation is an important topic in HPE as health professionals seldom get trained for teaching. Their competence need is not satisfied and nor is there enough emotional support or relatedness satisfaction, but they are still expected to deliver their best. Further and more in-depth studies on HPE teacher motivation would really add to the literature.

### EFFECTS OF AUTONOMY-SUPPORTIVE HPE

In general, autonomy support provided to students in teaching-learning or clinical supervision situations was associated with AM of students for learning, increased interest in the topic, better learning, students' perceived competence, biopsychosocial values, well-being, and academic performance. Student well-being was mediated by the satisfaction of the basic psychological needs of the students.

*Studies using a quantitative method.* Feri et al. (2016) reported that autonomy support by medical teachers was significantly negatively associated with academic performance. The authors attributed this unexpected finding to the educational background of the medical students. The students carried over a predominant influence from their high school environment, where a teacher-centered environment was the norm. Thus, the students were not competent for self-regulated learning. Neufeld and Malin (2020) found that medical student well-being was positively associated with the perceived instructor support mediated through the fulfillment of basic psychological needs of students. Williams et al. (1994) found that medical school teachers' provision of autonomy support in learning was associated with increased competence and interest in internal medicine as a topic, and interest in the topic was further associated with the medical students' interest in internal medicine as a specialization. Williams and Deci (1996) conducted two studies on Year-2 medical students. In Study 1, the students who had high general autonomous orientation had more autonomous reasons for participation in a patient interviewing course and had higher perception of competence in this course. Moreover, autonomy support from teachers accounted for the students feeling more relative autonomy and competence in their course. In Study 2, students' higher autonomy orientation was predictive of their biopsychosocial values for interviewing patients, higher relative autonomy for course participation, and perceived competence in interviewing. Williams et al. (1997) reported that medical students' perceptions of autonomy support from their clinical supervisors during

their internal medicine and surgery clerkships were significantly associated with the students' choice of specialty through increased interest and perceived competence.

*Studies using a qualitative method.* Biondi et al. (2015) surveyed American residents and their supervising faculty to understand the differences between resident and faculty perceptions of resident autonomy. They reported that residents, on the one hand, rated their behaviors in patient care (which were related to competence) more favorably than the faculty rated them. On the other hand, residents rated autonomy support from faculty less favorably than the faculty did. Thus there was discordance between the amount of autonomy the faculty thought they provided and the autonomy the residents perceived. The free-text, qualitative comments clarified that faculty were more inclined to give autonomy to residents who "appeared" to be competent and well-prepared. Time constraints and high patient load were mentioned as factors influencing provision of autonomy negatively, as were differences between the expectations, cultures, and priorities of the residents and faculty. Orsini, Evans et al. (2016) reported strategies used by medical teachers to motivate dental students for clinical learning and categorized them into themes of supporting autonomy, competence, and relatedness by the authors. The strategies described were as follows: (1) for fulfilling autonomy—avoiding and managing external motivators, acknowledging that some activities were uninteresting and providing rationale for engaging in such activities, giving students responsibility for patients, supporting students' personal interests, providing choices and encouraging proactive behavior from the students; (2) for fulfilling competence—providing optimal challenges in learning, allowing students to learn through observation when the challenge is too high, providing timely and constructive task-based feedback, valuing students' work and encouraging them; (3) for fulfilling relatedness—creating a team-based safe learning environment, getting acquainted with students, showing readiness to be criticized, and being a role model.

Creating autonomy-supportive environments for clinical supervision is an important topic in HPE and needs further investigation. Researching how to provide the optimal level of autonomy support customized to individual student capabilities would add to the current thinking in HPE about personalized learning possibilities.

### INTERVENTIONS OR CURRICULUM REFORM EFFECTS

The studies described below include investigations of curricular interventions on motivation or basic psychological needs of students. Some interventions, by themselves, are not SDT-based, but the studies explored the effect of these interventions on SDT-related concepts. This strategy reflects the utility of seeing whether new program elements increase, decrease, or leave unchanged learners' need satisfactions and frustrations.

Studies have investigated regular versus virtual microscopy and in-situ versus off-site simulation training, but these differences do not appear to affect motivation (Helle et al., 2011; Sørensen et al., 2015). However, one study comparing simulation-based genetics training with regular or no training scenarios identified an increase in intrinsic motivation

of their medium and high knowledge groups (Makransky et al., 2016). Neufeld, Huschi et al. (2020) created an SDT-based near-peer mentoring program and reported that this program was evaluated by students to be highly autonomy-supportive. In general, there were few intervention-based studies in HPE (especially randomized controlled trials are scarce), and none that followed the students for a longer period of time to investigate the long-term effects. Randomized controlled trials focusing on SDT-based interventions in HPE are needed to strengthen and extend the use of SDT in different HPE-related topics.

### INCONSISTENCY IN THE FINDINGS OF MEASUREMENT OF IDENTIFIED REGULATION IN HPE STUDENTS

The identified regulation subscale from the Academic Motivation Scale does not seem to work as intended in medical students, meaning that there is low variance in the way they answer this scale. Most reported Cronbach's alphas indicate internal consistency below the acceptable value (Kusurkar, Croiset et al., 2013; Orsini, Binnie, Evans et al., 2015; Orsini, Binnie, & Jerez, 2019), except the one reported by Del-Ben et al. (2013). Hommes et al. (2012), Orsini, Binnie, and Wilson (2016), Orsini, Binnie, and Tricio (2018), Orsini, Binnie, Wilson et al. (2018), Orsini et al. (2020), Sobral (2004), Schutte et al. (2017), Sockalingam et al. (2016), Tjin A Tsoi et al. (2016a, 2016b), and Tjin A Tsoi, De Boer, Croiset, Koster et al. 2018; Tjin A Tsoi, De Boer, Croiset, Kusurkar et al. 2018) have used the Academic Motivation Scale with undergraduate medical students, dental students, psychiatry residents, and practicing pharmacists, but have not reported the internal consistency or confirmatory factor analysis of all the subscales. The identified regulation subscale is said to have been problematic ever since its development, both in contents and in its internal consistency, and Can (2015) has suggested that the revision of this subscale is needed. In contrast, the identified regulation subscales of the Academic Self-Regulation Scale, the Learning Self-Regulation Scale, and the Multidimensional Work Motivation Scale have been used with health professions students and health professionals without any reported problems. (Caris et al., 2018; Isik et al., 2017, 2018; Feri et al., 2016; Kusurkar et al., 2021; Van der Burgt, Kusurkar, Wilschut et al., 2018; Van der Burgt et al., 2019; Visser et al., 2018).

## Applications to HPE Practice

Kusurkar, Croiset, & Ten Cate et al. (2011) have provided the following tips for stimulating intrinsic motivation of medical students based on autonomy-supportive teaching recommended by SDT:

- Understand and nurture students' needs and wishes.
- Let students' AM guide their behavior.
- Refrain from using incentives to motivate.
- Stimulate students for active participation in learning.

- Make students responsible for their own learning.
- Provide structured guidance.
- Provide challenges as per students' learning capacity.
- Provide positive and constructive feedback.
- Lend emotional support.
- Acknowledge learning-related negative feelings of students.
- Explain the value or relevance of uninteresting activities.
- Provide for choices in learning.
- Use suggestive (e.g., "can," "may," "could") instead of controlling (e.g., "must," "need," "should") language for student instruction.

Some of these have been confirmed by Orsini, Evans et al. (2015) through empirical research in the HPE context.

## Future Research

In spite of the impressive body of work done on SDT in HPE, there are several gaps that need to be explored. Since the association of motivation with academic performance is not conclusively established, this relationship needs further investigation in HPE. The probable reasons for difficulty in establishing this relationship could be that HPE is a professional education and performance is more complex than just academic grades; it includes clinical skills and professional performance. A paucity of longitudinal studies on development of motivation is a gap that needs to be addressed using different research methods. The probable reasons for this paucity could be the level of logistic difficulty involved in setting up a longitudinal study, low response rates to participation in longitudinal studies, and the amount of time required to collect data. Lack of quantitative evidence for relatedness satisfaction and its relationships with other variables warrants further research. More quantitative evidence is required for a "basic psychological needs satisfaction leading to positive consequences" model. Teacher motivation is less understood compared to student motivation in HPE. More studies on teacher motivation, especially on basic psychological needs, motivation, and outcomes of motivation, are the need of the hour in HPE. More investigation into benefits of autonomy support in teaching-learning and clinical supervision is necessary (Kusurkar & Croiset 2015). More SDT-based intervention studies that follow students for an extensive period of time are required to address this gap in the HPE literature. The creation and validation of the measurement of identified regulation through a new subscale specifically for HPE would be of great benefit to researchers.

Other new areas in which SDT could be applied include active learning in the clinical context; the use of virtual patients in teaching medical students as enhancing intrinsic motivation; how a novel curriculum based on the SDT principles with an emphasis on autonomy and competence can be built; using autonomy, competence, and relatedness to build a scholarship program for residents/students specializing in medicine; finding the

right level of autonomy support in HPE and clinical supervision of students and residents; and the role of motivation in professional identity formation.

Research work conducted in the HPE context has demanded a special place in the SDT literature owing to novel topics such as skill and competence development, clinical supervision/work, teacher/supervisor motivation in the absence of training for teaching, and professional identity formation, all of which can be explored and explained using the SDT framework. HPE researchers should take up this challenge and design SDT-based studies on such novel topics and extend the existing work.

## References

Babenko, B., & Oswald, A. (2019). The roles of basic psychological needs, self-compassion, and self-efficacy in the development of mastery goals among medical students. *Medical Teacher*, *41*(4), 478–481.

Biondi, E. A., Varade, W. S., Garfinkel, L. C., Lynn, J. F., Craig, M. S., Cellini, M. M., Shone, L. P., Harris, J. P., Baldwin, C. D. (2015). Discordance between resident and faculty perceptions of resident autonomy. *Academic Medicine, 90* (4), 462–471.

Can, G. (2015). Turkish version of the Academic Motivation Scale. *Psychological Reports, 116*, 388–408.

Caris, M. G., Sikkens, J. J., Kusurkar, R. A., & Van Agtmael, M. A. (2018). E-learning on antibiotic prescribing: The role of autonomous motivation in participation. A prospective cohort study. *Journal of Antimicrobial Chemotherapy, 73*, 2247–2251.

Da Silva, G. M. C., Borges, A. R. E., Da Silva, O., Lucchetti, A. L. G., & Lucchetti, G. (2018). Comparison of students' motivation at different phases of medical school. *Revista da Associação Médica Brasileira, 64*(10), 902–908.

Davis, K., Doole, E., Cheek, C., & Shires, L. (2019). How medical students learn in primary care. *Clinical Teacher, 16*, 474–478.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behaviour. *Psychological Inquiry, 11*(4), 227–268.

Del-Ben, C. M., Machado, V. F., Madisson, M. M., Resende, T. L., Valério, F. P., & Troncon, L. E. D. A. (2013). Relationship between academic performance and affective changes during the first year at medical school. *Medical Teacher, 35*(5), 404–410.

Dybowski, C., & Harendza, S. (2015). Validation of the Physician Teaching Motivation Questionnaire (PTMQ). *BMC Medical Education, 15*, 166.

Dybowski, C., Sehner, S., & Harendza, S. (2017). Influence of motivation, self-efficacy and situational factors on the teaching quality of clinical educators. *BMC Medical Education*, *17*(1), 84.

Feri, R., Soemantri, D., & Jusuf, A. (2016). The relationship between autonomous motivation and autonomy support in medical students' academic achievement. *International Journal of Medical Education, 7*, 417–423.

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise, 16*, 26–36.

Helle, L., Nivala, M., Kronqvist, P., Gegenfurtner, A., Björk, P., & Säljö, R. (2011). Traditional microscopy instruction versus process-oriented virtual microscopy instruction: A naturalistic experiment with control group. *Diagnostic Pathology*, *6*, S8.

Hommes, J., Rienties, B., de Grave, W., Bos, G., Schuwirth, L., & Scherpbier, A. (2012). Visualising the invisible: A network approach to reveal the informal social side of student learning. *Advances in Health Sciences Education, 17*, 743–757.

Isik, U., Wilschut, J., Croiset, G., & Kusurkar, R. A. (2018). The role of study strategy in motivation and academic performance of ethnic minority and majority students: A structural equation model. *Advances in Health Sciences Education, 23*, 921–935.

Isik, U., Wouters, A., Croiset, G., & Kusurkar, R. A. (2021). What kind of support do I need to be successful as an ethnic minority medical student? A qualitative study. *BMC Medical Education, 21*, 6.

Isik, U., Wouters, A., Ter Wee, M. M., Croiset, G., & Kusurkar, R. A. (2017). Motivation and academic performance of medical students from ethnic minorities and majority: A comparative study. *BMC Medical Education, 17*, 233.

Isik, U., Wouters, A., Verdonk, P., Croiset, G., & Kusurkar, R. A. (2021). "As an ethnic minority, you just have to work twice as hard": Experiences and motivation of ethnic minority students in medical education. *Perspectives on Medical Education*, *10*(*5*), 272–278.

Kusurkar, R. A., & Croiset, G. (2015). Autonomy support for autonomous motivation in medical education. *Medical Education Online, 20*(1), 27951.

Kusurkar, R. A., Croiset, G., Galindo-Garré, F., & Ten Cate, T. J. (2013). Motivational profiles of medical students: Association with study effort, academic performance and exhaustion. *BMC Medical Education, 13*, 87.

Kusurkar, R. A., Croiset, G., Mann, K. V., Custers, E. J. F. M., & Ten Cate, T. J. (2012). Have motivation theories guided the development and reform of medical education curricula? A review of the literature. *Academic Medicine*, *87*(6), 735–743.

Kusurkar, R. A., Croiset, G., & Ten Cate, T. J. (2011). Twelve tips to stimulate intrinsic motivation in students through autonomy-supportive classroom teaching derived from self-determination theory. *Medical Teacher, 33*, 978–982.

Kusurkar, R. A., & Ten Cate, T. J. (2013). Education is not filling a bucket, but lighting a fire: Self-determination theory and motivation in medical students. *Academic Medicine*, *88*(6), 904.

Kusurkar, R. A., Ten Cate, T. J., Van Asperen, M., & Croiset, G. (2011). Motivation as an independent and a dependent variable in medical education: A review of the literature. *Medical Teacher, 33*, e242–e262.

Kusurkar, R. A., Ten Cate, T. J., Vos, C. M., Westers, P., & Croiset, G. (2013). How motivation affects academic performance: A structural equation modelling analysis. *Advances in Health Sciences Education, 18*, 57–69.

Kusurkar, R. A., van der Burgt, S., Isik, U., Mak-van der Vossen, M., Wilschut, J., Wouters, A., & Koster, A. S. (2021). Burnout and engagement among PhD students in medicine: The BEeP study. *Perspectives on Medical Education*, *10*, 110–117.

Makransky, G., Bonde, M. T., Wulff, J. S., Wandall, J., Hood, M., Creed, P. A., Bache, I., Silahtaroglu, A., Nørremølle, A. (2016). Simulation based virtual learning environment in medical genetics counseling: An example of bridging the gap between theory and practice in medical education. *BMC Medical Education, 16*, 98.

Neufeld, A., Huschi, Z., Ames, A., Trinder, K., Malin, G., & McKague, M. (2020). Peers United in Leadership & Skills Enhancement: A near-peer mentoring program for medical students. *Canadian Medical Education Journal*, *11*(6), e145–e148.

Neufeld, A., & Malin, G. (2019). Exploring the relationship between medical student basic psychological need satisfaction, resilience, and well-being: A quantitative study. *BMC Medical Education*, *19*(1), 405.

Neufeld, A., & Malin, G. (2020). How medical students' perceptions of instructor autonomy-support mediate their motivation and psychological well-being, *Medical Teacher*, *42*(6), 650–656.

Neufeld, A., Mossière, A., & Malin, G. (2020). Basic psychological needs, more than mindfulness and resilience, relate to medical student stress: A case for shifting the focus of wellness curricula. *Medical Teacher*, *42*(12), 1401–1412.

Ommering, B.W.C., Wijnen-Meijer, M., Dolmans, D. H. J. M., Dekker, F. W., & Van Blankenstein, F. M. (2020). Promoting positive perceptions of and motivation for research among undergraduate medical students to stimulate future research involvement: A grounded theory study. *BMC Medical Education, 20*, 204.

Orsini, C., Binnie, V., Evans, P., Ledezma, P., Fuentes, F., & Villegas, M. J. (2015). Psychometric validation of the Academic Motivation Scale in a dental student sample. *Journal of Dental Education, 79*, 971–981.

Orsini, C., Binnie, V., Fuentes, F., Ledezma, P., & Lerez, O. (2016). Implications of motivation differences in preclinical-clinical transition of dental students: A one-year follow-up study. *Educación Médica*, *17*(4), 193–196.

Orsini, C., Binnie, V., & Jerez, O. (2019). Motivation as a predictor of dental students' affective and behavioral outcomes: Does the quality of motivation matter? *Journal of Dental Education*, *83*(5), 521–529.

Orsini, C., Binnie, V., & Tricio, J. A. (2018). Motivational profiles and their relationships with basic psychological needs, academic performance, study strategies, self-esteem, and vitality in dental students in Chile. *Journal of Educational Evaluation for Health Professions, 15*, 11.

Orsini, C., Binnie, V. I., & Wilson, S. L. (2016). Determinants and outcomes of motivation in health professions education: A systematic review based on self-determination theory. *Journal of Educational Evaluation for Health Professions, 13*, 19.

Orsini, C., Binnie, V., Wilson, S., & Villegas, M. J. (2018). Learning climate and feedback as predictors of dental students' self-determined motivation: The mediating role of basic psychological needs satisfaction. *European Journal of Dental Education, 22*, e228–e236.

Orsini, C., Evans, P., Binnie, V., Ledezma, P., & Fuentes, F. (2016). Encouraging intrinsic motivation in the clinical setting: Teachers' perspectives from the self-determination theory. *European Journal of Dental Education, 20*, 102–111.

Orsini, C., Evans, P., & Jerez, O. (2015). How to encourage intrinsic motivation in the clinical teaching environment? A systematic review from the self-determination theory. *Journal of Educational Evaluation for Health Professions, 12*, 8.

Orsini, C., Tricio J. A., Segura, C., & Tapia, D. (2020). Exploring teachers' motivation to teach: A multisite study on the associations with the work climate, students' motivation, and teaching approaches. *Journal of Dental Education*, *84*(4), 429–437.

Orsini, C., Tricio, J., Tapia, D., & Segura, C. (2019). How dental students' course experiences and satisfaction of their basic psychological needs influence passion for studying in Chile. *Journal of Educational Evaluation for Health Professions, 16*, 37.

O'Sullivan, P. S., & Irby, D. M. (2015). What motivates occasional faculty developers to lead faculty development workshops? A qualitative study. *Academic Medicine*, *90*(11), 1536–1540.

O'Sullivan, P. S., Mkony, C., Beard, J., & Irby, D. M. (2016). Identity formation and motivation of new faculty developers: A replication study in a resource constrained university, *Medical Teacher*, *38*(9), 879–885.

Perlman, D., Moxham, L., Patterson, C., & Cregan, A. (2019). Stigmatization behavior of pre-registration nurses: Do the self-determined psychological needs influence this? *Issues in Mental Health Nursing, 40*(4), 342–346.

Ryan, R. M., & Deci, E. L. (2000a). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*, 54–67.

Ryan, R. M., & Deci, E. L. (2000b). The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Psychological Inquiry*, *11*(4), 319–338.

Schutte, T., Tichelaar, J., Dekker, R. S., Thijs, A., De Vries, T. G. P. M., Kusurkar, R. A., Richir, M. C., Van Agtmael, M. (2017). Motivation and competence of participants in a learner-centered student-run clinic: An exploratory pilot study. *BMC Medical Education, 17*, 23.

Sobral, D. T. (2004). What kind of motivation drives medical students' learning quests? *Medical Education, 38*, 950–957.

Sockalingam, S., Soklaridis, S., Yufe, S., Rawkins, S., Harris, I., Tekian, A., Silver, I., Wiljer, D. (2017). Incorporating lifelong learning from residency to practice: A qualitative study exploring psychiatry learners' needs and motivations. *Journal of Continuing Education in the Health Professions, 37*(2), 90–97.

Sockalingam, S., Wiljer, D., Yufe, S., Knox, M. K., Fefergrad, M., Silver, I., Harris, I., & Tekian, A. (2016). The relationship between academic motivation and lifelong learning during residency: A study of psychiatry residents. *Academic Medicine*, *91*(10), 1423–1430.

Sørensen, J. L., van der Vleuten, C. P. M., Rosthøj, S., Østergaard, D., LeBlanc, V., Johansen, M., Ekelund, K., Starkopf, L., Lindschou, J., Gluud, C., Weikop, P., Ottesen, B. (2015). Simulation-based multiprofessional obstetric anaesthesia training conducted in situ versus offsite leads to similar individual and team outcomes: A randomised educational trial. *BMJ Open, 5*, e008344.

Steinauer, J. E., Teherani, A., Mangini, R., Chien, J., Ten Cate, T. J., & O'Sullivan, P. (2019). Characterizations of motivation and identity in medical students' reflections about challenging patient interactions. *Medical Teacher*, *41*(10), 1178–1183.

Ten Cate, T. J., Kusurkar, R. A., & Williams, G. C. (2011). How can self-determination theory assist our understanding of teaching and learning processes in medical education. AMEE Guide 59. *Medical Teacher, 33*, 961–973.

Ten Hoeve, Y., Kunnen, S., Brouwer, J., & Roodbol, P. F. (2018). The voice of nurses: Novice nurses' first experiences in a clinical setting. A longitudinal diary study. *Journal of Clinical Nursing, 27*, e1612–e1626.

Tjin A Tsoi, S., De Boer, A., Croiset, G., Koster, A., Galindo-Garré, F., & Kusurkar, R. A. (2016a). Factors influencing pharmacists' CE-behavior. *Journal of Continuing Education in Health Professions*, *36*(3), 144–150.

Tjin A Tsoi, S., De Boer, A., Croiset, G., Koster, A., Galindo-Garré, F., & Kusurkar, R. A. (2016b). Unraveling motivational profiles of health care professionals for continuing education: The example of pharmacists in the Netherlands. *Journal of Continuing Education in Health Professions, 36*(1), 46–54.

Tjin A Tsoi, S., De Boer, A., Croiset, G., Koster, A., & Kusurkar, R. A. (2018). How basic psychological needs and motivation affect vitality and lifelong learning attitude of pharmacists: A structural equation model. *Advances in Health Sciences Education, 23*, 549–566.

Tjin A Tsoi, S., De Boer, A., Croiset, G., Kusurkar, R. A., & Koster, A. (2018). A longitudinal approach to changes in the motivation of Dutch pharmacists in the current continuing education system. *American Journal of Pharmacy Education, 82*(2), 6199, 135–143.

Van der Burgt, S., De la Croix, A., Broekman, M., Croiset, G., Peerdeman, S. M., & Kusurkar, R. A. (2021). Do medical specialists cope with stressors through fulfillment of basic psychological needs of self-determination theory. *International Journal of Medical Education, 12, 245–256.*.

Van der Burgt, S., Kusurkar, R. A., Croiset, G., & Peerdeman, S. M. (2018). Exploring the situational motivation of medical specialists: A qualitative study. *International Journal of Medical Education, 9*, 57–63.

Van der Burgt, S., Kusurkar, R. A., Nauta, K., Croiset, G., & Peerdeman, S. M. (2020). A qualitative study on factors influencing medical specialists' situational and contextual motivation. *International Journal of Medical Education, 11*, 111–119.

Van der Burgt, S., Kusurkar, R. A., Wilschut, J., Tjin A Tsoi, S., Croiset, G., & Peerdeman, S. M. (2018). Motivational profiles and motivation for lifelong learning of medical specialists. *Journal of Continuing Education in the Health Professions, 38*(3), 171–178.

Van der Burgt, S., Kusurkar, R. A., Wilschut, J., Tjin A Tsoi, S., Croiset, G., & Peerdeman, S. M. (2019). Medical specialists' basic psychological needs, and motivation for work and lifelong learning: A two-step factor score path analysis. *BMC Medical Education, 19*, 339.

Van Enk, A., & Regehr, G. (2018). HPE as a field: Implications for the production of compelling knowledge. *Teaching and Learning in Medicine, 30*(3), 337–344.

Visser, C. L. F., Kusurkar, R. A., Croiset, G., Ten Cate, T. J., & Westerveld, H. E. (2019). Students' motivation for interprofessional collaboration after their experience on an IPE ward: A qualitative analysis framed by self-determination theory. *Medical Teacher, 41*(1), 44–52.

Visser, C. L. F., Wilschut, J., Isik, U., Van der Burgt, S., Croiset, G., & Kusurkar, R. A. (2018). The association of readiness for interprofessional learning with empathy, motivation and professional identity development in medical students. *BMC Medical Education, 18*, 125.

Westein, M. P. D., Koster, A. S., Van der Burgt, S., Bouvy, M. L., & Kusurkar, R. A. *The educational environment: Relationship with satisfaction and frustration of basic psychological needs of trainees in a community pharmacy setting*. Manuscript submitted for publication.

Williams, G. C., & Deci, E. L. (1996). Internalization of biopsychosocial values by medical students: A test of self-determination theory. *Journal of Personality and Social Psychology*, *70*(4), 767–779.

Williams, G. C., & Deci, E. L. (1998). The importance of supporting autonomy in medical education. *Annals of Internal Medicine, 129*, 303–308.

Williams, G. C., Saizow, R., Ross, L., & Deci, E. L. (1997). Motivation underlying career choice for internal medicine and surgery. *Social Sciences Medicine*, *45*(11), 1705–1713.

Williams, G. C., Wiener, M. W., Marakis, K. M., Reeve, J., & Deci, E. L. (1994). Medical students' motivation for internal medicine. *Journal of General Internal Medicine, 9*, 327–333.

Wouters, A., Bakker, A. H., van Wijk, I. J., Croiset, G., & Kusurkar, R. A. (2014). A qualitative analysis of statements on motivation of applicants for medical school. *BMC Medical Education, 14*, 200.

Wouters, A., Croiset, G., Galindo-Garré, F., & Kusurkar, R. A. (2016). Motivation of medical students: Selection by motivation or motivation by selection. *BMC Medical Education, 16*, 37.

Wouters, A., Croiset, G., Schripsema, N. R., Cohen-Schotanus, J., Spaai, G. W. G., Hulsman, R. L., & Kusurkar, R. A. (2017a). A multisite study on medical school selection, motivation, engagement and academic performance. *Advances in Health Sciences Education, 22*, 447.

Wouters, A., Croiset, G., Schripsema, N. R., Cohen-Schotanus, J., Spaai, G. W. G., Hulsman, R. L., & Kusurkar, R. A. (2017b). Students' approaches to medical school choice: relationship with students' characteristics and motivation. *International Journal of Medical Education, 8*, 217–226.

Wouters, A., Isik, U., Croiset, G., & Kusurkar, R. A. (2017). Motivation of Dutch high school students from various backgrounds for applying to study medicine: A qualitative study. *BMJ Open, 7*, e014779.

# Self-Determination Theory and the Education of Learners with Disabilities

Michael L. Wehmeyer

## Abstract

The development of interventions to promote the self-determined learning of students with disabilities has its roots in understandings of causal agency, intrinsic motivation, and autonomous functioning described in early research in self-determination theory (SDT) and in applications of SDT in the context of positive psychology and education. In the early 1990s, the field of special education recognized that students themselves were the missing actors in efforts to improve post-school and life outcomes. As the field moved toward strengths-based approaches to disability after the turn of the 21st century, research in SDT, positive psychology, and positive education, including work on the application of SDT to educational settings, was critical in efforts in special education to enhance self-determined learning. This chapter overviews this progression, describes a model of the development of self-determination derived from SDT and causal agency theory, and overviews an intervention, the Self-Determined Learning Model of Instruction, that has strong evidence of efficacy and potential to contribute to enhancing self-determined learning for all students, with and without disabilities.

**Key Words:** disability, special education, self-determination theory, causal agency theory, autonomy support

The focus on self-determined learning in the education of learners with disabilities owes its development to two critical eras of research in self-determination theory (SDT). The first era involved seminal work synthesized in Deci and Ryan (1985). This work provided a theoretical foundation for understanding self-determination and autonomous functioning so as to be applied to the field of special education. The second era involved the important advancements to SDT presented in the original *Handbook of Self-Determination Research* (Deci & Ryan, 2002) and the important paper positioning SDT within positive psychology in *American Psychologist* (Ryan & Deci, 2000).

In *Intrinsic Motivation and Self-Determination in Human Behavior*, Deci and Ryan (1985) credited foundational work by Andras Angyal and Richard DeCharms

in shaping SDT. Angyal (1941, p. 33) emphasized heteronomous-determinism versus autonomous-determinism as a foundation for a science of personality, stating that

> the organism lives in a world in which things happen according to laws which are heteronomous from the point of view of the organism. The organism is subjected to the laws of the physical world just as is any other object of nature, with the exception that it can oppose self-determination to external determination.

Deci and Ryan (1985, p. 30) summarized Angyal's focus as suggesting that

> human development can be characterized in terms of movement toward greater autonomy and that this movement depends in part on the continual acquisition of competencies. To be self-determining one must have the skills to manage various elements of one's environment. Otherwise, one is likely to be controlled by them.

De Charms's theory of personal causation was also influential in conceptualizing SDT. De Charms (1968, p. 269) observed that "man strives to be a causal agent . . . to be the primary locus of causation for, or the origin of, his behavior; he strives for personal causation." Gender-dated language acknowledged, these ideas of an organismic theory of self-determination as self- versus other-caused action, as articulated by Angyal, and the basic need for humans to act as causal agents in their lives, as described by de Charms, were formative in the first decade of the design of interventions to promote the self-determination of students with disabilities.

A focus on the self-determination of youth with disabilities came about in the early 1990s because of the poor outcomes these youth experienced when they left school (Deci & Chandler, 1986; Wehmeyer, 1992; Wehmeyer & Ward, 1995). One factor contributing to such outcomes was the lack of focus on student autonomy and self-determination.

The chapters in the original *Handbook of Self-Determination Research* and the article in *American Psychologist* came at an opportune time in the development of a focus on the self-determination of students with disabilities. Ryan and Deci (2000) articulated the importance of SDT to the then newly introduced discipline of positive psychology, and the *Handbook of Self-Determination Research* synthesized the more fully formed meta-theory that SDT had become. At around the same time, the field of special education was moving toward strengths-based models of and approaches to disability. That is, historically disability had been understood within a pathology model; disability was viewed as a problem within the person (Wehmeyer, 2013). As a result, people with disabilities were perceived as broken or diseased and fundamentally different from other people by virtue

of their disability. Predictably and unavoidably, such a deficit perspective of disability resulted in people with disability being segregated from society, denied access to basic civil and human rights, and marginalized (Smith & Wehmeyer, 2012).

The special education systems around the world that emerged after World War II adopted this pathology model and thus followed the patterns of segregation and low expectations associated with this deficits focus of disability in the establishment of school practices for students with disabilities. But as civil protections were put in place during the later 20th century and people with disability became more visible members of these societies, the limitations of a deficits model became more readily apparent. There emerged a worldwide self-help and disability rights movement that emphasized the inherent right of people with disabilities to participate fully in society and the capacity of people with disabilities to function successfully in such societies (Driedger, 1989).

At the level of international human rights, this movement led to the establishment of the United Nations Convention on the Rights of Persons with Disabilities (CRPD), which articulated the rights of people with disability to equity and nondiscrimination in all aspects of life, from education and healthcare to work and employment. Article 3 of the General Principles of the CRPD states:

> The principles of the present Convention shall be:
> 1. Respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons;
> 2. Non-discrimination;
> 3. Full and effective participation and inclusion in society;
> 4. Respect for difference and acceptance of persons with disabilities as part of human diversity and humanity;
> 5. Equality of opportunity;
> 6. Accessibility;
> 7. Equality between men and women;
> 8. Respect for the evolving capacities of children with disabilities and respect for the right of children with disabilities to preserve their identities. (https://www.un.org/developm ent/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-3-gene ral-principles.html)

In these principles one can see the importance of SDT, especially as comprehensively expressed in recent work (e.g., Ryan and Deci, 2017), because at the core of the CRPD are issues pertaining to autonomy and self-determination.

As the self-advocacy movement gained momentum, the medical field began to reconsider the disease-based model of disability that had held sway for more than a century. The World Health Organization (2001) recognized that disability was more than just disease

and impairment and in 2001 released the International Classification of Functioning, Disability, and Health (ICF). The ICF

- is a multidimensional framework for the description of human functioning and disability, within which . . .
- *functioning* is used as an umbrella term for "neutral or non-problematic functional states," and . . .
- *disability* is used as "an umbrella term for problems in functioning," and . . .
- considers the interactions of impairments to body structure and functions (due to health or medical issues) along with environmental factors and personal factors on a person's activity and participation. (Buntinx, 2013, p. 9)

Breaking this down, within the ICF, disability is viewed primarily in terms of the impact of one's health or medical issues, environmental barriers and supports, and personal characteristics and factors on one's participation in life. The ICF was a means to conceptualize disability within a strengths-based approach and served to align the development of interventions and supports within special education with positive psychology. The focus shifted from pathology and disease models, which emphasized remediation of deficits, to social-ecological models that sought to bridge the gap between personal capacity and the demands of the environment so as to enable and support full participation.

The convergence of work in SDT from 2000 onward (Deci & Ryan, 2002; Ryan & Deci, 2017), the social-ecological approach to conceptualizing disability, the application of positive psychology to the disability context first explored in the *Oxford Handbook of Positive Psychology and Disability* (Wehmeyer, 2013), and a strengths-based approach to promoting self-determination and autonomous functioning in special education has resulted in theoretical frameworks that describe the life course development of self-determination (Wehmeyer et al., 2017) and have supported the development and evaluation of strengths-based interventions and assessments in the field of special education. The remainder of this chapter synthesizes this work.

## Self-Determination in Special Education

As noted, a focus on self-determination emerged in the field of special education in the early 1990s as a result of efforts to improve post-school outcomes for young people with disabilities. The early work in SDT mentioned previously provided a roadmap to understanding the construct and using that understanding to design interventions to facilitate greater autonomous functioning and self-determination. In our work, we proposed a functional model of self-determination (Wehmeyer, 1999) that drew from understandings of self-determination described by Deci and Ryan (1985). For purposes of intervention development, we defined self-determined action as "acting as the primary causal agent in

one's life and making choices and decisions regarding one's quality of life free from undue external influence or interference" (Wehmeyer, 1996a, p. 24).

With the emergence of positive psychology in the early 2000s and the expansion of SDT as described in the original *Handbook*, our functional model was reconceptualized as *causal agency theory* (Shogren, Wehmeyer, Palmer, Forber-Pratt et al., 2015; Wehmeyer, 2004). Our intent was to better align research and knowledge from the functional model of self-determined action with motivational theory in SDT so as to describe the development of self-determination and to facilitate the development and validation of educational interventions to promote self-determination.

Causal agency theory defines self-determination as:

> a dispositional characteristic manifested as acting as the causal agent in one's life. Self-determined people (i.e., causal agents) act in service to freely chosen goals. Self-determined actions function to enable a person to be the causal agent in his or her life. ( Shogren, Wehmeyer, Palmer, Forber-Pratt et al., 2015, p. 258)

Like the functional theory, causal agency theory emphasizes the importance of people acting as causal agents in their lives. People who are self-determined make or cause things to happen in their own lives, rather than someone or something else causing them to act. Self-determined action is goal-oriented and driven by preferences and interests and enables people to enhance the quality of their lives (Shogren, Wehmeyer, Palmer, Forber-Pratt et al., 2015).

As is the case with SDT, causal agency theory is situated within theories of human agency that view human action as self-caused and hypothesizes that people desire to be the origin of their own behavior (Little et al., 2002). Causal agency theory proposes three *essential characteristics* of self-determined action—volitional action, agentic action, and action-control beliefs—that enable people to act as a causal agent to make or cause things to happen in their lives. Shogren, Wehmeyer, Palmer, Forber-Pratt et al. (2015) defined these three essential characteristics accordingly:

> **Volitional action**: People who are self-determined "act volitionally," where volition "refers to making a conscious choice based upon one's preferences" (Shogren, Wehmeyer, Palmer, Forber-Pratt et al., 2015, p. 258). Conscious choice, in turn, implies intentionality. "[S]elf-determined actions are intentionally conceived, deliberate acts that occur without direct external influence" (p. 259). Thus volitional action refers to self-initiated actions that "enable a person to act autonomously" (p. 259).
>
> **Agentic action**: Acting as an agent in one's life implies that one acts in a self-directed manner in service of a goal. Agentic action involves acting "to identify

pathways that lead to a specific end or cause or create change" (Shogren, Wehmeyer, Palmer, Forber-Pratt et al., 2015, p. 259). Agentic actions, accordingly, involve self-regulated and self-directed actions that "enable a person to make progress toward freely chosen goals and to respond to opportunities and challenges in their environments" (p. 259). Causal agency theory's conceptualizations of both volitional and agentic action draw from and were informed by hope theory (Little, Snyder, & Wehmeyer, 2006; Snyder, 2000), which proposed mechanisms in which hopeful people sustain behaviors aimed at achieving goals (agency) and plans for goal achievement (pathways thinking) that lead to enhanced life satisfaction.

**Action-Control Beliefs**: In the original *Handbook of Self-Determination Research*, Little et al. (2002) described the relationship between SDT, the agentic self, and action-control beliefs. Causal agency theory incorporates the basic tenets of action-control theory (Chang, Adams, & Little, 2017), which proposed three general beliefs associated with the causal action sequence: "control expectancy [beliefs], which refers to the relation between agent and ends, meaning that individual's expectancy about their capability to achieve a given goal or end; means-ends beliefs, which represent the relation between means and ends; and agency beliefs, [which] refer to an individual's beliefs of what means they are capable of utilizing when the self acts as an agent" (p. 285).

As noted, one intent of causal agency theory was to unify advances in SDT, positive psychology, and research in special education so as to explain how people become more self-determined and, accordingly, to design interventions to enable people to become more self-determined (Wehmeyer et al., 2017). To that end, the development of self-determination is briefly discussed next.

### Development of Self-Determination

Wehmeyer and colleagues (2017) positioned the development of self-determination as an outcome of a person's response to threats to and opportunities for autonomy, competence, and relatedness in one's environment (Shogren, Little, & Wehmeyer, 2017). These threats and opportunities energize a *causal action sequence* that involves volitional and agentic action that is mediated by action-control beliefs (Mumbardó-Adam, Guàrdia-Olmos, & Giné, 2018). From early childhood onward, humans are motivated to employ a causal action sequence involving volitional and agentic action mediated by action-control beliefs to enable them to act as a causal agent in their lives. Repeated experiences of causal agency enable a person to meet basic psychological needs and result in enhanced self-determination.

This understanding of the development of self-determination provides a roadmap to understanding critical elements of creating interventions to promote causal agency and

self-determination. The following section examines interventions to promote autonomy and self-determination.

## Self-Determined Learning and Students with Disabilities

Our work in promoting the self-determination of youth with disabilities has benefited from and been guided by research on SDT in education (Niemiec & Ryan, 2009; Reeve, 2002, 2012; Reeve & Cheon, 2014; Reeve, Ryan, & Deci, 2018). Because this research will be covered in chapters elsewhere in this *Handbook*, this chapter will not cover it in any detail, other than to identify those findings that have influenced efforts to focus on promoting the self-determined learning of students with disabilities. To that end, Chang, Fukuda et al. (2017, pp. 104, 105) synthesized the research in SDT on characteristics of autonomy-supportive classrooms and teaching. That is, autonomy-supportive teachers

- communicate frequently to clarify expectations and acknowledge students' feelings and to ensure that students know what is expected of them and do not have to depend upon the teacher to self-direct learning . . .
- provide multiple choice opportunities by considering the relevance of activities to students' interests and values and do not rely on controlling events and experiences, such as competitions or evaluations . . .
- encourage and support students to participate actively, rather than being passive observers/absorbers. Such classrooms emphasize student self-direction and active involvement in generating, delivering, and consuming information and content. . . .
- provide positive and informational feedback that is constructive but positive, and not negative . . .
- provide guidance that clearly states expectations and the student's role. Structured guidance emphasizes elements of explicit and understandable directions, constructive feedback, and support for students to plan for learning and action.

Perhaps even more so with regard to the education of learners with disabilities, the general structure of classrooms too often emphasizes control (e.g., classroom goals, schoolwide rules, statements of expectations, adherence to standardized testing). In the name of discipline and order, teachers too often configure their classrooms in ways that end up being controlling (e.g., rules with *contingent/tangible rewards* or *punishment*, expectations with *conditional rewards*, and *teacher-prescribed*, not student-determined, classroom goals, guidance, or corrective feedback). The research in SDT is clear that when instruction is delivered in a controlling manner, students' motivation and engagement are undermined or decreased, but when it is delivered in an autonomy-supportive

manner, students' motivation and engagement are enhanced or facilitated (Cheon, Reeve, & Song, 2019; Cheon, Reeve, & Vansteenkiste, 2020; Grolnick & Pomerantz, 2009). This has been examined with students with disabilities, including teenage girls with emotional and behavioral disorders (Savard et al., 2013), students with intellectual disability (Pelletier & Joussemet, 2017), and students with deafblindness (Haakma, Janssen, & Minnaert, 2017).

### Self-Determined Learning

These myriad influences have led to a focus in our work on the importance of self-determined learning in the education of students with disabilities and in relation to promoting self-determination. Our framework for promoting self-determined learning was synthesized by Wehmeyer and Zhao (2020, p. 35), who noted that in self-determined learning:

- Teachers teach students to teach themselves.
- Students learn how to set and achieve goals and make plans.
- Teachers relinquish ownership for learning to the student, not by abdicating all roles in teaching, but by creating learning communities and using teaching methods that emphasize students' curiosity and experiences; that are autonomy-supportive and ensure that learning is tied to activities that are intrinsically motivating or lead to the attainment of goals that are valued and based upon student preferences, interests, and values.
- Teachers provide competence supports by emphasizing mastery experiences, using assessment (both teacher-directed and student-directed) to provide supportive feedback, and aligning instruction with students' strengths and abilities.
- Teachers provide relatedness supports by providing choice opportunities, supporting volition, and emphasizing the goal process and not just goal outcomes.
- Teachers promote autonomy and relatedness by showing empathy, genuine interest in student work, and taking the student's perspective (Reeve & Cheon, 2021).
- Students take initiative in learning because learning is meaningful and of personal value to them. They act volitionally because they are provided choices that are meaningful, meaningfully different, and autonomy-supportive.

These principals are operationalized in the primary intervention we have developed and evaluated, the Self-Determined Learning Model of Instruction, described next.

*The Self-Determined Learning Model of Instruction*

The focus in special education on promoting self-determination illuminated the fact that most teaching models used to educate learners with disabilities were teacher-directed, seeing the student as a relatively passive recipient of instruction (Wehmeyer, 1999). Joyce and Weil (1980, p. 1) defined a teaching model as "a plan or pattern that can be used to shape curriculums (long term courses of study), to design instructional materials, and to guide instruction in the classroom and other settings." Mithaug and colleagues (2003, 2007) proposed a frame to guide the development of efforts to promote self-determined learning in which students:

1.  act to pursue personally valued learning outcomes with expectations that they have the capacity to act as a causal agent and that if they do act, they can be successful (action-control beliefs) . . .
2.  self-regulate a problem-solving sequence to examine priorities based upon preferences, interests and values and prioritize action needed to reduce the discrepancy between what is known and what needs to be known and to set a goal to address that discrepancy (volitional action); students create an action plan to address the goal, design a self-monitoring process . . .
3.  implement the action plan, using information gathered through self-monitoring to evaluate progress toward the goal and adjusting the action plan or goal as necessary to achieve the goal (agentic action). (Wehmeyer & Zhao, 2020, p. 42)

Mithaug et al. (1998) and Wehmeyer et al. (2000) developed and evaluated a model of teaching based upon these principles called the Self-Determined Learning Model of Instruction (SDLMI). The basic intent was to provide a model of teaching for use by teachers to teach students to, in essence, teach themselves. As mentioned previously, models of teaching are intended for use by teachers, so the end users of the SDLMI are teachers, although students play a meaningful role in self-determining learning. Although developed initially with students with disabilities, the model is applicable for use with students without disabilities and in more recent years has been used to support instruction across age ranges and disability status (Wehmeyer & Zhao, 2020).

A teacher's guide to the SDLMI (Shogren, Raley, Burke et al., 2019) and instructions on implementation of the model are available at https://selfdetermination.ku.edu/homepage/intervention/#sdlmi, so they will not be discussed in detail in this chapter. Fundamentally, implementing the SDLMI involves a three-phase instructional process. Each phase presents a problem the student must solve: What is my Goal? (Phase 1 problem); What is my Plan? (Phase 2 problem); and What have I Learned? (Phase 3 problem). Students solve these problems by answering a series of four Student Questions that vary for each phase to suit the specific problem being solved but that pose the same four steps

in a problem-solving sequence: (1) identify the problem, (2) identify potential solutions to the problem, (3) identify barriers to solving the problem, and (4) identify consequences of each solution. Thus students learn a self-regulated problem-solving process. Student questions are associated with Teacher Objectives that provide guidance for teachers to support students to answer the questions. Each teacher objective is linked to Educational Supports that they can implement to teach or support students to answer the questions and, thus, self-regulate problem-solving to set and attain goals.

Although it is a model of teaching, the SDLMI is structured such that the student is the causal agent for actions in learning: solving the problem of what to learn, setting goals to creating action plans, monitoring progress, evaluating progress, and revising the action plan or goal as needed. The first time a teacher implements the model with a student, the student can reword the questions so that they have a set of questions that are their own.

There is strong evidence to support the implementation of the SDLMI. We have conducted multiple randomized trials to validate the causal relationships between implementation of the SDLMI and more positive student self-determination and school and adult outcomes. First, Wehmeyer, Palmer et al. (2012) conducted a randomized trial control group study of the effect of interventions to promote self-determination on the self-determination of high school students with disabilities. Students in the treatment group (*n* = 235) received instruction using the SDLMI along with other efforts to promote autonomy-supportive classrooms, while students in the control group (*n* = 132) did not. Self-determination was measured using two instruments that had been developed and validated through initiatives in the 1990s to promote the self-determination of youth with disabilities, The Arc's Self-Determination Scale (Wehmeyer, 1996b) and the AIR Self-Determination Scale (Wolman et al., 1994). Measurement occurred at baseline and after two and three years of intervention. Data were analyzed using latent growth curve analysis. Findings indicated that students with disabilities who participated in interventions to promote self-determination over the three-year period showed significantly more positive gains in their overall self-determination scores than did students not exposed to interventions to promote self-determination. Shogren, Wehmeyer, Palmer, Rifenbark et al. (2015) conducted a follow-up study of the youth in the Wehmeyer, Palmer et al. (2012) study, tracking student post-school outcomes. Students in the treatment group achieved more positive post-school employment and community inclusion outcomes than students in the control group.

In another randomized trial of the efficacy of the SDLMI with secondary students with disabilities, Wehmeyer, Shogren et al. (2012) found that students in the treatment group who received the SDLMI became more self-determined than their peers in the control group who did not. Shogren et al. (2012) determined that students in the treatment group in this study also had more positive educational goal attainment outcomes and were more positively engaged in classroom activities. Shogren, Burke et al. (2019) conducted

a study of goal attainment with youth with cognitive disabilities who set goals using the SDLMI, determining that students attained educational and transition goals at higher than expected rates after receiving instruction with the SDLMI. Lee, Wehmeyer, and Shogren (2015) conducted a meta-analysis of single-case design students of the SDLMI, determining that the intervention had benefits for students in academic and job training settings.

The SDLMI has been implemented in multiple countries, most extensively in South Korea. Seo, Wehmeyer, and Palmer (2014) demonstrated the efficacy of the SDLMI with adolescents with learning disabilities in Korea, finding that those who received instruction with the SDLMI had higher levels of academic goal attainment then those who did not. Lee and Wehmeyer (2008) demonstrated, through a meta-analysis of research in Korean journals, the positive educational benefits in goal attainment to students from teachers using the SDLMI.

*Assessment of Self-Determination*

In addition to the development and validation of the SDLMI, we have built and validated multiple measures of self-determination for teachers to use to identify areas of instructional need in self-determination and to use in research to evaluate the efficacy of interventions to promote self-determined learning. The most recent such efforts resulted in the Self-Determination Inventory (SDI) assessments (Shogren, Little, Grandfield, et al., 2020). The SDI has a student self-report version and a teacher-report version, both of which have been normed with students with and without disabilities. The two versions parallel one another. The SDI was developed to operationalize causal agency theory in that both versions measure the three essential characteristics of self-determined action (volitional action, agentic action, and action-control beliefs) as well as overall self-determination as defined by causal agency theory. The 51-item self-report version was normed with adolescents ages 13 to 22 with and without disabilities. Validation of the student report form identified an equivalent factor structure across adolescents with and without disabilities, as well as adequate reliability in both populations (Shogren, Little, Grandfield et al., 2020).

There is still a need to validate assessments of autonomous motivation and related SDT constructs among students with disabilities, though some progress has been made. Katz and Cohen (2014) documented the validity of a measure of autonomous motivation with students with cognitive disabilities. Frielink and colleagues (2019) have examined the psychometric properties of the Basic Psychological Need Satisfaction and Frustration Scale with people with intellectual disability. And Shogren, Raley et al. (2019) used multiple measures of basic psychological needs satisfaction, agentic engagement, and academic motivation successfully with students with autism.

## Conclusions

Effective interventions in the field of special education have a number of components and are psychoeducational and derived from understandings of child development and human behavior (Wehmeyer, 2021). To that end, the field has benefited from SDT and its application to education in multiple ways, as described in this chapter. Early research and theory in SDT provided guidance for understanding self-determination and autonomous functioning. Research within the more mature SDT framework guided efforts to understand the development of self-determination and to create and evaluate interventions to promote self-determined learning. There is now a strong evidence base establishing that promoting self-determined learning has multiple educational and post-school benefits to students with disabilities.

It is important to emphasize that interventions developed to enable students with disabilities to become self-determined learners are not disability-only interventions. As Wehmeyer and Zhao (2020) emphasized, all students need to be enabled to become self-determined learners, to take ownership over and agency in their education, and to be causal agents in their lives. Seminal research on SDT in education (e.g., Niemiec & Ryan, 2009; Reeve, 2012; Reeve & Cheon, 2014; Reeve et al., 2018) has described the characteristics of autonomy-supportive classrooms and teachers and developed interventions such as the Autonomy-Supportive Intervention Program (Cheon & Reeve, 2015). We believe that the SDLMI can contribute an autonomy-supportive intervention for use with all students.

## References

Angyal, A. (1941). *Foundations for a science of personality*. Harvard University Press.

Buntinx, W. H. E. (2013). Understanding disability: A strengths-based approach. In M. L. Wehmeyer (Ed.), *The Oxford handbook of positive psychology and disability* (pp. 7–18). Oxford University Press.

Chang, R., Adams, N., & Little, T. D. (2017). Action-control beliefs and agentic actions. In M. L. Wehmeyer, K. A. Shogren, T. D. Little, & S. J. Lopez (Eds.), *Development of self-determination through the life-course* (pp. 285–295). Springer.

Chang, R., Fukuda, E., Durham, J., & Little, T. D. (2017). Enhancing students' motivation with autonomy-supportive classrooms. In M. L. Wehmeyer, K. A. Shogren, T. D. Little, & S. J. Lopez (Eds.), *Development of self-determination throughout the life-course* (pp. 99–110). Springer.

Cheon, S. H., & Reeve, J. (2015). A classroom-based intervention to help teachers decrease students' amotivation. *Contemporary Educational Psychology, 40*, 99–111.

Cheon, S. H., Reeve, J., & Song, Y.-G. (2019). Recommending goals and supporting needs: An intervention to help physical education teachers communicate their expectations while supporting students' psychological needs. *Psychology of Sport and Exercise, 41*, 107–118.

Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2020). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. *Teaching and Teacher Education, 90*, 103004.

De Charms, R. (1968). *Personal causation: The internal affective determinants of behavior*. Academic Press.

Deci, E. L., & Chandler, C. L. (1986). The importance of motivation for the future of the LD field. *Journal of Learning Disabilities*, *19*(10), 587–594.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.

Deci, E. L., & Ryan, R. M. (2002). *Handbook of self-determination research*. University of Rochester Press.

Driedger, D. (1989). *The last civil rights movement: Disabled Peoples' International*. St. Martin's Press.

Frielink, N., Schuengel, C., & Embregts, P. J. C. M (2019). Psychometric properties of the Basic Psychological Need Satisfaction and Frustration Scale–Intellectual Disability (BPNSFS-ID). *European Journal of Psychological Assessment*, *35*(1), 37045.

Grolnick, W. S., & Pomerantz, E. M. (2009). Issues and challenges in studying parental control: Toward a new conceptualization. *Child Development Perspectives, 3*, 165–170.

Haakma, I., Janssen, M., & Minnaert, A. (2017). Intervening to improve teachers' need-supportive behaviour using self-determination theory: Its effects on teachers and on the motivation of students with deafblindness. *International Journal of Disability, Development and Education*, *64*(3), 310–327.

Joyce, B., & Weil, M. (1980). *Models of teaching* (2nd ed.). Prentice Hall.

Katz, I., & Cohen, R. (2014). Assessing autonomous motivation in students with cognitive impairment. *Journal of Intellectual and Developmental Disability*, *39*(4), 323–332.

Lee, S. H., Wehmeyer, M. L., & Shogren, K. A. (2015). The effect of instruction with the Self-Determined Learning Model of Instruction on students with disabilities: A meta-analysis. *Education and Training in Autism and Developmental Disabilities, 50*(2), 237–247.

Lee, Y., & Wehmeyer, M. L. (2008). Effects of interventions to enhance the self-determination of students with disabilities in South Korea. *Journal of International Special Needs Education, 11*, 39–49.

Little, T. D., Hawley, P. H., Henrich, C. C., & Marsland, K. (2002). Three views of the agentic self: A developmental synthesis. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 389–404). University of Rochester Press.

Little, T. D., Snyder, R., & Wehmeyer, M. L. (2006). The agentic self: On the nature and origins of personal agency across the lifespan. In D. Mroczek & T. D. Little (Eds.), *The handbook of personality development* (pp. 61–79). Lawrence Erlbaum Associates.

Mithaug, D. E., Mithaug, D. K., Agran, M., Martin, J. E., & Wehmeyer, M. L. (2003). *Self-determined learning theory: Construction, verification, and evaluation*. Lawrence Erlbaum Associates.

Mithaug, D. E., Mithaug, D., Agran, M., Martin, J., & Wehmeyer, M. L. (2007). *Self-instruction pedagogy: How to teach self-determined learning*. Charles C. Thomas.

Mithaug, D., Wehmeyer, M. L., Agran, M., Martin, J., & Palmer, S., (1998). The Self-Determined Learning Model of Instruction: Engaging students to solve their learning problems. In M. L. Wehmeyer & D. J. Sands (Eds.), *Making it happen: Student involvement in educational planning, decision-making and instruction* (pp. 299–328). Paul H. Brookes.

Mumbardó-Adam, C., Guàrdia-Olmos, J., & Giné, C. (2018). Assessing self-determination in youth with and without disabilities: The Spanish version of the AIR self-determination scale. *Psicothema*, *30*(2), 238–243.

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and Research in Education, 7*(2), 133–144.

Pelletier, J. E., & Joussemet, M. (2017). The benefits of supporting the autonomy of individuals with mild intellectual disabilities: An experimental study. *Journal of Applied Research in Intellectual Disabilities*, *30*(5), 830–846.

Reeve, J. (2002). Self-determination theory applied to educational settings. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 183–203). Rochester University Press.

Reeve, J. (2012). A self-determination theory perspective on student engagement. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 149–172). Springer.

Reeve, J., & Cheon, S. H. (2014). An intervention-based program of research on teachers' motivating styles. In S. Karabenick & T. Urdan (Eds.), *Advances in motivation and achievement: Motivational interventions* (Vol. 18, pp. 293–339). Emerald.

Reeve, J. & Cheon, S. H. (2021). Autonomy-supportive teaching: Its malleability, benefits, and potential to improve educational practice. *Educational Psychologist*, *56*(1), 54–77.

Reeve, J., Ryan, R. M., & Deci, E. L. (2018). Sociocultural influences on student motivation as viewed through the lens of self-determination theory. In D. M. McInerney & G. A. D. Liem (Eds.), *Big theories revisited 2: Research on sociocultural influences on motivation and learning* (pp. 15–40). Information Age Publishing.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Savard, A., Joussemet, M., Pelletier, J. E., & Mageau, G. A. (2013). The benefits of autonomy support for adolescents with severe emotional and behavioral problems. *Motivation and Emotion, 37,* 688–700.

Seo, H., Wehmeyer, M., & Palmer, S. (2014). The effects of the Self-Determined Learning Model of Instruction on academic performance of students with high-incidence disabilities. *Journal of Special Education: Theory and Practice*, *15*(1), 305–330.

Shogren, K. A., Burke, K. M., Antosh, A., Wehmeyer, M. L., LaPlante, T., Shaw, L. A., & Raley, S. (2019). Impact of the Self-Determined Learning Model of Instruction on self-determination and goal attainment in adolescents with intellectual disability. *Journal of Disability Policy Studies*, *30*(1), 22–34.

Shogren, K. A., Little, T. D., Grandfield, E., Raley, S., Wehmeyer, M. L., Lang, K. M. & Shaw, L. A. (2020). The Self-Determination Inventory-Student Report: Confirming the factor structure of a new measure. *Assessment for Effective Intervention*, *45*(2), 110–120.

Shogren, K. A., Little, T. D., & Wehmeyer, M. L. (2017). Human agentic theories and the development of self-determination. In M. L. Wehmeyer, K. A. Shogren, T. D. Little, & S. Lopez (Eds.), *Development of self-determination through the life-course* (pp. 17–26). Springer.

Shogren, K., Palmer, S., Wehmeyer, M. L., Williams-Diehm, K., & Little, T. (2012). Effect of intervention with the Self-Determined Learning Model of Instruction on access and goal attainment. *Remedial and Special Education*, *33*(5), 320–330.

Shogren, K. A., Raley, S. K., Burke, K. M., & Wehmeyer, M. L. (2019). *The Self-Determined Learning Model of Instruction Teacher's Guide.* Lawrence, KS: Kansas University Center on Developmental Disabilities.

Shogren, K. A., Raley, S. K., Wehmeyer, M. L., Grandfield, E., Jones, J., & Shaw, L. A. (2019). Exploring the relationships among basic psychological needs satisfaction and frustration, agentic engagement, motivation, and self-determination in adolescents with disabilities. *Advances in Neurodevelopmental Disorders, 3,* 119–128.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Forber-Pratt, A., Little, T., & Lopez, S. (2015). Causal agency theory: Reconceptualizing a functional model of self-determination. *Education and Training in Autism and Developmental Disabilities, 50*(3), 251–263.

Shogren, K. A., Wehmeyer, M. L., Palmer, S. B., Rifenbark, G., & Little, T. (2015). Relationships between self-determination and postschool outcomes for youth with disabilities. *Journal of Special Education*, *48*(4), 256–267.

Smith, D. J., & Wehmeyer, M. L. (2012). *Good blood, bad blood: Science, nature, and the myth of the Kallikaks*. American Association on Intellectual and Developmental Disabilities.

Snyder, C. R. (Ed.). (2000). *Handbook of hope: Theory, measurement, and applications*. Academic Press.

Wehmeyer, M. L. (1992). Self-determination and the education of students with mental retardation. *Education and Training in Mental Retardation*, *27*, 302–314.

Wehmeyer, M. L. (1996a). Self-determination as an educational outcome: Why is it important to children, youth and adults with disabilities? In D. J. Sands & M. L. Wehmeyer (Eds.), *Self-determination across the life span: Independence and choice for people with disabilities* (pp. 15–34). Paul H. Brookes.

Wehmeyer, M. L. (1996b). A self-report measure of self-determination for adolescents with cognitive disabilities. *Education and Training in Mental Retardation and Developmental Disabilities, 31*, 282–293.

Wehmeyer, M. L. (1999). A functional model of self-determination: Describing development and implementing instruction. *Focus on Autism and Other Developmental Disabilities*, *14*, 53–61.

Wehmeyer, M. L. (2004). Beyond self-determination: Causal agency theory. *Journal of Developmental and Physical Disabilities, 16*, 337–359.

Wehmeyer, M. L. (Ed.). (2013). *Oxford handbook of positive psychology and disability*. Oxford University Press.

Wehmeyer, M. L. (2021). Psychoeducational approaches to instruction of students with intellectual and developmental disabilities. In L. M. Glidden (Ed.), *American Psychological Association handbook of intellectual and developmental disabilities, Vol. 2: Clinical and educational implications: Prevention, intervention, and treatment* (pp. 55–74). American Psychological Association

Wehmeyer, M. L., Palmer, S., Agran, M., Mithaug, D., & Martin, J. (2000). Promoting causal agency: The Self-Determined Learning Model of Instruction. *Exceptional Children*, *66*, 439–453.

Wehmeyer, M. L., Palmer, S., Shogren, K., Williams-Diehm, K., & Soukup, J. (2012). Establishing a causal relationship between interventions to promote self-determination and enhanced student self-determination. *Journal of Special Education*, *46*(4), 195–210.

Wehmeyer, M. L., Shogren, K. A. Little, T. D., & Lopez, S. J. (Eds.). (2017). *Development of self-determination through the life-course*. Springer.

Wehmeyer, M. L., Shogren, K., Palmer, S., Williams-Diehm, K., Little, T., & Boulton, A. (2012). The impact of the Self-Determined Learning Model of Instruction on student self-determination. *Exceptional Children*, *78*(2), 135–153.

Wehmeyer, M. L., & Ward, M. (1995). The spirit of the IDEA mandate: Student involvement in transition planning. *Journal for Vocational Special Needs Education*, *17*, 108–111.

Wehmeyer, M.L., & Zhao, Y. (2020). Teaching students to become self-determined learners. Alexandria, VA: ASCD.

Wolman, J. M., Campeau, P. L., DuBois, P. A., Mithaug, D. E., & Stolarski, V. S. (1994). *AIR Self-Determination Scale and user guide*. American Institutes for Research.

World Health Organization. (2001). *International classification of functioning, disability, and health (ICF)*. WHO.

# Physical Needs, Activity, and Sport

# Self-Determination Theory Applied to Sport

Martyn Standage

## Abstract

Sports so acutely illustrate human motivation (i.e., "being moved into action"). To understand the motivational dynamics of sports, researchers have tested propositions within self-determination theory (SDT) for more than 40 years. Here, SDT provides a broad and coherent theoretical perspective to explain the social conditions that promote high-quality forms of athlete motivation and thriving as well as those that contribute to ill-being and impoverished functioning. In this chapter, empirical research findings are collated to review (1) SDT's multidimensional perspective of motivation; (2) the motivational and wellness benefits of satisfying, as opposed to frustrating, the basic psychological needs for autonomy, competence, and relatedness; and (3) how the functional significance of various elements of sporting environments differentially affect motivation and sport-related outcomes as a function of being need-supporting or need-thwarting. Practical recommendations are organized around the concept of basic psychological needs. Finally, several directions for future research in sport settings are offered.

**Key Words:** self-determination theory, motivation, intrinsic motivation, autonomous motivation, psychological needs, social contexts, coaching styles, autonomy support, intervention

In tracing the history of self-determination theory (SDT; Ryan & Deci, 2017), it is evident that sports have long provided fertile settings for scholars to test the key assumptions outlined within the theory as well as to apply these principles to inform practice. Arguably, one of the main drivers for this expanding body of research is the fact that sport contexts so acutely illustrate and encapsulate human motivation (i.e., "being moved into action"). Whether one considers a recreational footballer playing for social reasons, a child expanding their physical capacities via engagement in their sports program, or an Olympian effortfully engaging with their training regime across many years, motivation is at the heart of their endeavors.

When applied to sports, SDT provides a nuanced, broad, and coherent framework to understand the social conditions that facilitate high-quality forms of athlete motivation, well-being, and thriving as well as those that contribute to ill-being and impoverished

functioning. Understanding the multifaceted and dynamic nature of motivation in and across sport settings is a highly complex task. Thus, SDT's six mini-theories unified via the concept of basic psychological needs provides a coherent structure to empirically test and understand specific motivational phenomena. In this regard, scholars have applied SDT to sport settings for more than 40 years to examine key assumptions, including how distinct goals, different motives, and varying social contexts (e.g., coach-created climates, competition, feedback, and rewards) differentially predict key outcomes such as high-quality forms of motivation, engagement, performance, wellness, and thriving (for reviews, see Ntoumanis, 2012; Ryan & Deci, 2017; Standage & Ryan, 2020).

Rather than attempting to draw together a comprehensive overview of SDT-based research in sport, the aim of this chapter is to provide a brief review, focusing on key findings from a selection of empirical studies. Here, selected works from four key areas of inquiry will be discussed: first, the relation between intrinsic and extrinsic motivation and a range of sport-related outcomes (e.g., athlete experiences, well-being, and performance); second, the unifying role of the basic psychological needs within SDT in linking social-contextual factors to motivation, engagement, wellness, performance, and functioning; third, the differing social environments and conditions that are conducive to supporting (vs. thwarting) the basic psychological needs; fourth, practical applications and strategies. Also, some key suggestions for future SDT research in sport contexts are offered.

## Self-Determination Theory and Sport

### Intrinsic Motivation

Sports provide millions of individuals with immense joy, interest, and excitement. Indeed, the intrinsic inclinations of people to play in their own time, compete, act in the absence of any apparent external reward, and seek to test and develop their skills and capacities manifest so acutely in sports settings. Reflecting the prototype of autonomous motivation within SDT, multiple benefits of being intrinsically motivated toward sports have been documented, including positive associations with increased deliberate practice (Vink, Raudsepp, & Kais, 2015), greater sport persistence (Jõesaar, Hein, & Hagger, 2011; Pelletier et al., 2001), better sport performance (Charbonneau, Barling, & Kelloway, 2001), heightened athlete engagement (Podlog et al., 2015), and enhanced vitality and eudaimonic well-being (Kouali, Hall, & Pope, 2020).

### Extrinsic Motivation: A Differentiated Perspective

Ideally, and for optimal growth and development, athletes would be intrinsically motivated toward all their training and competitive endeavors. Yet people engage in sports for multiple motives, both intrinsic and extrinsic forms of motivation that coexist to simultaneously predict the quality of one's overall motivation (cf. Ryan & Deci, 2017). As outlined by Pelletier and Rocchi (this volume), the second of SDT's mini-theories, organismic integration theory (OIT; Deci & Ryan, 1985), was developed to distinguish

between different types of extrinsic motivation (i.e., to act for instrumental reasons) that vary in the degree to which they are experienced as being autonomous (vs. controlled). This multidimensional approach to extrinsic motivation is built around the concept of internalization (cf. Ryan & Connell, 1989), with the different types of regulation located on a continuum of self-determination. From least to most autonomous, these motivational types are *external regulation* (i.e., behavior is regulated by externally controlled rewards, compliance with social pressure, and/or to avoid punishment), *introjected regulation* (i.e., rather than external contingencies, behavior is regulated via self-imposed intrapersonal contingencies such as shame, guilt, ego enhancement, and pride), *identified regulation* (i.e., behavior is regulated via the conscious valuing of an activity as being important to one's aims/goals), and *integrated regulation* (i.e., behavior which is regulated when the person identifies with the value of the activity and when it has been brought into congruence with the individual's other core values, goals, and needs). (See Pelletier and Rocchi, this volume, for definitions and a more detailed discussion of each type of motivation.)

When applied to sports, as with all life domains, intrinsic motivation and the distinct forms of extrinsic motivation are hypothesized to differentially affect experiences, well-being, functioning, and performance. It is this *autonomy-control* distinction that provides a coherent structure for researchers and practitioners to conceptualize, define, examine, and understand motivation from a *quality* perspective. According to OIT, when behavior is autonomously regulated (i.e., via intrinsic motivation and the well-internalized extrinsic forms of integrated and identified regulations), then greater persistence, higher-quality behavior, improved performance, enriched experiences, and enhanced well-being will manifest (Ryan & Deci, 2017). An expanding body of empirical work has documented the many benefits linked to autonomous (or high-quality) forms of sport motivation. Here, empirical work has shown autonomous motivation toward sport to positively predict outcomes such as persistence (Pelletier et al., 2001), better performance (Gillet, Berjot, & Gobancé, 2009), positive self-talk (Karamitrou et al., 2017), more enthusiastic commitment (O'Neil & Hodge, 2020), adaptive coping (Gaudreau & Antl, 2008), greater vitality and well-being (Gagné, Ryan, & Bargmann, 2003; Stenling, Lindwall, & Hassmén, 2015), and sportspersonship (Ntoumanis & Standage, 2009). Similarly, autonomous motivation has been shown to negatively predict outcomes such as sport dropout (Pelletier et al., 2001), burnout (Barcza-Renner et al., 2016; Jowett et al., 2013), negative self-talk (Karamitrou et al., 2017), negative affect (Gagné et al., 2003), and constrained commitment (O'Neil & Hodge, 2020).

In contrast to the positive pattern of findings reported for autonomous motivation, research has shown that partial or noninternalized forms of motivation toward sport (i.e., introjected and external regulations) are positively linked with negative outcomes. These outcomes include lower performance (Gillet, Vallerand, & Paty, 2013), athlete burnout (Jowett et al., 2013), sport dropout (Rocchi et al., 2020), nonoptimal coping (Gaudreau & Antl, 2008), negative self-talk (Karamitrou et al., 2017), lower dispositional flow

(Lonsdale, Hodge, & Rose, 2008), antisocial attitudes (Ntoumanis & Standage, 2009), and ongoing ill-being (Stenling et al., 2017).

Across organized sports, and even more so at the higher levels of performance, athletes are faced with arduous training loads, demanding competition schedules, travel commitments, periods of solitude, and the performing of not very interesting and somewhat mundane tasks/drills (see Treasure et al., 2007). The nature of the tasks, drills, and situations that athletes face can be boring and mundane yet entirely integral to supporting the development of their athletic skills and capacities. In this regard, well-internalized extrinsic motivation becomes a key driver. Here, the process of internalization (i.e., the active and natural process wherein individuals take on external values, beliefs, and behavioral regulations from social contexts and transfer and integrate these as their own; cf. Ryan & Deci, 2017) makes a valuable contribution to understanding the motivational basis for effortful engagement in the less interesting aspects of sport. Past SDT work has provided insight into the social strategies required to support internalization, including the provision of a meaningful rationale, conveyance of choice, acknowledgment of feelings, and variety (Deci et al., 1994; Green-Demers et al., 1998).

In addition to engaging with the more unexciting aspects of sport, improving one's ability at one's chosen sport as well as maintaining high levels of performance require considerable investment over a prolonged period. Insight into the role played by intrinsic motivation and well-internalized extrinsic motivation in supporting ongoing sport participation is demonstrated in a prospective study conducted by Pelletier and colleagues (2001). With a sample of 369 competitive swimmers from across the province of Quebec, the authors collected data regarding interpersonal behaviors (autonomy support vs. controlling coaching) and sports motivation at Time 1. Behavioral persistence was then recorded at Time 2 for Season 1 (10 months) and at Time 3 for Season 2 (22 months). Results of structural equation modeling showed that autonomous motivations (both intrinsic motivation and identified regulation) positively predicted greater persistence across both seasons. External regulation was unrelated to persistence at the end of Season 1 and a negative predictor of persistence at the end of Season 2. Amotivation was a strong negative predictor of persistence across both seasons. It is worth noting that introjected regulation predicted short-term behavioral engagement (Time 2), yet not over the longer term (Time 3). This finding has been replicated in other domains (e.g., adolescent exercise; Gillison, Standage, & Skevington, 2011) and points to the fact that at times people can be moved into action by self-worth strivings and a desire to gain approval of others. Yet the findings also allude to the fact that such introjects are poor predictors of longer-term commitment and engagement and are linked with poorer quality experiential outcomes (e.g., higher anxiety, guilt, and contingent self-worth; cf. Standage & Ryan, 2012, 2020).

Remaining with the higher end of sport participation and behavioral outcomes, it can be argued that the most important outcome is that of performance (Standage, 2012).

Research using SDT as a theoretical basis to address the "motivation-performance" relationship has shown that autonomous sports motivation positively predicts objective performance data as well as coach ratings of performance (e.g., Gillet et al., 2009, 2010). In one study, Gillet and colleagues (2009) carried out a longitudinal study of 90 young tennis players across three competitive seasons. Autonomous motivation (as assessed via a self-determination index) was shown to positively predict better objective performance data as provided by the French Tennis Federation. Specifically, autonomous motivation at the beginning of a season (Time 1) was shown to positively predict performance across the following two seasons (Times 2 and 3). Autonomous motivation at Time 2 (assessed at the end of the second season) also positively predicted performance during the third season. Such data support the tenets of OIT that when people are autonomously motivated, they experience more interest, excitement, and confidence, which manifests in enhanced performance and persistence (cf. Ryan & Deci, 2017).

As reviewed, a robust pattern of empirical findings has supported the tenets proposed by OIT, with intrinsic motivation and well-internalized extrinsic motivation consistently being shown to correspond to higher-quality behavioral and psychological engagement in sports. Conversely, more controlled forms of sports motivation have been shown to compromise the quality of sporting engagement, in terms of both psychological and behavioral markers. In view of this compelling body of evidence, it is paramount that scholars and practitioners explicitly understand a core set of necessary requirements that support the internalization process as well as other markers of thriving in sports. Within SDT, the concept of basic psychological needs explains how variations in the satisfaction and frustration of these necessary requirements differentially predict thriving, development, and wellness as well as diminished functioning, restricted growth, and ill-being. It is to the basic psychological need propositions within SDT that the attention now turns.

**Basic Psychological Needs and Sport**

The basic psychological needs specified by basic psychological needs theory (BPNT; Ryan & Deci, 2017; Vansteenkiste, Soenens, & Ryan, this volume) form the nexus within the broader SDT framework, serving as the unifying principle that links social-contextual factors with motivation, engagement, wellness, and functioning. When satisfied, the basic psychological needs for *autonomy, competence*, and *relatedness* provide the functional requirements for people to experience high-quality forms of motivation, thriving, and well-being. Yet when any of the basic psychological needs are frustrated, greater ill-being, passive engagement, restricted development, and impoverished functioning are hypothesized (Ryan & Deci, 2017).

An expanding body of research within sport settings has provided empirical support for the propositions of BPNT. Indeed, research has shown psychological need satisfaction to positively predict many adaptive sport outcomes, such as intrinsic motivation (Jõesaar et al., 2011), thriving (Brown et al., 2017; Brown, Arnold, Standage, & Fletcher, 2021),

deliberate practice (Verner-Filion et al., 2017), dedication (Bhavsar et al., 2020), vitality (Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011; Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011), behavioral engagement (Curran, Hill, & Niemiec, 2013), performance (Verner-Filion et al., 2017), and enjoyment and well-being (Warburton et al., 2020). Equally supportive of BPNT, psychological need satisfaction has been shown to be negatively associated with markers of impoverished functioning, including athlete burnout (Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011; Jowett et al., 2016), exhaustion (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011), disaffection, depression (Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011), and negative affect (Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011).

In recent work, Brown and colleagues (2017) examined the role of psychological need satisfaction and psychological need frustration in relation to identifying British sport performers who thrived in demanding competitive sporting encounters during the previous month. Specifically, data were collected to test whether classifications into "thriving" profile memberships could be predicted from scores for personal enablers (e.g., resilient qualities), contextual enablers (e.g., social support), and underpinning process variables (e.g., need satisfaction, need frustration). Aligned with the propositions of BPNT, the authors found that (1) higher levels of psychological need satisfaction positively predicted sport performers' membership into a "thriving" profile and (2) greater levels of basic psychological need frustration positively predicted the likelihood of sport performers' membership to the "below average" profile (vs. the "thriving" profile).

In contrast to the positive outcomes associated with psychological need satisfaction, psychological need frustration has been shown to be a positive predictor of maladjustment in sport, with positive associations reported with exhaustion (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011), disordered eating (Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011), depression (Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011), negative affect (Bhavsar et al., 2020), burnout (Jowett et al., 2016), and perturbed physiological arousal (e.g., Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011). Data from sport settings have also shown psychological need frustration to be negatively associated with adaptive outcomes such as vitality (e.g., Bartholomew, Ntoumanis, Ryan, Bosch et al., 2011; Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011), performance satisfaction (Felton & Jowett, 2015), and well-being and enjoyment (Warburton et al., 2020).

Within BPNT it is also hypothesized that the basic psychological needs vary within people over time, contexts, and social interactions (Ryan & Deci, 2017). A study by Gagné and colleagues (2003) used a within- and between-person design to follow 33 gymnasts over 15 practice sessions across a four-week period. Results of multilevel analyses showed that gymnasts who endorsed higher levels of autonomous motivation had, on average, more positive experiences of their sport and reported higher levels of well-being. At the within-person level, changes from pre- to post-practice were shown to be directly

linked to the satisfaction of the basic psychological needs within the practice setting. That is, gymnasts who endorsed higher need satisfaction reported experiencing greater positive affect, increased vitality, better state self-esteem, and lower negative affect.

In a recent prospective study, Brown, Arnold, Standage, Turner et al. (2021) asked 51 British elite hockey players to complete measures assessing their basic psychological need satisfaction and challenge appraisals on seven consecutive days prior to a competitive match. In-match thriving was assessed retrospectively using measures of subjective performance and well-being. The authors also collected saliva samples immediately on waking, and then +0.5, +3, and +5.25 hours on the day of the match from a subsample of 21 players who played their game in the early afternoon (i.e., rather than evening, when hormonal values would have been lower due to diurnal rhythm). Saliva was assayed for catabolic (i.e., cortisol) and anabolic (i.e., dehydroepi-androsterone [DHEA]) hormones with the "anabolic balance" also expressed by the ratio of DHEA:cortisol. Results of latent growth modeling showed levels of pre-match psychological need satisfaction and challenge appraisals to positively predict in-match thriving. Although not statistically significant, small and moderate negative associations were reported for thriving with cortisol concentration (+5.25 h sample) and total cortisol exposure across the morning of the match, respectively. The concentration of DHEA shared a small positive, yet nonsignificant, association with thriving. These trends may suggest that athletes who reported that they were thriving were also perceiving and/or employing adaptive response mechanisms on the morning of the match. Yet, in view of issues related to statistical power coupled with the fact that exposure to a chronic stressor can lead to a blunted cortisol response, future work with increased power is needed to assess the associations among key SDT constructs (e.g., psychological need satisfaction/frustration and need-supportive/thwarting contexts), hormonal responses, and athlete thriving. Such research would also extend the work of Bartholomew, Ntoumanis, Ryan, Bosch et al. (2011, Study 2), who reported a positive association between need frustration and secretory immunoglobulin A, a finding which suggests that when athletes perceive their needs to be actively frustrated, they are more likely to experience increased physiological arousal and potentially anticipatory apprehension.

With a sample of 61 British university athletes, Bartholomew, Ntoumanis, Ryan, Bosch (2011, Study 3) conducted a diary study, collecting pre- and post-training data across a two-week period (i.e., eight training days) to examine whether experiences of need satisfaction and need frustration during training would predict changes in well-being and ill-being before and after each session. Supportive of BPNT, the results of multilevel modeling showed that higher levels of need satisfaction during training positively predicted greater levels of positive affect post-training. Equally consistent with BPNT, the authors reported that perceptions of psychological need frustration predicted changes in negative affect and physical symptoms from pre- to post-training.

In addition to diary studies documenting the effects of daily fluctuations of need satisfaction and frustration on well-being and ill-being outcomes, researchers have studied the longitudinal associations among the psychological needs and indices of athlete well-being. For example, Gaudreau, Amiot, and Vallerand (2009) followed 265 Canadian hockey players across three measurement periods during the first 11 weeks of a season. Via latent class growth modeling, the authors identified three distinct trajectories for both positive affect and negative affect. Results showed psychological need satisfaction (as well as low and high athletic identity) to substantially increase the likelihood of membership into the more healthy, adaptive trajectory (i.e., as compared to the other two, less adaptive trajectories). In a more recent study, Brown, Arnold, Standage, and Fletcher (2021) examined the associations among psychological need satisfaction and thriving with a sample of 268 British sport performers across three occasions spanning 28 days. Results from longitudinal structural equation modeling showed that athlete thriving was highly predicted by both the recent experience of thriving and the satisfaction of the basic psychological needs. The findings of Brown et al.'s research and others in the extant literature (cf. Standage & Ryan, 2020) serve to illustrate the important role of basic psychological need satisfaction as a means by which coaches and practitioners can support and maintain athlete thriving across a series of sporting encounters. It is to several features of the social environment that the focus now shifts.

## Social Contexts and Supports for the Basic Psychological Needs

Within SDT, the positive and negative influences of social-contextual factors on motivation, wellness, and behavior are distinguished by the extent to which they *support* versus *thwart* a person's basic psychological needs. Therefore, an important strand of SDT research has focused on the nature of social conditions, including external inputs, intrapersonal events, and interpersonal relationships (cf. Ryan & Deci, 2017). Here, a selection of sport-related conditions will be reviewed in the context of their functional significance.

### External Events

Developed and refined primarily during the 1970s and 1980s, cognitive evaluation theory (CET; Deci & Ryan, 1985) was the first SDT mini-theory to be formulated, providing a theoretical lens for understanding how differing external events (e.g., rewards, competition, feedback) and later internal events (e.g., ego involvement, public self-conscience) support or undermine an individual's intrinsic motivation (see Reeve, this volume). Sports provide an excellent testbed for examining an overarching question within CET: "[I]f a person is involved in an intrinsically interesting activity and begins to receive an extrinsic reward for doing it, what will happen to his or her intrinsic motivation for the activity?" (Deci & Ryan, 1985, p. 43). To explain such effects, two types of social inputs are specified within CET, namely *informational events* (which are noncontrolling and provide effectance-relevant information) and *controlling events* (which represent pressure to feel,

behave, or think in specific ways; Deci & Ryan, 1985). Within CET, it is hypothesized that informational (or functional) events will enhance and sustain intrinsic motivation via the satisfaction of people's basic psychological needs for autonomy and competence. In contrast, controlling events that frustrate an individual's experience of autonomy and competence are held to undermine intrinsic motivation (see Reeve, this volume).

**Rewards**. Using a stabilometer task, Orlick and Mosher (1978) were the first to demonstrate the potential for rewards (in the form of trophies) to undermine intrinsic motivation in relation to a physical task. The authors allocated children who exhibited initial intrinsic motivation toward a balance task to one of four experimental conditions: a conditionally expected reward, an unexpected reward, no reward but social reinforcement, and no reward and no social reinforcement. Four days later, the children engaged in the task again and their intrinsic motivation was assessed. The authors used the free-choice paradigm to assess intrinsic motivation, an approach whereby an observation is made regarding the amount of time spent on an activity when participants are alone, free to choose what to do, and have no external or evaluative reason to engage in the target activity. From pre- to post-reward sessions, results showed that participants in the two reward conditions spent less time choicefully engaged with the target activity than those in the nonreward conditions. From the perspective of CET, these findings suggest that rewards offered in the work of Orlick and Mosher were perceived by the children as being controlling.

A meta-analysis of 128 experimental studies, including the work of Orlick and Mosher (1978) and other sport/motor-task studies (e.g., Vallerand & Reid, 1984; Weinberg & Ragan, 1979) has shown engagement-contingent, completion-contingent, performance-contingent rewards as well as all rewards, all tangible rewards, and all expected rewards to undermine intrinsic motivation (Deci, Koestner, & Ryan, 1999). When applied to sport contexts, the offering of rewards such as trophies and prizes can diminish the intrinsic motivation of athletes when presented in a controlling manner (e.g., implicit messages of incompetence, enhancement of social comparison, and/or identifying and promoting the best athletes; Ryan & Deci, 2017). As Ryan and Deci recognize, gatekeeping practices to separate elite athletes from their nonelite counterparts play an important role in identifying and promoting the best athletes, yet this approach can have dire consequences in youth sport. That is, the employing of practices that emphasize social comparisons may run the risk that many children yet to reach their athletic prime will never do so (Ryan & Deci, 2017).

**Athletic scholarships**. A specific type of reward that has received some empirical interest from a CET perspective is that of athletic scholarships (e.g., Ryan 1977, 1980; Kingston, Horrocks, & Hanton, 2006; Moller & Sheldon, 2020). These performance-contingent rewards are commonly used in the United States, offered to student athletes by universities that are members of the National Collegiate Athletic Association. Ryan (1977) conducted the initial research into the effects of being awarded a scholarship on

student athletes' intrinsic motivation. He found that male football players receiving scholarships reported higher extrinsic motivation (vs. intrinsic) as well as less enjoyment of their sport than their nonscholarship counterparts. Such findings were akin to the undermining effect of "pay for play" and consistent with tenets of CET. A subsequent study by Ryan (1980) sought to replicate and extend his previous work to male athletes (football players and wrestlers) and female athletes (various sports) from 12 institutions. These data were more complex, revealing gender and sport differences. For female athletes, their intrinsic motivation did not differ as a function of scholarship status. In terms of sport, consistent with his 1977 findings, Ryan reported support for the undermining effect in the male football players, yet not for male wrestlers nor female athletes from across several different sports. These data were interpreted in the context that the awarding of athletic scholarships to female athletes as well as male wrestlers at the time being "rare." These atypical rewards may have provided informational feedback that was perceived as being indicative of competence. For male football players, the awarding of scholarships was commonplace, attracting them to certain athletic programs, thus viewed as being controlling.

Kingston, Horrocks, and Sheldon (2006) extended the focus on intrinsic motivation to examine whether the multiple types of motivation within SDT could be used to discriminate between U.S. student athletes of differing scholarship status. Results showed that scholarship athletes reported significantly higher levels of introjected regulation and external regulation and lower levels of intrinsic motivation than their nonscholarship counterparts.

Recently, Moller and Sheldon (2020) examined the "undermining effect" of athletic scholarships with college athletes attending the University of Missouri, addressing the question "[W]hat happens to former college athletes' intrinsic motivation following college?" After controlling for the time elapsed since college, scholarship status was positively related to felt external motivation during college, and negatively related to present-day enjoyment of the target sport. Such findings provide support for the notion that the undermining effects can be prolonged, spanning decades.

Although studies have provided support for the undermining effects of athletic scholarships on intrinsic motivation, a few investigations have reported no such effect or yielded complex data (cf. Ryan & Deci, 2017). To this end, Ryan and Deci have argued that more research is required to tease out the circumstances under which scholarships are considered informational or controlling in their functional significance.

**Feedback**. According to CET, competence-affirming feedback will differentially affect an individual's level of intrinsic motivation to the extent that it is interpreted as being informational or controlling (Deci & Ryan, 1985). In situations where people experience a sense of autonomy, and especially when optimal challenge is present, it is likely that positive feedback will increase intrinsic motivation (Ryan & Deci, 2017). Support for this tenet of CET has been demonstrated in several studies. For example, Thill and Mouanda (1990) reported that handball players who received bogus negative

verbal feedback (i.e., indicating failure) after shooting at targets reported lower levels of intrinsic motivation than players receiving bogus positive verbal feedback. Similarly, in a study utilizing a stabilometer motor task, Vallerand and Reid (1984) examined (1) the effects of positive and negative verbal feedback on reported intrinsic motivation and (2) whether perceptions of competence would mediate the effects of verbal feedback type on intrinsic motivation. Having been prescreened for having at least a moderate level of intrinsic motivation toward the task, 84 participants were allocated to one of three conditions: (1) positive feedback, (2) negative feedback, or (3) no verbal feedback. Results showed that positive verbal feedback increased, and negative verbal feedback decreased, the participants' reported intrinsic motivation. Moreover, and supportive of CET, results of path analysis showed perceived competence to mediate the effects of verbal feedback on intrinsic motivation.

**Competitive outcome**. When engaged in direct competition (i.e., situations where people compete against each other with a view to maximizing their own successes while minimizing the successes of an opponent; Deci & Ryan, 1985), inevitable outcomes are those of "winning" and "losing." Winning and losing convey competence-affirming and incompetence-affirming feedback, respectively. Previous research in sport settings as well as lab-based experimental work using physical tasks to study the competition process have shown that objectively winning a competition leads to higher intrinsic motivation (as indexed by self-reported measures or via free-choice behavior assessments; e.g., McAuley & Tammen, 1989; Vallerand & Reid, 1984; Weinberg & Ragan, 1979). As Ryan and Reeve (in press) point out, it is how the competitive outcome affects perceived competence rather than the competitive outcome in and of itself that explains the ups and downs of intrinsic motivation in competitive settings. Therefore, when considering objective win/loss information, it is important to remember that is also the way in which individuals and/or teams subjectively evaluate their performance that counts. In this regard, past research has shown that when people perceive they have performed well, they are more likely to report higher levels of intrinsic motivation than those who perceived failure, even if they have been objectively unsuccessful (McAuley & Tammen, 1989).

Lab-based research has also shown participants who were told that they had won competitive trials to report higher levels of psychological need satisfaction, positive affect, and vitality than those informed that they had lost (Standage, Duda, & Pensgaard, 2005). The effect of the competitive outcome information and the well-being gains reported in this work were mediated via basic psychological need satisfaction.

**Competition**. Millions of people worldwide engage in competitive sports wherein a key objective is to have evenly matched athletes or teams compete. Although competition is an integral aspect of sports, it is certainly a complicated social phenomenon. Research examining competition from the perspective of CET is perhaps best known for the early demonstrations that competitive environments that place pressure on individuals to win lead to decrements in intrinsic motivation and enjoyment when compared with the

noncompetitive engagement in the same task/activity (Ryan & Reeve, in press). Reference in the SDT literature is often made to Deci et al.'s (1981) study, in which the authors demonstrated that when people are instructed to win at an activity (in this instance, a puzzle task), they perceive competition as controlling, and as such it tends to decrease their intrinsic motivation. From the literature, it is clear that controlling elements such as emphasizing the competitive outcome and receiving pressure from others (e.g., coaches, parents, teammates) to achieve an imposed standard can undermine motivation and lead to the darker aspects of sport competition (cf. Ryan & Reeve, in press). For example, Ntoumanis et al. (2017) in their prospective study of 257 Greek athletes reported that perceptions of controlling coach behaviors (indexed by the coach's controlling use of rewards, negative conditional regard, intimidation, and excessive personal control) positively predicted psychological need frustration and, in turn, low moral functioning (e.g., favorable attitudes toward cheating and gamesmanship) and doping intentions/doping use.

When competition is not characterized by controlling elements such as pressure to win, it can be enhancing of the basic psychological needs for autonomy, competence, and relatedness (Ryan & Reeve, in press). Indeed, there are numerous adaptive informational elements of competition such as optimal challenge, excitement, and mastery experiences that are conducive to supporting positive experiences, high-quality motivation, effortful engagement, and the wellness of competitors.

One example of research that assessed several features of competition was conducted by Tauer and Harackiewicz (2004). Here, the authors assessed the effects of competition, cooperation, and intergroup competition on task enjoyment and performance with a sample of children partaking in a basketball free-throw task. Three findings of interest emerged. First, results replicated the competitive feedback (viz., "success" vs. "failure") findings reported in the CET literature. Second, and in comparing pure competition and pure cooperation, no differences on task enjoyment or performance were reported. Third, intergroup competition was found to consistently lead to the highest levels of task enjoyment and performance (in two of the three studies in which performance was assessed). In appraising their findings, the authors argued that engaging in intergroup competition provided the children with the best overall experience as they derive the benefits available from competition and cooperation. That is, they experience the excitement and challenge of competition as well as the interpersonal enthusiasm and relatedness that comes from having teammates. Considered from a CET perspective, it may also be that the controlling dimension of competition in this work was downplayed in favor of the informational component (Vallerand, 2007).

An exciting avenue of work would be to extend existing lab-based research to real-world settings. Here, research that ecologically tracks how differing features of the competitive process interact to satisfy as well as frustrate the basic psychological needs would be a worthy undertaking. Such work would provide rich insight into the brighter and darker sides of sports competition. Ryan and Reeve (in press) recently proposed a set

of *informational* (e.g., autonomy-supportive supervisor, task-involving and relationship-supportive interpersonal climate, perceived challenge, winning, positive effectance feedback/expectancies/information, task involvement) and *controlling* (e.g., pressure to win, controlling supervisor, ego-involving and status-centric interpersonal climate, losing, negative effectance feedback/expectancies, competitively contingent rewards, ego involvement) competitive elements that would be particularly useful in informing this endeavor.

### Intrapersonal Events: Task and Ego Involvement

Task and ego involvement are two intrapersonal events that have implications for the motivation and wellness of athletes. According to CET, the functional significance of task-involvement (i.e., a focus on self-referenced gains, learning, and effortful engagement) is one in which internally informational information supports intrinsic motivation as it facilitates an internal locus of causality and perceived competence (Ryan & Deci, 2017). In contrast, ego involvement occurs when people put pressure on themselves (i.e., they internalize external contingencies) such that their self-worth hinges on outperforming others (Ryan, 1982). Here, the person is experiencing an internally administered pressure to meet specific outcomes, and as such the functional significance of the event is experienced as being controlling, which in turn undermines the person's perceived locus of causality and subsequently their intrinsic motivation and well-being (Deci & Ryan, 1985; Ryan & Reeve, in press). Lab-based work has provided empirical support for such a proposition, showing that when people feel pressured to perform, they report less intrinsic motivation toward the task at hand than participants told to just try their best (e.g., Ryan, 1982).

In sport contexts, the saliency of competition and a focus on competitive outcomes can, and does, induce ego involvement. Using a physical coordination task, Standage et al. (2005) examined the effects of different competitive features on participants' psychological need satisfaction and well-being (i.e., ego-involving vs. task-involving, working cooperatively vs. working alone, and win vs. loss competitive outcome information). Results showed that participants allocated to the task-involving conditions and those working in cooperation reported higher levels of psychological need satisfaction and well-being. In contrast, those in the ego-involving conditions reported higher levels of negative affect and lower levels of psychological need satisfaction and vitality. Participants who were told that they had won reported higher levels of psychological need satisfaction, positive affect, and vitality than those told that they had lost, whereas participants informed that they had lost reported higher levels of negative affect. Standage et al. also tested when losing was worse via three planned contrasts. The results showed that losing in an ego-involving competitive structure that centers on individual-based achievement was the costliest competitive encounter. Summarizing the findings, standardized indirect effects from a motivational process model grounded within SDT showed the effects of the competitive

features (i.e., ego-involving context, cooperation context, competitive outcome) affected well-being outcomes via psychological need satisfaction.

The Standage et al. (2005) findings provide empirical support for the notion that ego involvement tends to thwart psychological need satisfaction and undermine motivation and well-being (Ryan & Reeve, in press). Yet, at the same time, and supporting the earlier discussion on competition, the results again highlight that it is not competition per se that threatens a person's motivation and well-being in competitive settings. Indeed, it seems that even when "failure" is realized, the quality of the experience can be maintained when competition is couched in a task-involving context and/or cooperation is promoted. As not many athletes are afforded the luxury of always being the winner, such findings are reassuring and informative with respect to how the debilitating effects of competition can be countered.

Rewards, feedback, competition, and, over time, an individual's intrapersonal dynamics (e.g., ego involvement) are delivered to athletes by significant others such as coaches, parents, and teammates. In the context of being supportive (or thwarting) of the psychological needs, SDT holds that the interpersonal styles, motivating techniques, intentions, and attitudes of these social agents markedly contribute to the quality of the motivational climate and subsequently to the athletes' motivation, engagement, performance, and wellness (cf. Ryan & Deci, 2017). It is to the nature of interpersonal contexts and past research in sport contexts that the attention now turns.

### Interpersonal Contexts

Sports occur in dynamic social contexts wherein athletes bring their goals, values, and day-to-day life experiences to bear. At the same time, athletes are exposed to different social agents (e.g., coaches, teammates, parents), each varying in how they convey and communicate motivationally laden messages. Issues such as competitive level, competitive calendar, and proximal context (e.g., training or competition) will also influence an athlete's quality of motivation, their sport experiences, and their effortful engagement. Although it is beyond the scope of this chapter to provide a detailed discussion, there is still certainly much work to still be conducted on the social dynamics and the complex nature of interpersonal environments in sport. Moreover, and while the social contexts of sport can involve a number of key individuals (e.g., youth sports have both authority figures such as coaches and parents and teammate/peer relationships), in the following, my focus is on coach-created motivational climates.

According to SDT, an athlete's behavioral engagement, sport experiences, performance, and well-being are influenced to the extent to which significant others (e.g., coaches, teammates, parents) support their basic psychological needs for autonomy, competence, and relatedness. In a nutshell, need-supportive environments are viewed as being conducive to high-quality motivation, internalization, and thriving, whereas need-thwarting social contexts contribute to controlled motivation, impaired functioning, and

ill-being. SDT research has shown the social contexts promoted by significant others (e.g., coaches and teammates) to play an important role in supporting or undermining motivation quality, well-being, engagement, and performance (cf. Standage & Ryan, 2020).

Akin to other life domains, the interpersonal climate that has received the most empirical attention in sport to date is that of *autonomy support* (i.e., interpersonal environments that are supportive of choice, initiation, and understanding, while minimizing the need to perform and act in a prescribed manner; Ryan & Deci, 2017). Although labeled "autonomy-support," such contexts enhance the likelihood of an individual satisfying all three psychological needs (Ryan & Deci, 2017). Past work has shown that athletes who perceive their coach to use an autonomy-supportive coaching style report a wealth of benefits, including higher psychological need satisfaction (Adie, Duda, & Ntoumanis, 2008; Haerens et al., 2018), greater autonomous motivation (Haerens et al., 2018; O'Neil & Hodge, 2020; Pelletier et al., 2001; Sheldon & Watson, 2011), higher well-being and vitality (Gagné et al., 2003; Haerens et al., 2018), greater engagement (Curran et al., 2014; Delrue et al., 2019), better objective team performance (Sheldon & Watson, 2011), and sustained behavioral persistence (Pelletier et al., 2001). Research has also shown the adaptive pattern of findings for autonomy support to hold even in situations where athletes were poorly motivated or disruptive (e.g., Delrue et al., 2019) as well as across level of participation (e.g., varsity vs. recreational and club sport; Sheldon & Watson, 2011).

Although empirical work shows the multiple benefits for athletes of an autonomy-supportive coaching climate, not all coaches provide such motivational climates for their athletes. One strand of SDT research has contrasted autonomy support with controlling coaching environments. Controlling coach-created sport climates put pressure on athletes to think, feel, and behave in particular, and imposed, ways. Thus the functional significance associated with perceptions of control manifest very differently from the processes and outcomes associated with autonomy support (i.e., they are characterized by imposed pressures, enforced performance standards, conditional regard, etc.). Supporting such reasoning, and in contrast to the adaptive findings associated with autonomy support, perceptions of a controlling coach climate have been shown to be positively associated with a number of maladaptive outcomes, including controlled (or poor quality) forms of motivation (O'Neil & Hodge, 2020; Pelletier et al., 2001), greater sport disaffection (Curran et al., 2014), more symptoms of burnout (Barcza-Renner et al., 2016), increased cognitive anxiety (Ramis et al., 2017), and ill-being (Haerens et al., 2018).

In recent years, there has been a logical shift toward focusing on and defining characteristics of coach-created climates in a broader manner commensurate with the three psychological needs outlined within SDT. Here, there has been a shift to distinguishing between *need-supportive* and *need-thwarting* social contexts with measurement tools being developed to assess this broader conceptualization within sport (e.g., Rocchi, Pelletier, & Desmarais, 2017). In their psychometric validation work with samples of student athletes and coaches from a provincial sporting association, Rocchi and her colleagues reported

results that aligned with the propositions of SDT: athletes who reported that their coaches used need-supportive interpersonal behaviors also endorsed higher psychological need satisfaction and autonomous sport motivation, whereas athletes who reported that their coaches employed need-thwarting interpersonal behaviors reported greater psychological need frustration and controlled sport motivation.

The dynamic nature of sport contexts makes it likely that coaches will use a mixture of need-supportive and need-thwarting styles across differing settings. In this regard, Delrue et al. (2017) reported significant variation in 197 Belgian soccer players' perceptions of coach behaviors across five soccer matches (as being supporting or thwarting of the needs for autonomy and competence). The authors also reported that in-game perceptions of supports for autonomy and competence positively predicted prosocial sport behavior and negatively predicted antisocial behaviors, whereas perceptions of the thwarting of the autonomy and competence needs were shown to positively predict antisocial behavior and resentment toward the referee.

Within SDT, the satisfaction of *all* three psychological needs is theorized to support and maintain human thriving (Ryan & Deci, 2017). Thus, it would be insightful to include assessments of autonomy, competence, *and* relatedness supports in future longitudinal sports research to ascertain the benefits and costs of exposure to differing motivational climates. Establishing a brief set of items that capture core and differing features of the social context is key to such work. Item response theory would be useful to such an endeavor (Standage & Ryan, 2020).

## Practical Implications

A major focus within any application of SDT to sports would be to facilitate the basic psychological need satisfactions of both athletes and their coaches. To date, intervention attempts have mainly been conducted in other domains, such as education and healthcare (e.g., arthritis, hypertension, physical activity, smoking abstinence; cf. Gillison et al., 2019; Reeve & Cheon, 2021). Within healthcare contexts, intervention studies, including several randomized controlled trials, have shown that when patients experience psychological need satisfaction in their treatment, they experience greater volitional engagement in their treatment and demonstrate greater maintenance of desirable health behaviors (cf. Ryan & Deci, 2017).

In the context of education, Reeve and Cheon (2021) recently reviewed 51 autonomy-supportive teaching intervention studies, reporting that (1) by employing SDT principles in teacher-education interventions, teachers were capable of learning and employing autonomy-supportive styles in their teaching practice and (2) when teachers become autonomy-supportive, their students experience important and adaptive educational outcomes (e.g., autonomous motivation, engagement, prosocial behavior, perceived skill-development, improved self-concept). Reynders et al. (2019) applied this "teach the teacher" approach to the sports domain, leading to a "coach the coach" intervention. The authors randomly allocated coaches to a control group or an "autonomy support and

structure" condition. As a result of the intervention content, both coaches and their athletes reported positive changes in terms of the coaches' autonomy-supportive and structuring coaching behavior (team sport athletes being an exception). Notably, athletes in the intervention group reported increased autonomous motivation and greater engagement than those allocated to the control condition.

The systematic and empirically driven research approach to the development of SDT also provides a clear roadmap for interventions. Being able to map the features, qualities, and nature of environments that are supportive of autonomy, competence, and relatedness is of significant import to sport practitioners (Standage & Ryan, 2020). A clear gap in the extant literature pertains to the systematic translation of the principles within SDT to inform and improve sports practice for the benefit of all involved. Drawing from a rich body of empirical research across various life domains, including sport, exercise, and health (cf. Ryan & Deci, 2017; Standage & Ryan, 2012, 2020; Teixeira et al., 2020), several situational components that provide supports for each basic psychological need that could form part of need-supportive interventions in sports are briefly outlined in the following text. Although listed under a particular need support, it is important to note that these features of the social context can, and often do, support two or more of the basic psychological needs.

*Autonomy supports*: (1) provide choice; (2) seek athlete input; (3) elicit, understand, and acknowledge the players' perspectives; (4) employ noncontrolling and nonjudgmental language; (5) support athlete initiative; (6) explore and set goals rich in intrinsic goal content; (7) provide meaningful rationales; and (8) encourage athletes to experiment with new tasks that could offer challenge and provide opportunities for learning and skill development.

*Competence supports*: (1) provide structure; (2) use informational feedback; (3) appropriately apply positive feedback; (4) clarify expectations to athletes/teams; (5) promote task-involved engagement; (6) support optimal challenge; and (7) provide clear, constructive, and relevant feedback.

*Relatedness supports*: (1) express authentic interest in the person; (2) encourage asking questions and listening to the athletes' reasons; (3) promote a supportive and collaborative context for athletes and their teammates; (4) show unconditional regard; and (5) support cooperation.

## Future Directions

Many avenues exist for future basic research and intervention work in sport, grounded within SDT, a few of which have already been alluded to within this chapter. Further directions for potential work include the following:

- Similar to research conducted in school physical education (e.g., Vasconcellos et al., 2020) and across health settings (e.g., Gillison et al., 2019), it would

be insightful to synthesize the available empirical data in sports to quantify the mean associations among SDT variables as well as outcome variables of interest. In this work, researchers should also explore moderating factors (e.g., sex, age, competitive level, type of sport, culture, country) associated with heterogeneity in effect sizes to understand how the effect size varies from study to study (cf. Borenstein et al., 2021).

- As the processes within SDT are dynamic and multidimensional in nature, research designs, assessments, and analyses that capture the ongoing interplay among key SDT constructs are required to better understand and predict changes in key sport-related outcomes. Experience sampling, event sampling, and longitudinal designs are all critical to advancing the field (Standage & Ryan, 2020).

- As intervention work continues to increase in sport contexts it would be useful to develop a classification of "motivation and behavior change techniques" in a manner similar to recent work in health contexts (Teixeira et al., 2020). Such a classification system would (1) help to systematically identify, define, and classify how "coach intervention techniques" lead to changes in important behavioral and psychological outcomes as a function of satisfying the psychological needs for autonomy, competence, and relatedness and (2) aid in the development, translation, and precision of describing and reporting intervention attempts in sport settings.

- More research is required which tests tenets of the mini-theories of relationships motivation theory (RMT) and goal contents theory (GCT). With RMT in mind, it would be interesting to longitudinally explore the relational dynamics of differing social agents with similar and contrasting interpersonal styles to examine their influence on the ongoing strivings, wellness, and behaviors of athletes across training, competition, and different times of the competitive cycle (See Standage & Emm, 2014 for a discussion of RMT and sport). In terms of GCT, as goal pursuit in sports is highly prevalent, work in the sport domain would benefit from the systematic development of an assessment of participants' intrinsic and extrinsic goal contents (Standage & Ryan, 2020). Such work would provide a foundation for future empirical assessments of goal contents within sport settings.

## Conclusions

Within this chapter, only a small portion of the expansive body of SDT research in sport settings has been reviewed. Several key findings were presented. First, the distinction between autonomous and controlled motivation was discussed from a quality perspective. The multiple advantages of acting through autonomous types of motivation for an athlete's performance, well-being, engagement, and other important sport-related

outcomes were reported. Second, the basic psychological needs were reviewed in the context of the role that these functional requirements play in differentially linking various social contextual factors with positive and negative sport outcomes. Considerable empirical work has shown that psychological need satisfaction enhances positive outcomes such as high-quality forms of sports motivation, wellness, vitality, engagement, and athlete thriving. In contrast, results have documented the well-being, motivation, and behavioral costs of experiencing psychological need frustration. Third, the functional significance of differing elements of sport-related social contexts (e.g., rewards, feedback, competition, ego involvement, interpersonal interactions) were considered from the perspective of being conducive to supporting or thwarting the psychological needs for autonomy, competence, and relatedness. To this end, a large body of research in sports settings substantiate the tenets of BPNT, attesting to the positive outcomes associated with need-supportive social conditions as well as the detriments of environments that thwart the basic psychological needs of athletes and coaches. In view of the importance of the basic psychological needs to understanding the social conditions that facilitate and support positive outcomes in sport such as wellness, thriving, and intrinsic motivation, practical recommendations were organized around specific supports for autonomy, competence, and relatedness. Finally, several specific directions for future research were offered.

Across the past five decades, researchers have drawn from SDT to make original, meaningful, and innovative contributions to our understanding of sports motivation. From the origins of SDT research, focusing on how social inputs such as competition, feedback, and rewards sustain or undermine intrinsic motivation, through to testing the broad motivational phenomena within and across the current six SDT mini-theories, empirical work within sports has been rife. As we move forward, it will be exciting to see how sports research continues to make contributions to SDT, especially as the theory goes through further expansion and refinement.

## References

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2008). Autonomy support, basic need satisfaction and the optimal functioning of adult male and female sport participants: A test of basic needs theory. *Motivation and Emotion*, *32*, 189–199.

Barcza-Renner, K., Eklund, R. C., Morin, A. J. S., & Habeeb, C. M. (2016). Controlling coaching behaviors and athlete burnout: Investigating the mediating roles of perfectionism and motivation. *Journal of Sport & Exercise Psychology*, *38*(1), 30–44.

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, *37*, 1459–1473.

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., & Thøgersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport & Exercise Psychology*, *33*, 75–102.

Bhavsar, N., Bartholomew, K. J., Quested, E., Gucciardi, D. F., Thøgersen-Ntoumani, C., Reeve, J., Sarrazin, P., & Ntoumanis, N. (2020). Measuring psychological need states in sport: Theoretical considerations and a new measure. *Psychology of Sport and Exercise*, *47*, 101617.

Borenstein, M. H., Hedges, L. V., Higgins, J. P. T., Rothstein, H. R. (2021). *Introduction to meta-analysis* (2nd ed.). John Wiley & Sons.

Brown, D., Arnold, R., Standage, M., & Fletcher, D. (2017). Thriving on pressure: A factor mixture analysis of sport performers' responses to competitive encounters. *Journal of Sport & Exercise Psychology*, *39*, 423–437.

Brown, D. J., Arnold, R., Standage, M., & Fletcher, D. (2021). A longitudinal examination of thriving in sport performers. *Psychology of Sport and Exercise*, *55*, 101934.

Brown, D. J., Arnold, R., Standage, M., Turner, J. E., & Fletcher, D. (2021). The prediction of thriving in elite sport: A prospective examination of the role of psychological need satisfaction, challenge appraisal, and salivary biomarkers. *Journal of Science and Medicine in Sport*, *24*(4), 373–379.

Charbonneau, D., Barling, J., & Kelloway, E. K. (2001), Transformational leadership and sports performance: The mediating role of intrinsic motivation. *Journal of Applied Social Psychology*, *31*, 1521–1534.

Curran, T., Hill, A. P., Hall, H. K., & Jowett, G. E. (2014). Perceived coach behaviors and athletes' engagement and disaffection in youth sport: The mediating role of the psychological needs. *International Journal of Sport Psychology*, *45*, 559–580.

Curran, T., Hill, A. P., & Niemiec, C. P. (2013). A conditional process model of children's behavioral engagement and behavioral disaffection in sport based on self-determination theory. *Journal of Sport & Exercise Psychology*, *35*(1), 30–43.

Deci, E. L., Betley, G., Kahle, J., Abrams, L., & Porac, J. (1981). When trying to win: Competition and intrinsic motivation. *Personality and Social Psychology Bulletin, 7*(1), 79–83.

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality, 62*, 119–142.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*, 627–668.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.

Delrue, J., Vansteenkiste, M., Mouratidis, T., Gevaert, K., Vande Broek, G., & Haerens, L. (2017). A game-to-game investigation of the relation between need-supportive and need-thwarting coaching and moral behavior in soccer. *Psychology of Sport and Exercise, 31*, 1–10.

Delrue, J., Soenens, B., Morbée, S., Vansteenkiste, M., & Haerens, L. (2019). Do athletes' responses to coach autonomy support and control depend on the situation and athletes' personal motivation? *Psychology of Sport and Exercise*, *43*, 321–332.

Felton, L., & Jowett, S. (2015). On understanding the role of need thwarting in the association between athlete attachment and well/ill-being. *Scandinavian Journal of Medicine & Science in Sports*, *25*(2), 289–298.

Gagné, M., Ryan, R. M., & Bargmann, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology*, *15*, 372–390.

Gaudreau, P., Amiot, C. E., & Vallerand, R. J. (2009). Trajectories of affective states in adolescent hockey players: Turning point and motivational antecedents. *Developmental Psychology*, *45*(2), 307–319.

Gaudreau, P., & Antl, S. (2008). Athletes' broad dimensions of dispositional perfectionism: Examining changes in life satisfaction and the mediating role of sport-related motivation and coping. *Journal of Sport & Exercise Psychology*, *30*, 356–382.

Gillet, N., Berjot, S., & Gobancé, L. (2009). A motivational model of performance in the sport domain. *European Journal of Sport Science*, *9*, 151–158.

Gillet, N., Vallerand, R. J., Amoura, S., & Baldes, B. (2010). Influence of coaches' autonomy support on athletes' motivation and sport performance: A test of the hierarchical model of intrinsic and extrinsic motivation. *Psychology of Sport and Exercise*, *11*, 155–161.

Gillet, N., Vallerand, R. J., & Paty, B. (2013), Situational motivation and performance. *Journal of Applied Social Psychology*, *43*, 1200–1210.

Gillison, F. B., Rouse, P., Standage, M., Sebire, S. J., & Ryan, R. M. (2019). A meta-analysis of techniques to promote motivation for health behaviour change from a self-determination theory perspective. *Health Psychology Review*, *13*(1), 110–130.

Gillison, F. B, Standage, M., & Skevington, S. M. (2011). Motivation and body-related factors as discriminators of change in adolescents' exercise behavior patterns. *Journal of Adolescent Health*, *48*(1), 44–51.

Green-Demers, I., Pelletier, L. G., Stewart, D. G., & Gushue, N. R. (1998). Coping with the less interesting aspects of training: Toward a model of interest and motivation enhancement in individual sports. *Basic and Applied Social Psychology*, *20*(4), 251–261.

Haerens, L., Vansteenkiste, M., De Meester, A., Delrue, J., Tallir, I., Vande Broek, G., Goris, W., & Aelterman, N. (2018). Different combinations of perceived autonomy support and control: Identifying the most optimal motivating style. *Physical Education and Sport Pedagogy*, *23*(1), 16–36.

Jõesaar, H., Hein, V., & Hagger, M. S. (2011). Peer influence on young athletes' need satisfaction, intrinsic motivation and persistence in sport: A 12-month prospective study. *Psychology of Sport and Exercise*, *12*(5), 500–508.

Jowett, G. E., Hill, A. P., Hall, H. K., & Curran, T. (2013). Perfectionism and junior athlete burnout: The mediating role of autonomous and controlled motivation. *Sport, Exercise, and Performance Psychology*, *2*, 48–61.

Jowett, G. E., Hill, A. P., Hall, H. K., & Curran, T. (2016). Perfectionism, burnout and engagement in youth sport: The mediating role of basic psychological needs. *Psychology of Sport and Exercise, 24*, 18–26.

Karamitrou, A., Comoutos, N., Hatzigeorgiadis, A., & Theodorakis, Y. (2017). A self-determination approach to understanding of athletes' automatic self-talk. *Sport, Exercise, and Performance Psychology*, *6*(4), 340–354.

Kingston, K. M., Horrocks, C. S., & Hanton, S. (2006). Do multidimensional intrinsic and extrinsic motivation profiles discriminate between athlete scholarship status and gender? *European Journal of Sport Science, 6*(1), 53–63.

Kouali, D., Hall, C., & Pope, P. (2020). Measuring eudaimonic wellbeing in sport: Validation of the Eudaimonic Wellbeing in Sport Scale. *International Journal of Wellbeing*, *10*(1), 93–106.

Lonsdale, C., Hodge, K., & Rose, E. A. (2008). The Behavioral Regulation in Sport Questionnaire (BRSQ): Instrument development and initial validity evidence. *Journal of Sport & Exercise Psychology*, *30*(3), 323–355.

McAuley, E., & Tammen, V. V. (1989). The effects of subjective and objective competitive outcomes on intrinsic motivation. *Journal of Sport & Exercise Psychology*, *11*, 84–93.

Moller, A. C., & Sheldon, K. M. (2020). Athletic scholarships are negatively associated with intrinsic motivation for sports, even decades later: Evidence for long-term undermining. *Motivation Science, 6*(1), 43–48.

Ntoumanis, N. (2012). A self-determination theory perspective on motivation in sport and physical education: Current trends and possible future research directions. In G. C. Roberts & D. C. Treasure (Eds.), *Motivation in sport and exercise* (Vol. 3, pp. 91–128). Human Kinetics.

Ntoumanis, N., Barkoukis, V., Gucciardi, D. F., & Chan, D. K. C. (2017). Linking coach interpersonal style with athlete doping intentions and doping use: A prospective study. *Journal of Sport & Exercise Psychology*, *39*(3), 188–198.

Ntoumanis, N., & Standage, M. (2009). Morality in sport: A self-determination theory perspective. *Journal of Applied Sport Psychology*, *21*, 365–380.

O'Neil, L., & Hodge, K. (2020). Commitment in sport: The role of coaching style and autonomous versus controlled motivation. *Journal of Applied Sport Psychology, 32*(6), 607–617.

Orlick, T. D., & Mosher, R. (1978). Extrinsic awards and participant motivation in a sport related task. *International Journal of Sport Psychology*, *9*, 27–39.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., & Brière, N. M. (2001). Associations among perceived autonomy support, forms of self-regulation, and persistence: A prospective study. *Motivation and Emotion, 25*, 279–306.

Podlog, L., Gustafsson, H., Skoog, T., Gao, Z., Westin, M., Werner, S., & Alricsson, M. (2015). Need satisfaction, motivation, and engagement among high-performance youth athletes: A multiple mediation analysis. *International Journal of Sport and Exercise Psychology*, *13*(4), 415–433.

Ramis, Y., Torregrosa, M., Viladrich, C., & Cruz, J. (2017). The effect of coaches' style on the competitive anxiety of young athletes. *Frontiers in Psychology*, *8*, article 572. doi: 10.3389/fpsyg.2017.00572.

Reeve, J., & Cheon, S. H. (2021). Autonomy-supportive teaching: Its malleability, benefits, and potential to improve educational practice. *Educational Psychologist*, *56*(1), 54–77.

Reynders, B., Vansteenkiste, M., Van Puyenbroeck, S., Aelterman, N., De Backer, M., Delrue, J., De Muynck, G.-J., Fransen, K., Haerens, L., & Vande Broek, G. (2019). Coaching the coach: Intervention effects on need-supportive coaching behavior and athlete motivation and engagement. *Psychology of Sport and Exercise, 43*, 288–300.

Rocchi, M. A., Guertin, C., Pelletier, L. G., & Sweet, S. N. (2020). Performance trajectories for competitive swimmers: The role of coach interpersonal behaviors and athlete motivation. *Motivation Science*, *6*(3), 285–296.

Rocchi, M., Pelletier, L., & Desmarais, P. (2017). The validity of the Interpersonal Behaviors Questionnaire (IBQ) in sport. *Measurement in Physical Education and Exercise Science, 21*(1), 15–25.

Ryan, E. D. (1977). Attribution, intrinsic motivation, and athletics. In L. I. Gedvilas & M. E. Kneer (Eds.), *Proceedings of the National College Physical Education Association for Men/National Association for Physical Education of College Women national conference* (pp. 346–353). Office of Publications Services.

Ryan, E. D. (1980). Attribution, intrinsic motivation, and athletes: A replication and extension. In C. H. Nadeau, W. R. Halliwell, K. M. Newell, & G. C. Roberts (Eds.), *Psychology of motor behavior and sport: 1979* (pp. 19–26). Human Kinetics.

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology, 43*, 450–461.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*(5), 749–761.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., & Reeve, J. (in press). Intrinsic motivation, psychological needs, and competition: A self-determination theory analysis. In S. M. Garcia, A. Tor, & A. J. Elliot (Eds.), The *Oxford handbook of the psychology of competition*. Oxford University Press.

Sheldon, K. M., & Watson, A. (2011). Coach's autonomy support is especially important for varsity compared to club and recreational athletes. *International Journal of Sports Science & Coaching*, *6*(1), 109–123.

Standage, M. (2012). Self-determination theory and performance in sport. In S. Murphy (Ed.), The *Oxford handbook of sport and performance psychology* (pp. 233–249). Oxford University Press.

Standage M., Duda, J. L., & Pensgaard, A. M. (2005). The effect of competitive outcome and task-involving, ego-involving, and cooperative structures on the psychological well-being of individuals engaged in a co-ordination task: A self-determination approach. *Motivation and Emotion*, *29*(1), 41–68.

Standage, M., & Emm, L.G. (2014). Relationships within physical activity settings. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships: Theory, research and applications* (pp. 239–262). Springer.

Standage, M., & Ryan, R. M. (2012). Self-determination theory and exercise motivation: Facilitating self-regulatory processes to support and maintain health and well-being. In G. C. Roberts & D. C. Treasure (Eds.), *Advances in motivation in sport and exercise* (pp. 233–270). Human Kinetics.

Standage, M., & Ryan, R. M. (2020). Self-determination theory in sport and exercise. In G. Tenenbaum, & R. C. Eklund (Eds.), *Handbook of sport psychology* (4th ed., Vol. 1, pp. 37–56). John Wiley & Sons.

Stenling, A., Ivarsson, A., Hassmén, P., & Lindwall, M. (2017). Longitudinal associations between athletes' controlled motivation, ill-being, and perceptions of controlling coach behaviors: A Bayesian latent growth curve approach. *Psychology of Sport and Exercise, 30*, 205–214.

Stenling, A., Lindwall, M., & Hassmén, P. (2015). Changes in perceived autonomy support, need satisfaction, motivation, and well-being in young elite athletes. *Sport, Exercise, and Performance Psychology*, *4*(1), 50–61.

Tauer, J. M., & Harackiewicz, J. M. (2004). The effects of cooperation and competition on intrinsic motivation and performance. *Journal of Personality and Social Psychology*, *81*(6), 849–861.

Teixeira, P. J., Marques, M. M., Silva, M. N., Brunet, J., Duda, J. L., Haerens, L., La Guardia, J., Lindwall, M., Lonsdale, C., Markland, D., Michie, S., Moller, A. C., Ntoumanis, N., Patrick, H., Reeve, J., Ryan, R. M., Sebire, S. J., Standage, M., Vansteenkiste, M., Weinstein, N., Weman-Josefsson, K., Williams, G. C., Hagger, M. S. (2020). A classification of motivation and behavior change techniques used in self-determination theory–based interventions in health contexts. *Motivation Science*, *6*(4), 438–455.

Thill, E., & Mouanda, J. (1990). Autonomy or control in the sport context: Validity of cognitive evaluation theory. *International Journal of Sport Psychology*, *21*, 1–20.

Treasure, D. C., Lemyre, N., Kuczka, K. K., & Standage, M. (2007). Motivation in elite sport: A self-determination perspective. In M. S. Hagger, & N. L. D. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 153–165). Human Kinetics.

Vallerand, R. J. (2007). Intrinsic and extrinsic motivation in sport and physical activity: A review and a look at the future. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (pp. 59–83). John Wiley & Sons.

Vallerand, R. J., & Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory. *Journal of Sport Psychology*, *6*(1), 94–102.

Vasconcellos, D., Parker, P. D., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., Ryan, R. M., & Lonsdale, C. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. *Journal of Educational Psychology*, *112*(7), 1444–1469.

Verner-Filion, J., Vallerand, R. J., Amiot, C. E., & Mocanu, I. (2017). The two roads from passion to sport performance and psychological well-being: The mediating role of need satisfaction, deliberate practice, and achievement goals. *Psychology of Sport and Exercise, 30*, 19–29.

Vink, K., Raudsepp, L., & Kais, K. (2015). Intrinsic motivation and individual deliberate practice are reciprocally related: Evidence from a longitudinal study of adolescent team sport athletes. *Psychology of Sport & Exercise*, *16*(3), 1–6.

Warburton, V. E., Wang, J. C. K., Bartholomew, K. J., Tuff, R. L., & Krystal, C. M. (2020). Need satisfaction and need frustration as distinct and potentially co-occurring constructs: Need profiles examined in physical education and sport. *Motivation and Emotion, 44*, 54–66.

Weinberg, R. S., & Ragan, J. (1979). Effects of competition, success/failure, and sex on intrinsic motivation. *Research Quarterly: American Alliance for Health, Physical Education, Recreation and Dance*, *50*, 503–510.

# Motivational Processes in Physical Education: A Self-Determination Theory Perspective

Ian M. Taylor *and* Chris Lonsdale

## Abstract

Physical education (PE) classes present an opportunity to counteract insufficient levels of physical activity in children and potentially stimulate active lifestyles outside of school and across the lifespan. Facilitating adaptive motivation within PE classes is commonly viewed as an essential step in achieving these aims. Therefore, it is unsurprising that self-determination theory (SDT) has been widely employed to study motivational dynamics, behavior, and student outcomes in PE. This chapter will first provide an overview of measurement and operationalization issues within SDT-based PE research. It will subsequently describe and evaluate intervention work that has aimed to satisfy PE students' psychological needs, facilitate autonomous motivation, and promote a range of adaptive outcomes. Research that has investigated teacher motivation and their motivational styles from an SDT perspective will also be examined. Finally, the chapter will outline some potential future research directions, including an alternative approach to employing SDT in PE classes to develop psychologically need-satisfying experiences and inspire physical activity across the lifespan.

**Key Words:** Key words: physical education, physical activity, psychological need satisfaction, self-determination, autonomous regulation

Sustained physical activity positively impacts the physical and mental health of children and adolescents (Guthold et al., 2020) and reduces risk of noncommunicable diseases (e.g., stroke, diabetes) across the lifespan (U.S. Department of Health and Human Services, 2018). Promoting physical activity in children and adolescents, therefore, represents a major public health goal. Yet, despite attempts to increase physical activity over several decades, children and young people in many parts of the world remain insufficiently physically active. Globally in 2016, 81% of children ages 11 to 17 years did not meet current recommendations for physical activity (Guthold et al., 2020).

School contexts represent a significant opportunity to alter these physical activity patterns in children and adolescents. In particular, the physical education (PE) class, mandatory in many countries across the world, allows children and adolescents to engage in physical activity and potentially stimulate active lifestyles outside of school and in

later life (Silva et al., 2018). Many government programs identify constructive attitudes and motivation toward physical activity as essential learning outcomes of PE (e.g., U.K. Department for Education, 2013). It is unsurprising, therefore, that efforts have been made to understand and intervene in PE contexts in the hope of increasing physical activity and other important educational and health outcomes. These endeavors have often focused on motivation in the PE class, and self-determination theory (SDT) has been commonly employed as a theoretical lens through which to study motivational dynamics, behavior, and student outcomes. This chapter will review this work to draw out some key conclusions and offer further questions. Specifically, we provide an overview of measurement and operationalization issues and review research that has examined PE through an SDT lens. We then focus on evaluating PE intervention work that has aimed to satisfy students' psychological needs, facilitate autonomous motivation, and promote a range of adaptive outcomes. Although most research has focused on student motivational processes, we also review research that has shed light on teacher motivation and motivational styles. Finally, we will outline some potential future research directions. By tackling these topics, we hope to offer a deep understanding of the motivational processes that occur in PE and describe how to engineer optimal motivational experiences that facilitate physical and psychological benefits.

## Measuring and Operationalizing SDT Constructs in PE

As can be seen in other chapters of this book, SDT is a wide-ranging theory involving many tenets and subtheories that explain human behavior. Work in PE contexts has largely centered on a motivational sequence in which classroom contexts that satisfy students' basic psychological needs for autonomy, competence, and relatedness will facilitate autonomous motivation for PE, which subsequently promotes a range of favorable behavioral, affective, and cognitive outcomes (e.g., Ntoumanis, 2001; Standage, Duda, & Ntoumanis, 2005). A small amount of research has investigated psychological need support from fellow students (e.g., Koka, 2014); however, more research has focused on teacher psychological need support. In its early development, SDT focused on supporting autonomy, which is primarily concerned with encouraging people to make their own choices (Deci & Ryan, 1987), and fostering internalization of behavioral choices (Deci et al., 1994). Educational research tended to adopt a wider perspective focusing on teacher autonomy support, structure, and involvement as facilitators of student autonomy, competence, and relatedness, respectively (Connell & Wellborn, 1991). PE-based research has also employed these terms (e.g., Taylor & Ntoumanis, 2007) or, straightforwardly, autonomy support, competence support, and relatedness support (e.g., Jackson-Kersey & Spray, 2016). Recent trends in examining teaching styles that thwart students' psychological needs have tended to focus on teachers' psychologically controlling behaviors (De Meyer et al., 2014), but some researchers have also focused on chaotic (competence-thwarting) and emotionally cold (relatedness-thwarting) teaching styles (e.g., Van den Berghe et al., 2013).

Isolating each component of the PE motivational context is difficult because they are often entwined. For example, providing students with an opportunity to take responsibility (typically viewed as autonomy support) or giving informational feedback on progress (typically viewed as competence support) may enhance the relationship between teacher and student and therefore simultaneously support students' relatedness. Indeed, strong associations between the three types of need support are typical (Vasconcellos et al., 2020), although correlations may be somewhat inflated due to common method variance (e.g., exclusively self-report). Compounding this overlap, some research has employed the term "autonomy support" as a composite reflecting the support of all three needs, which perhaps should now be labeled psychological "need support" to avoid confusion (e.g., Standage et al., 2005). Overall, researchers should not expect SDT-based social factors to satisfy only the corresponding psychological need and not the other two needs.

The measurement of psychological need support in PE has undergone substantial development; this makes navigation of this area difficult. Items adapted from a suite of climate scales (e.g., learning climate; Williams & Deci, 1996) have been adapted to PE contexts (e.g., Standage et al., 2005). Teacher autonomy support, structure, and involvement can be measured by adapting the Teacher as Social Context Questionnaire (Belmont et al., 1988) to the PE context. More recent work has developed scales specifically for PE classes. One instrument measures organizational, procedural, and cognitive dimensions of perceived autonomy support (Tilga, Hein, & Koka, 2017). A second, the Basic Psychological Needs Support Questionnaire, measures support of all three needs in PE contexts (Sánchez-Oliva et al., 2013). Contexts that thwart psychological needs can be measured using the Psychologically Controlling Teaching scale adapted to PE (Soenens et al., 2012).

Self-report scales have the advantage of accounting for the psychological meaning, or functional significance, given to contextual factors by each student (Deci & Ryan, 1987). Observation instruments have also been created to provide a measurement of independently rated teacher psychological need support. One such instrument evaluates teachers' (1) reliance on extrinsic sources of motivation versus nurturing inner motivational resources, (2) reliance on controlling versus informational language, (3) neglect or provision of explanatory rationales, (4) degree of patience for students to produce a right answer/correct behavior, and (5) extent of acknowledgment and acceptance of negative affect (Cheon & Reeve, 2013). Observational tools are also available for autonomy support, structure (i.e., competence support), and relatedness support (Haerens et al., 2013). Need-thwarting behavior has been observed and operationalized as controlling (autonomy-thwarting), chaotic (competence-thwarting), and emotionally cold (relatedness-thwarting) teacher behavior (Van den Berghe et al., 2013).

Psychological need satisfaction and frustration in PE can be measured using the Basic Psychological Need Satisfaction and Frustration Scale adapted to the PE class (Haerens et al., 2015) or a composite of different questionnaire subscales measuring

satisfaction of each need (e.g., Cheon, Reeve, & Ntoumanis, 2018). Psychological need frustration can also be measured using the Psychological Need Thwarting Scale adapted to PE (Bartholomew et al., 2011; note that "thwarting" now refers to the contextual or interpersonal suppression of psychological needs, but in this research, "thwarting" referred to the intrapersonal experience that is now referred to as "frustration"). Recent PE-based work has suggested that, in addition to satisfaction and frustration, autonomy dissatisfaction can explain additional variance in PE disengagement (Cheon et al., 2019). Psychological need dissatisfaction can be measured by adapting the Psychological Need Dissatisfaction scale (Costa, Ntoumanis, & Bartholomew, 2015). When seeking to answer research questions relating to psychological needs one must carefully choose the most appropriate measurement because each has a different emphasis. Including measures of psychological need satisfaction, dissatisfaction, and frustration in any single research project may suggest a lack of critical thought in hypothesis development. Instead, a useful question might be: Which of the processes and psychological needs are most salient to the issue under investigation?

The motivational regulations have been measured using a variety of scales, including the Perceived Locus of Causality scale (Goudas, Biddle, & Fox, 1994; see also Lonsdale et al., 2011), a modified version (PLOC-R; Vlachopoulos et al., 2011), a version aimed at 9- to 12-year-olds (PLOC-C; Pannekoek et al., 2014), and a version of the Situational Motivation Scale adapted to the PE class for momentary motivational states (Standage et al., 2003). These questionnaires do not measure integrated regulation because it is difficult for children to assess and communicate the extent to which behavior congruently aligns with other life values. Nonetheless, some research on integrated regulation has looked at younger populations (11–14 years old; e.g., Gea-Garcia et al., 2020). It would be interesting to investigate the development of the self in order to identify periods, such as the early teenage years, when integrated regulation becomes relevant.

Scores derived from these motivational regulation questionnaires can be used in different ways. Overall self-determination can be investigated using a relative autonomy index, which is calculated by multiplying each regulation subscale score with an assigned weight according to the self-determination continuum. The sum of these product terms form an index of self-determination. The weights to be used if using the contextual scales are 2 (intrinsic motivation), 1 (identified regulation), −1 (introjected regulation), −1 (external regulation), and −2 (amotivation). The Situational Motivation Scale does not measure introjected regulation; therefore, the weights to be used are 2 (intrinsic motivation), 1 (identified regulation), −1 (external regulation), and −2 (amotivation). However, using these indices may hide important information regarding the specific types of motivation underlying an individual's behavior. For example, a student with low levels of autonomous and controlling motivation would receive a similar score as a student with high levels of autonomous and controlling motivation, yet these motivational profiles are clearly different (Ullrich-French & Cox, 2009).

An alternative method is to adopt a person-oriented approach to identify combinations of behavioral regulations that have implications for functioning in PE. For example, PE students from the United States were classified into five groups based on their motivational regulations. The two groups who reported the most adaptive PE experience were a self-determined group (high in autonomous motivation and low in controlling motivation) and a motivated group (high in all types of motivation; Ullrich-French & Cox, 2009). Researchers also examine each motivational regulation independently (e.g., Taylor et al., 2010) or investigate autonomous motivation (combining intrinsic motivation and identified regulation), controlled motivation (combining introjected and external regulation), and amotivation (e.g., Kerner et al., 2018) as separate constructs. Combining intrinsic motivation and identified regulation may also be necessary to avoid statistical issues, such as multicollinearity, because the two regulations are often very highly correlated (Lonsdale et al., 2011). Development of measures that better distinguish between these types of autonomous regulation would provide researchers with greater flexibility in their analytic approach.

## Testing the Motivational Sequence in PE

A meta-analysis of the relationships between psychological need support, psychological need satisfaction, motivational regulations, and PE-relevant outcomes provides a broad overview of research to date (Vasconcellos et al., 2020). Teachers' psychological need support had positive associations with satisfaction of all three psychological needs, especially autonomy. Satisfaction of each psychological need was strongly and positively associated with autonomous forms of motivation, and negatively associated with external regulation and amotivation. The benefits of psychological need support and satisfaction in PE contexts have also been emphasized in a review of qualitative research (White et al., 2021). Somewhat surprisingly in the meta-analysis, psychological need satisfaction was moderately and positively correlated with introjected regulations. Although introjected regulation is a controlling type of behavioral regulation, it represents partial internalization whereby some satisfaction of specific needs has occurred, but at the expense of others (Ryan & Deci, 2019). For example, experiencing conditional regard often puts relatedness in competition with autonomy, resulting in introjected regulation (Assor, Roth, & Deci, 2004).

A vast range of behavioral, cognitive, and affective outcomes have been investigated in PE. The meta-analysis by Vasconcellos and colleagues (2020) demonstrated that, in general, autonomous motivation positively predicted favorable outcomes and negatively predicted maladaptive outcomes; the reverse pattern was observed for amotivation. Introjected regulation had a small negative correlation with favorable outcomes and a stronger positive association with maladaptive outcomes. This pattern is congruent with the suboptimal nature of introjected regulation. Nonetheless, PE-based SDT work has illuminated the complexity of this behavioral regulation.

Introjected regulation can be a powerful driver of behavior. For example, introjected regulation has been positively associated with effort in PE (Cox et al., 2011). In boys, behavior may be enacted for ego enhancement and avoiding social disapproval. Girls, however, may energize behavior due to partial internalization of physical activity and exercise (i.e., doing it because they should; Gillison et al., 2009). Despite some positive behavioral benefits, introjected regulation is sometimes associated with psychological costs in PE classes (e.g., anxiety; Jaakkola et al., 2019), and so the long-term consequences for behavior and well-being are suboptimal. Additionally, introjected regulation may positively associate with favorable outcomes when examined in isolation from autonomous motives. However, any positive elements of introjected regulation (i.e., some degree of internalization) disappear when autonomous motives are also included in statistical models. Comparing meta-analyzed path analysis, which includes all types of motivation, with individual meta-analyzed correlations supports this suggestion (Vasconcellos et al., 2019). In sum, introjected regulation may have some small positive benefits, particularly if focusing on energizing behavior. However, this type of motivational regulation is also accompanied by anxiety, and any positive benefits may be subsumed if autonomous motives are simultaneously considered.

In contrast to theoretical expectations, external regulation is often positively associated with favorable outcomes and negatively associated with maladaptive outcomes (Vasconcellos et al., 2020). For example, external regulation was positively associated with intentions to exercise in a sample of U.K. PE students (Taylor et al., 2010). External mandates are prevalent in the fabric of PE in many parts of the world (i.e., participation is compulsory, and nonparticipation leads to sanctions). Responding affirmatively to questionnaire items measuring external regulation, such as "I have to participate in PE," may be based on awareness of these mandates, rather than the fundamental motive that it is intended to tap into. As a result, the extent of external regulation reported by students may be artificially positive and the regulation less influential in determining student outcomes. This implies that findings should be evaluated within the context of compulsory PE participation, and that measures of external regulation should be adapted with this and related issues in mind.

A major aim of PE is to foster attitudes and behaviors that lead to a lifetime of healthy physical activity; hence, a common research question is: Can autonomous motivation for PE lead to autonomous motivation for leisure-time physical activity (LTPA) and LTPA behavior? A meta-analysis concluded that autonomous motivation in PE is positively associated with autonomous motivation in leisure time. Subsequently, this motivation is positively associated with proximal predictors of LTPA drawn from the theory of planned behavior (i.e., subjective norms, attitudes, and perceived behavioral control), which are positively associated with LTPA behavior (Hagger & Chatzisarantis, 2016). According to this transcontextual model of motivation, motivational transfer occurs because psychological need-satisfying PE activities may increase the propensity to seek similar need-satisfying

behaviors in other contexts (Hagger & Chatzisarantis, 2016). However, a lack of experimental work and a reliance on self-report and correlational methods were noted by the authors. In fact, there is a scarcity of SDT-based PE interventions that have successfully increased LTPA behavior when it has been measured using accelerometry. Moreover, a test of the reciprocal relationship between autonomous motivation in PE and self-reported LTPA found stronger evidence for LTPA predicting change in PE autonomous motivation rather than the usual assumption of autonomous PE motivation impacting LTPA (Taylor, 2017). Given the major aim of PE to encourage lifetime physical activity, the cross-contextual transfer of motivation and behavior deserves continuing investigation.

## PE Interventions Based on SDT

The substantial amount of observational data detailed above has laid the foundations for an increasing amount of experimental and intervention work in PE. Some interventions have focused on providing PE students with choice. For example, providing girls with choices during a 10-day walking activity in PE significantly increased autonomous motivation and decreased external regulation and amotivation, compared to a no-choice condition (Prusak et al., 2004). However, choice did not influence students' motivation during soccer skills testing in PE (Johnson et al., 2011). The Motivating Active Learning in PE (MALP) trial examined the effects of providing complete free choice in PE class (i.e., no instruction), providing two to four choice options within a PE class, and explaining the relevance of tasks for students' lives (Lonsdale et al., 2013). Both choice interventions increased students' perceived autonomy relative to usual teaching practice; however, the interventions did not influence motivation. The free-choice intervention increased physical activity in class, and both choice conditions decreased sedentary behavior.

Interventions focusing on increasing teacher autonomy support more broadly have been successful in altering teacher behavior, and this often (but not always) leads to small positive changes in psychological need satisfaction and/or autonomous motivation (Raabe et al., 2019). Several interventions aimed to leverage this motivational process to increase child physical activity. For example, the Activity and Motivation in Physical Education (AMPED) trial was a cluster randomized controlled trial partly based on the theoretical tenets of SDT (Lonsdale et al., 2019). The intervention adopted a blended (i.e., combination of online and face-to-face training) approach to help teachers enhance their students' motivation toward PE and maximize opportunities for moderate to vigorous physical activity. The trial had positive effects on teachers' motivational behavior and students' physical activity in lessons, but no significant effects on students' motivation. The Self-Determined Exercise and Learning for Fitness (SELF-FIT) trial incorporated SDT principles with fitness and games in PE classes (Ha et al., 2020). The intervention successfully enhanced students' moderate to vigorous physical activity in PE. Decreases in competence and autonomy satisfaction were reported for boys, whereas no change in psychological need satisfaction was observed for girls. Autonomous motivation did not change for boys

but increased for girls. Another intervention aimed at training teachers in psychological need support also successfully increased need-supportive teaching and students' physical activity, but the authors did not report potential mediating variables, such as students' psychological need satisfaction or motivation (Escriva-Boulley et al., 2018). Training delivered to a single teacher successfully led to higher student perceptions of autonomy-supportive teaching across several classes, relative to the teaching of a control (i.e., usual practice) teacher. In addition, the intervention had small but significant indirect effects on autonomous motivation in PE and leisure time via autonomy support. However, the intervention did not significantly enhance LTPA intentions and self-reported physical activity (Barkoukis, Chatzisarantis, and Hagger, 2020).

Overall, the evidence that SDT-based teacher training interventions can boost student physical activity in PE classes is generally favorable but not conclusive, and strong evidence is lacking for any changes resulting from the mediating effects of psychological need satisfaction and autonomous motivation. There is little evidence to show that these interventions benefit LTPA. Nonetheless, the development and testing of SDT interventions continues, so the evidence base will no doubt expand. In addition, a set of guiding principles has now been developed for the design and delivery of organized physical activity sessions, which includes PE (Lubans et al., 2017). These principles are based on SDT, as well as other theories, and could be implemented in future work.

Not all SDT-based interventions have focused on physical activity behavior as the primary outcome. A successful intervention based in South Korea included interactive workshops, discussion sessions, and booster activities for teachers at three points over 12 weeks. Increases in course-related psychological need satisfaction, autonomous motivation, classroom engagement, skill development, future intentions, and academic achievement at the beginning, middle, and end of the semester were observed (Cheon, Reeve, & Moon, 2012). A similar intervention (although somewhat smaller in size) aimed to enhance students' prosocial behavior and diminish antisocial behavior in PE. The intervention increased teachers' autonomy support and students' need satisfaction and prosocial behavior, and it decreased teachers' controlling teaching, as well as students' need frustration, antisocial behavior, and attitude toward cheating (Cheon et al., 2018). A more general framework based on SDT principles aims to assist in the development of continual professional development programs in PE (Aelterman et al., 2013).

**Influences on Teacher Need Support and Motivation**

The results described above show the potential impact of training PE teachers to support students' psychological needs; however, there are many other factors that can influence teachers' need-supportive teaching. For example, many PE teachers appear to implicitly subscribe to a matching hypothesis, in which autonomy support is effective for autonomous students and controlling strategies are effective for students with high controlling motivation. This is despite data failing to support these beliefs—autonomy support

benefiting both types of students (De Meyer et al., 2016). Qualitative work suggests that teachers believe facets of autonomy support (i.e., providing choice and relevant explanations of activities) can enhance student motivation, enjoyment, and PE behavior (Bennie et al., 2016). Nonetheless, a variety of student characteristics, such as age, physical attributes, gender, motivation, and ability, are believed by teachers to impact the suitability and effectiveness of autonomy support (Taylor, Ntoumanis, & Smith, 2009). These beliefs can be altered through intervention. Teachers whose psychological needs were satisfied during their training reported an increase in effectiveness and feasibility beliefs regarding autonomy and competence support, as well as greater intentions to apply the proposed strategies (Aelterman et al., 2016).

The motivational state and causality orientation of the teacher is another important factor in determining the level of psychological need support shown by teachers to students. Control-oriented teachers were found to be less need-supportive, especially less competence-supporting, and displayed more psychological need-thwarting teaching practices, particularly displaying an emotionally cold (i.e., unfriendly) teaching style, relative to autonomy-oriented teachers (Van den Berghe et al., 2013). This research is complemented by qualitative work suggesting that PE teachers' motivational strategies are impacted by their own motivational state (Taylor et al., 2009). Therefore, it seems that teacher and student self-determination may be reciprocally related. For example, the average student self-determination in a class was positively associated with the teacher's self-determination to teach that class, which, in turn positively predicted the teacher's need-supportive behaviors (Taylor & Ntoumanis, 2007). This process was broadly replicated in a cross-sectional survey of PE teachers (Taylor, Ntoumanis, & Standage, 2008). In other words, if students enjoy and value PE, then the teacher enjoys and values teaching them, and subsequently provides them with psychological need support. Unfortunately, teachers' perceptions about students' self-determination toward PE are not always accurate. Teachers' estimates of their students' self-determination toward PE were only moderately or weakly correlated with the students' self-evaluations (Taylor & Ntoumanis, 2007), so the basis on which teachers modify their teaching style is often faulty.

In addition to influence from students, teachers' motivation and behavior can be affected by a variety of contextual demands associated with the teaching environment. An emphasis on student assessment, Western cultural teaching norms, and time constraints were all perceived to restrict psychological need-supportive strategies in a group of U.K.-based PE teachers (Taylor et al., 2009). Teachers are also often evaluated based on student performance scores; however, SDT-based work has shown the potential negative impact of this type of teacher evaluation. In a cross-sectional study of Spanish PE teachers, the degree to which perceived pressure was experienced from this type of evaluation was negatively related to autonomous motivation, unrelated to controlled motivation, and positively related to amotivation. Amotivation was found to mediate the relationship between pressure and teachers' vitality and exhaustion (Cuevas et al., 2018). This type of teaching

job pressure measured along with others (i.e., time constraints, pressure from colleagues and school administration) has also been shown to predict burnout via the frustration of teachers' psychological needs, and competence frustration also mediated the association between job pressure and somatic complaints (Bartholomew et al., 2014).

Clearly, the teaching context in many countries involves aspects that reduce the quality of teacher motivation, well-being, and subsequent teaching practices. Intervention work to enhance the motivational experience of teachers is beginning to be carried out. The Physical Education Teacher Collaborative Network is an online community of practice where teachers collaborate on, discuss, and exchange ideas via Facebook (Gorozidis et al., 2020). The network includes 16 educational modules designed using SDT principles. For example, teachers can engage in self-paced learning (autonomy support), discussion guidelines emphasize respect and acceptance of opinion (relatedness support), and interactive features enable personal progress monitoring (competence support). The network shows promising preliminary results of enhanced autonomy and relatedness, but surprisingly a decrease in competence satisfaction. Teacher reports of competence satisfaction may decrease because teachers may negatively reevaluate following training or support highlighting good practice. The evaluation did not include a control group, so more rigorous evaluations are necessary, but the network is an interesting idea. This area is in its infancy, but considering that intentions to drop out of teaching can be significant in PE teachers (Mäkelä, Hirvensalo, & Whipp, 2014), it seems an area essential to progress.

### Future Research Directions

Several future research directions have been briefly suggested in the chapter so far, including (1) continued investigation of the transfer of motivation from PE to leisure time, and vice versa; (2) investigation of the development of integrated regulation in adolescence; and (3) development and testing of interventions aimed at enhancing the motivational experience of the teacher. Many more possibilities exist that can enhance our understanding of the PE motivational environment, but also to develop SDT as a motivational framework. As described earlier, autonomy-supportive teacher training interventions have shown promise, but some have been more effective than others. Rather than *adding* to the evidence base by broadly replicating these interventions, it would be fruitful to *enhance* the evidence base by examining potential moderators of intervention effectiveness in a structured, confirmatory manner. Many potential moderators have been highlighted in this chapter, such as teacher beliefs and causality orientations (De Meyer et al., 2016; Van den Berghe et al., 2013), especially the false belief that autonomy support is effective only for autonomously motivated students, or more tangible elements of the teaching environment (e.g., time available in lesson, type of lesson activity). More precise interventions accounting for moderators could then be scaled up and assessed on their potential for mass implementation (e.g., Lonsdale et al., 2021).

Almost all the intervention work so far has focused on training teachers to be more supportive of students' psychological needs. It is arguable that this overreliance on teacher training assumes that PE students require need satisfaction to be provided for them, when in fact need-satisfying experiences can be sought and actively taken. One of the theoretical foundations of SDT is that all humans, including PE students, are active organisms (Ryan & Deci, 2019). An assumed reliance on teachers providing need support implies that students are passive. This idea might materialize as training and education for the students on how to seek need-satisfying experiences rather than training teachers to provide need-satisfying experiences. Theoretically speaking, this suggestion refers to interventions that focus on developing agentic engagement (Reeve, 2013) or intrinsic learning goals (Froiland, 2018) or altering functional significance (Deci & Ryan, 1987) rather than manipulating the social environment. Imagine a PE class in which students can extract need satisfaction despite a controlling, chaotic, and cold teacher. Given the importance of peers in fostering adaptive motivational experiences in PE (White et al., 2021) and potential contagion of autonomous motivation among students (Radel et al., 2010), interventions aimed at students supporting each other's psychological needs would also reduce reliance on the teacher to do so.

Broadly speaking, these suggestions target students' capacity to actively seek need-satisfying experiences, regardless of the available contextual support for psychological needs. If students are reliant on the PE teacher to provide need-satisfying experiences that facilitate physical activity, it is unsurprising that these effects dissipate in contexts where the teacher is absent (e.g., at the weekend, after children have graduated). All individuals possess to some degree a dispositional tendency to interpret situations and events as supportive of autonomy (i.e., autonomous orientation; Hagger & Hamilton, 2021). Developing this need-satisfying outlook in PE classes may have many benefits, including more effectively inspiring engagement in physical activity outside of school and across the lifespan. As mentioned previously, teacher-focused interventions have had limited success in achieving this fundamental aim of PE. In contrast, when psychological need satisfaction in PE is sourced from the activity itself, without requiring teacher psychological need support, then students may be more likely to seek similar experiences in other physical activity contexts.

Of course, teachers should not abandon autonomy support in PE, but this interpersonal strategy should be complemented by attempts to develop psychologically self-sufficient students. This approach would require transformative educational change, but there have been attempts to facilitate other dispositional outlooks, such as a growth mindset (e.g., Park et al., 2016). Indeed, the feasibility of diaries that encourage students to seek out and reflect on psychological need-satisfying experiences has been explored (Earl et al., 2020). PE class activities could be restructured to incorporate intrinsic and need-satisfying development goals. For example, in addition to competitive and technical

goals, team-based activities are ideal to promote communal goals and satisfying relationships. Individual fitness-based activities could foster positive psychological growth (e.g., well-being, positive affect) in combination with traditional physical goals. Strategic games could actively develop autonomous decision-making. In sum, the psychological development of children is as essential as their physical development in the PE class.

## Summary

SDT has been investigated within the PE context for several decades, with most of the work focusing on the extent to which teachers support student psychological needs and autonomous motivation to facilitate outcomes important for health, learning, and well-being. The range of terms used and measurement instruments available makes navigating this work and developing research on SDT difficult, and we hope this chapter has provided some guidance on this issue. There are now several interventions that have employed SDT as a guiding framework to develop teacher training programs in PE, and many of these have been successful in altering the outcome under scrutiny. However, there is little compelling evidence at this point that psychological need satisfaction and autonomous motivation mediate any intervention effects on student physical activity behavior. This chapter highlights alternatives to teacher training interventions that warrant attention. Complementing the research on student motivation, an increasing amount of attention is being placed on teacher motivation. Much of this research has highlighted that several aspects of the teaching environment negatively impact teacher motivation and teaching styles; therefore, this issue seems to require significant attention.

## References

Aelterman, N., Vansteenkiste, M., Van Keer, H., De Meyer, J., Van den Berghe, L., & Haerens, L. (2013). Development and evaluation of a training on need-supportive teaching in physical education: Qualitative and quantitative findings. *Teaching and Teacher Education, 29*, 64–75. https://doi.org/10.1016/j.tate.2012.09.001

Aelterman, N., Vansteenkiste, M., Van Keer, H., & Haerens, L. (2016). Changing teachers' beliefs regarding autonomy support and structure: The role of experienced psychological need satisfaction in teacher training. *Psychology of Sport and Exercise, 23*, 64–72. https://doi.org/10.1016/j.psychsport.2015.10.007

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of perceived parental conditional regard: A self-determination theory analysis. *Journal of Personality, 72*, 47–87. doi:10.1111/j.1467-8624.2007.01133.x

Barkoukis, V., Chatzisarantis, N., & Hagger, M. S. (2020). Effects of a school-based intervention on motivation for out-of-school physical activity participation. *Research Quarterly for Exercise and Sport*, 1–15. Advance online publication.

Bartholomew, K. J. Ntoumanis, N. Cuevas, R., & Lonsdale, C. (2014). Job pressure and ill-health in physical education teachers: The mediating role of psychological need thwarting. *Teaching & Teacher Education, 37*, 101–107. https://doi.org/10.1016/j.tate.2013.10.006

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., & Thøgersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport & Exercise Psychology, 33*(1), 75–102. https://doi.org/10.1123/jsep.33.1.75

Belmont, M., Skinner, E., Wellborn, J., & Connell, J. (1988). *Teacher as social context: A measure of student perceptions of teacher provision of involvement, structure, and autonomy support* (Tech. Rep. No. 102). University of Rochester.

Bennie, A., Peralta, L., Gibbons, S., Lubans, D., & Rosenkranz, R. (2016). Physical education teachers' perceptions about the effectiveness and acceptability of strategies used to increase relevance and choice for students in physical education classes. *Asia-Pacific Journal of Teacher Education 45*(3), 302–319.

Cheon, S. H., & Reeve, J. (2013). Do the benefits from autonomy-supportive PE teacher training programs endure? A one-year follow-up investigation. *Psychology of Sport and Exercise*, *14*(4), 508–518. https://doi.org/10.1016/j.psychsport.2013.02.002

Cheon, S. H., Reeve, J., Lee, Y., Ntoumanis, N., Gillet, N., Kim, B. R., & Song, Y.-G. (2019). Expanding autonomy psychological need states from two (satisfaction, frustration) to three (dissatisfaction): A classroom-based intervention study. *Journal of Educational Psychology*, *111*(4), 685–702. https://doi.org/10.1037/edu0000306

Cheon, S. H., Reeve, J., & Moon, I. S. (2012). Experimentally based, longitudinally designed, teacher-focused intervention to help physical education teachers be more autonomy supportive toward their students. *Journal of Sport & Exercise Psychology*, *34*(3), 365–396.

Cheon, S. H., Reeve, J., & Ntoumanis, N. (2018). A needs-supportive intervention to help PE teachers enhance students' prosocial behavior and diminish antisocial behavior. *Psychology of Sport and Exercise, 35*, 74–88. https://doi.org/10.1016/j.psychsport.2017.11.010

Connell, J. P., & Wellborn, J. G. (1991). *Competence, autonomy, and relatedness: A motivational analysis of self-system processes*. In M. R. Gunnar & L. A. Sroufe (Eds.), *The Minnesota Symposia on Child Psychology, Vol. 23: Self processes and development* (pp. 43–77). Lawrence Erlbaum Associates.

Costa, S., Ntoumanis, N., & Bartholomew, K. J. (2015). Predicting the brighter and darker sides of interpersonal relationships: Does psychological need thwarting matter? *Motivation and Emotion, 39*, 11–24. http://dx.doi.org/10.1007/s11031-014-9427-0

Cox, A. E., Ullrich-French, S., Madonia, J., & Witty, K. (2011). Social physique anxiety in physical education: Social contextual factors and links to motivation and behavior. *Psychology of Sport and Exercise*, *12*(5), 555–562. https://doi.org/10.1016/j.psychsport.2011.05.001

Cuevas, R., Ntoumanis, N., Fernandez-Bustos, J. G., & Bartholomew, K. (2018). Does teacher evaluation based on student performance predict motivation, well-being, and ill-being? *Journal of School Psychology*, *68*, 154–162. https://doi.org/10.1016/j.jsp.2018.03.005

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, *62*(1), 119–142. https://doi.org/10.1111/j.1467-6494.1994.tb00797.x

Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, *53*(6), 1024–1037. https://doi.org/10.1037/0022-3514.53.6.1024

De Meyer, J., Soenens, B., Vansteenkiste, M., Aelterman, N., Van Petegem, S., & Haerens, L. (2016). Do students with different motives for physical education respond differently to autonomy-supportive and controlling teaching? *Psychology of Sport and Exercise, 22*, 72–82. https://doi.org/10.1016/j.psychsport.2015.06.001

De Meyer, J., Tallir, I. B., Soenens, B., Vansteenkiste, M., Aelterman, N., Van den Berghe, L., Speleers, L., & Haerens, L. (2014). Does observed controlling teaching behavior relate to students' motivation in physical education? *Journal of Educational Psychology*, *106*(2), 541–554. https://doi.org/10.1037/a0034399

Earl, S. R., Meijen, C., Taylor, I. M., & Passfield, L. (2020). Developing young adolescents' psychological need satisfaction: A feasibility study of a pupil-focused intervention in secondary schools. *Educational Studies, 47*(5), 591-608. doi:10.1080/03055698.2020.1719386.

Escriva-Boulley, G., Tessier, D., Ntoumanis, N., & Sarrazin, P. (2018). Need-supportive professional development in elementary school physical education: Effects of a cluster-randomized control trial on teachers' motivating style and student physical activity. *Sport, Exercise, and Performance Psychology*, *7*(2), 218–234. https://doi.org/10.1037/spy0000119

Froiland, J. M. (2018). The intrinsic learning goals of elementary school students, in their own words. *Journal of Humanistic Psychology*, *61*, 629–649. https://doi.org/10.1177/0022167818763923

Gea-García, G. M., González-Gálvez, N., Espeso-García, A., Marcos-Pardo, P. J., González-Fernández, F. T., & Martínez-Aranda, L. M. (2020). Relationship between the practice of physical activity and physical fitness

in physical education students: The integrated regulation as a mediating variable. *Frontiers in Psychology*, *11*, 1910. https://doi.org/10.3389/fpsyg.2020.01910.

Gillison, F., Osborn, M., Standage, M., & Skevington, S. (2009). Exploring the experience of introjected regulation for exercise across gender in adolescence. *Psychology of Sport and Exercise*, *10*(3), 309–319. https://doi.org/10.1016/j.psychsport.2008.10.004

Gorozidis, G. S., Tzioumakis, Y. S., Krommidas, C., & Papaioannou, A. G. (2020). Facebook group PETCoN (Physical Education Teacher Collaborative Network): An innovative approach to PE teacher in-service training: A self-determination theory perspective. *Teaching and Teacher Education*, *96*, 103184. https://doi.org/10.1016/j.tate.2020.103184

Goudas, M., Biddle, S., & Fox, K. (1994). Perceived locus of causality, goal orientations, and perceived competence in school physical education classes. *British Journal of Educational Psychology*, *64*(3), 453–463. https://doi.org/10.1111/j.2044-8279.1994.tb01116.x

Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2020). Global trends in insufficient physical activity among adolescents: A pooled analysis of 298 population-based surveys with 1.6 million participants. *Lancet Child and Adolescent Health, 4*, 23–35. https://doi.org/10.1016/ S2352-4642(19)30323-2

Ha, A. S., Lonsdale, C., Lubans, D. R., & Ng, J. (2020). Increasing students' activity in physical education: Results of the self-determined exercise and learning for FITness trial. *Medicine and Science in Sports and Exercise*, *52*(3), 696–704. https://doi.org/10.1249/MSS.0000000000002172

Haerens, L., Aelterman, N., Van den Berghe, L., De Meyer, J., Soenens, B., & Vansteenkiste, M. (2013). Observing physical education teachers' need-supportive interactions in classroom settings. *Journal of Sport & Exercise Psychology*, *35*(1), 3–17. https://doi.org/10.1123/jsep.35.1.3

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise*, *16*(Part 3), 26–36. https://doi.org/10.1016/j.psychsport.2014.08.013

Hagger, M. S., & Chatzisarantis, N. L. D. (2016). The trans-contextual model of autonomous motivation in education: Conceptual and empirical issues and meta-analysis. *Review of Educational Research*, *86*(2), 360–407. https://doi.org/10.3102/0034654315585005

Hagger, M. S., & Hamilton, K. (2021). General causality orientations in self-determination theory: Meta-analysis and test of a process model. *European Journal of Personality*, *35*, 710-735. doi:10.1177/0890207020962330

Jaakkola, T., Barkoukis, V., Huhtiniemi, M., Salin, K., Seppälä, S., Lahti, J., & Watt, A. (2019). Enjoyment and anxiety in Finnish physical education: Achievement goals and self-determination perspectives. *Journal of Physical Education and Sport, 19*(3), 1619–1629. https://efsupit.ro/images/stories/septembrie2019/Art 235.pdf

Jackson-Kersey, R., & Spray, C. M. (2016). The effect of perceived psychological need support on amotivation in physical education, *European Physical Education Review, 22*, 99–112. https://doi.org/10.1177/1356336X15591341

Johnson, T. G., Prusak, K. A., Pennington, T., & Wilkinson, C. (2011). The effects of the type of skill test, choice, and gender on the situational motivation of physical education students. *Journal of Teaching in Physical Education*, *30*(3), 281–295.

Kerner, C., Kirk, D., De Meester, A., & Haerens, L. (2018). Why is physical education more stimulating for pupils who are more satisfied with their own body? *Health Education Journal*, *78*(3), 1–15.

Koka, A. (2014). The relative roles of teachers and peers on students' motivation in physical education and its relationship to self-esteem and health-related quality of life. *International Journal of Sport Psychology*, *45*(3), 187–213. doi:10.7352/IJSP

Lonsdale, C., Lester, A., Owen, K. B., White, R. L., Peralta, L., Kirwan, M., Diallo, T., Maeder, A. J., Bennie, A., MacMillan, F., Kolt, G. S., Ntoumanis, N., Gore, J. M., Cerin, E., Cliff, D. P., & Lubans, D. R. (2019). An internet-supported school physical activity intervention in low socioeconomic status communities: Results from the Activity and Motivation in Physical Education (AMPED) cluster randomised controlled trial. *British Journal of Sports Medicine*, *53*(6), 341–347. https://doi.org/10.1136/bjsports-2017-097904

Lonsdale, C., Rosenkranz, R. R., Sanders, T., Peralta, L. R., Bennie, A., Jackson, B., Taylor, I. M., & Lubans, D. R. (2013). A cluster randomized controlled trial of strategies to increase adolescents' physical activity and motivation in physical education: Results of the Motivating Active Learning in Physical Education (MALP) trial. *Preventive Medicine*, *57*(5), 696–702. https://doi.org/10.1016/j.ypmed.2013.09.003

Lonsdale, C., Sabiston, C. M., Taylor, I. M., & Ntoumanis, N. (2011). Measuring student motivation for physical education: Examining the psychometric properties of the Perceived Locus of Causality Questionnaire and the Situational Motivation Scale. *Psychology of Sport and Exercise*, *12*(3), 284–292. https://doi.org/10.1016/j.psychsport.2010.11.003

Lonsdale, C., Sanders, T., Parker, P., Noetel, M., Hartwig, T., Vasconcellos, D., Lee, J., Antczak, D., Kirwan, M., Morgan, P., Salmon, J., Moodie, M., McKay, H., Bennie, A., Plotnikoff, R. C., Cinelli, R., Greene, D., Peralta, L., Cliff, D., Kolt, G., Gore, J., Gao, L., Boyer, J., Morrison, R., Hillman, C., Shigeta, T. T., Tan, E., & Lubans, D. R. (2021). Effect of a scalable school-based intervention on cardiorespiratory fitness in children: A cluster randomized clinical trial. *JAMA Pediatrics*, e210417. Advance online publication. https://doi.org/10.1001/jamapediatrics.2021.0417

Lubans, D. R., Lonsdale, C., Cohen, K., Eather, N., Beauchamp, M. R., Morgan, P. J., Sylvester, B. D., & Smith, J. J. (2017). Framework for the design and delivery of organized physical activity sessions for children and adolescents: Rationale and description of the "SAAFE" teaching principles. *International Journal of Behavioral Nutrition and Physical Activity*, *14*, article 24. https://doi.org/10.1186/s12966-017-0479-x

Mäkelä, K., Hirvensalo, M., & Whipp, P. R. (2014). Should I stay or should I go? Physical education teachers' career intentions. *Research Quarterly for Exercise and Sport*, *85*(2), 234–244. https://doi.org/10.1080/02701367.2014.893052

Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology, 71*, 225–242. https://doi.org/10.1348/000709901158497

Pannekoek, L., Piek, J., Kane, R., & Hagger, M. (2014). The children's perceived locus of causality scale for physical education. *Journal of Teaching in Physical Education, 33*, 162–185. doi:10.1123/jtpe.2013-0095

Park, D., Gunderson, E. A., Tsukayama, E., Levine, S. C., & Beilock, S. L. (2016). Young children's motivational frameworks and math achievement: Relation to teacher-reported instructional practices, but not teacher theory of intelligence. *Journal of Educational Psychology*, *108*(3), 300–313. doi:10.1037/edu0000064

Prusak, K. A., Treasure, D. C., Darst, P. W., & Pangrazi, R. P. (2004). The effects of choice on the motivation of adolescent girls in physical education. *Journal of Teaching in Physical Education*, *23*(1), 19–29.

Raabe, J., Schmidt, K., Carl, J., & Höner, O. (2019). The effectiveness of autonomy support interventions with physical education teachers and youth sport coaches: A systematic review. *Journal of Sport & Exercise Psychology*, 1–11. Advance online publication. https://doi.org/10.1123/jsep.2019-0026

Radel, R., Sarrazin, P., Legrain, P., & Wild, T. C. (2010). Social contagion of motivation between teacher and student: Analyzing underlying processes. *Journal of Educational Psychology*, *102*(*3*), 577–587. https://doi.org/10.1037/a0019051

Reeve, J. (2013). How students create motivationally supportive learning environments for themselves: The concept of agentic engagement. *Journal of Educational Psychology*, *105*(3), 579–595. https://doi.org/10.1037/a0032690

Ryan, R. M., & Deci, E. L. (2019). Brick by brick: The origins, development, and future of self-determination theory. *Advances in Motivation Science, 6*, 111–156. https://doi.org/10.1016/bs.adms.2019.01.001

Sánchez-Oliva, D., Leo, F. M., Amado, D., Cuevas, R., & García-Calvo, T. (2013). Desarrollo y validación del cuestionario de apoyo a las necesidades psicológicas básicas en educación física [Development and validation of the questionnaire to support basic psychological needs in physical education]. *Motricidad: European Journal of Human Movement, 30*, 53–71.

Silva, D., Chaput, J. P., Katzmarzyk, P. T., Fogelholm, M., Hu, G., Maher, C., Olds, T., Onywera, V., Sarmiento, O. L., Standage, M., Tudor-Locke, C., & Tremblay, M. S. (2018). Physical education classes, physical activity, and sedentary behavior in children. *Medicine and Science in Sports and Exercise*, *50*(5), 995–1004. https://doi.org/10.1249/MSS.0000000000001524

Soenens, B., Sierens, E., Vansteenkiste, M., Dochy, F., & Goossens, L. (2012). Psychologically controlling teaching: Examining outcomes, antecedents, and mediators. *Journal of Educational Psychology, 104*, 108–120. doi:10.1037/a0025742

Standage, M., Duda, J. L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology*, *75*(3), 411–433. https://doi.org/10.1348/000709904X22359

Standage, M., Treasure, D., Duda, J., & Prusak, K. (2003). Validity, reliability, and invariance of the Situational Motivation Scale (SIMS) across diverse physical activity contexts. *Journal of Sport & Exercise Psychology, 25*(1), 19–43. doi:10.1123/jsep.25.1.19

Taylor, I. M. (2017). Reciprocal effects of motivation in physical education and self-reported physical activity. *Psychology of Sport and Exercise, 31*, 131–138. https://doi.org/10.1016/j.psychsport.2017.01.003

Taylor, I. M., & Ntoumanis, N. (2007). Teacher motivational strategies and student self-determination in physical education. *Journal of Educational Psychology*, *99*(4), 747–760. https://doi.org/10.1037/0022-0663.99.4.747

Taylor, I. M., Ntoumanis, N., & Smith, B. (2009). The social context as a determinant of teacher motivational strategies in physical education. *Psychology of Sport and Exercise*, *10*(2), 235–243. https://doi.org/10.1016/j.psychsport.2008.09.002

Taylor, I. M., Ntoumanis, N., & Standage, M. (2008). A self-determination theory approach to understanding the antecedents of teachers' motivational strategies in physical education. *Journal of Sport & Exercise Psychology*, *30*(1), 75–94. https://doi.org/10.1123/jsep.30.1.75

Taylor, I. M., Ntoumanis, N., Standage, M., & Spray, C. M. (2010). Motivational predictors of physical education students' effort, exercise intentions, and leisure-time physical activity: A multilevel linear growth analysis. *Journal of Sport & Exercise Psychology*, *32*(1), 99–120. https://doi.org/10.1123/jsep.32.1.99

Tilga, H., Hein, V., & Koka, A. (2017). Measuring the perception of the teachers' autonomy-supportive behavior in physical education: Development and initial validation of a multi-dimensional instrument. *Measurement in Physical Education & Exercise Science, 21*, 244–255. https://doi.org/10.1080/1091367X.2017.1354296

Ullrich-French, S., & Cox, A. (2009). Using cluster analysis to examine the combinations of motivation regulations of physical education students. *Journal of Sport & Exercise Psychology*, *31*(3), 358–379. https://doi.org/10.1123/jsep.31.3.358

U.K. Department for Education. (2013). *National curriculum in England: Physical education programmes of study*. U.K. Department for Education.

U.S. Department of Health and Human Services. (2018). *2018 Physical Activity Guidelines Advisory Committee scientific report*. U.S. Department of Health and Human Services.

Van den Berghe, L., Soenens, B., Vansteenkiste, M., Aelterman, N., Cardon, G., Tallir, I. B., & Haerens, L. (2013). Observed need-supportive and need-thwarting teaching behavior in physical education: Do teachers' motivational orientations matter? *Psychology of Sport and Exercise*, *14*(5), 650–661. https://doi.org/10.1016/j.psychsport.2013.04.006

Vasconcellos, D., Parker, P. D., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., Ryan, R. M., & Lonsdale, C. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. *Journal of Educational Psychology*, *112*(7), 1444–1469. https://doi.org/10.1037/edu0000420

Vlachopoulos, S. P., Katartzi, E. S., Kontou, M. G., Moustaka, F. C., & Goudas, M. (2011). The revised Perceived Locus of Causality in Physical Education Scale: Psychometric evaluation among youth. *Psychology of Sport and Exercise, 12*, 583–592. doi:10.1016/j.psychsport.2011.07.003.

White, R. L., Bennie, A., Vasconcellos, D., Cinelli, R., Hilland, T., Owen, K. B., & Lonsdale, C. (2021). Self-determination theory in physical education: A systematic review of qualitative studies. *Teaching & Teacher Education*, *99*, 103247. doi:10.1016/j.tate.2020.103247

Williams, G. C., & Deci, E. L. (1996). Internalization of biopsychosocial values by medical students: A test of self-determination theory. *Journal of Personality and Social Psychology*, *70*(4), 767–779. https://doi.org/10.1037/0022-3514.70.4.767

# Self-Determination Theory in Physical Activity Contexts

John C. K. Wang *and* Martin S. Hagger

## Abstract

Regular participation in physical activities of sufficient duration and intensity has been consistently associated with adaptive health benefits among people of all ages, including special populations. This chapter provides a review on self-determination theory in the physical activity contexts. First, the chapter presents the benefits of and guidelines on regular physical activity participation. Next, it reviews the effectiveness of self-determination theory in identifying the determinants of physical activity behavior and the processes involved. Specifically, the relationships between psychological need satisfaction, autonomous motivation, and physical activity participation will be examined. Next, the chapter reviews studies related to the process of internalization in physical activity participation and intervention studies in creating an autonomy-supportive environment. It also reviews studies that integrate self-determination theory with other theories. Finally, it identifies future directions for research applying the theory in the physical activity domain.

**Key Words:** physical activity, exercise, psychological need satisfaction, internalization, trans-contextual model

## Benefits of Regular Physical Activity

Physical activity is defined as any bodily movement produced by skeletal muscle that requires energy expenditure (Caspersen et al., 1985). Regular participation in physical activities of sufficient duration and intensity has been consistently associated with adaptive health benefits among people of all ages, including special populations. Caspersen et al. defined "exercise" and "sport" as specific forms of physical activity. "Exercise" is defined as planned and structured physical activity with the goal of maintaining physical fitness and promoting health. "Sport" is defined as a competitive endeavor governed by rules and structures that requires physical skills and strategy. Some sports, but not all, entail activities of sufficient intensity to confer health benefits. Other forms of physical activity include activities performed incidentally throughout an individual's day, such as active transport (e.g., walking or cycling to work) or occupational physical activity (e.g., manual workers lifting objects in a warehouse or at a building site). This chapter primarily focuses on physical activity and exercise for health benefits. We present the benefits of regular physical activity participation and provide updated recommendations for physical

activity participation. We review the effectiveness of self-determination theory (SDT) in identifying the determinants of physical activity behavior and the processes involved and intervention studies based on SDT and recent developments. Finally, we identify future directions for research applying the theory in the physical activity domain.

Among children and adolescents, regular participation in physical activity assists in the development of musculoskeletal tissues, the cardiovascular system, and neuromuscular awareness (World Health Organization, 2010) and may reduce the risk of developing certain noncommunicable chronic diseases later in life, such as cardiovascular disease and diabetes (U.S. Department of Health and Human Services, 2018). Regular participation in physical activity by young people has been shown to promote cardiovascular fitness, skeletal health, and psychological health and to assist in maintaining healthy blood pressure, body composition, glucose tolerance, and blood lipid profiles (Blair & Morris, 2009; Santos et al., 2012; World Health Organization, 2019; Laredo-Aguilera et al., 2019).

Among adults and older populations, regular physical activity participation increases functional capacity and reduces the risk factors (e.g., high blood cholesterol, high blood pressure, and overweight) of many chronic diseases, such as coronary heart disease, obesity, cardiovascular diseases, colon cancer, and diabetes mellitus (Anderson & Durstine, 2019; Booth, Roberts, & Laye, 2012; Bouchard, Shephard, & Stephens, 1994; Leon, 1997; McGinnis, 1992; Pate et al., 1995; Powell et al., 1989). In addition, regular participation in physical activities of moderate intensity has been associated with better mental health (e.g., reduced depressive symptoms and anxiety, improved mood), and quality of life (e.g., life satisfaction, psychological well-being) outcomes (Berger & Owen, 1992; Biddle, Fox, & Boutcher, 2000; Carvalho et al., 2014; Raglin, 1990).

In many countries, the promotion of physical activity has been included in national agenda, as evidenced in various national initiatives. Examples include the Healthy People 2020 and Fit for Life campaigns in the United States and Finland, respectively; the United Kingdom's "Strategy Statement on Physical Activity"; and the World Health Organization's (2018) "Global Action Plan on Physical Activity 2018–2030," all of which aim to encourage more people to be regularly physically active to improve their health. National government departments of health and international health authorities have also promulgated evidence-based guidelines on the amount of physical activity required to promote health for different groups. For example, the World Health Organization (2020) recommends that children and youth ages 5 to 17 do an average of one hour of moderate-to vigorous-intensity, mostly aerobic physical activity across the week, and at least three days a week of vigorous-intensity aerobic activities as well as strengthening exercises. Adults ages 18 to 64 and older adults 65 and over are recommended to participate in at least 150 to 300 minutes of moderate-intensity, aerobic physical activity or at least 75 to 150 minutes of vigorous-intensity aerobic physical activity, or an equivalent combination of the two, throughout the week. Muscle-strengthening activities involving all major muscle groups should be done at least twice a week.

Despite the known benefits of regular physical activity and government and health authority endorsement of regular physical activity participation in the general population (World Health Organization, 2018), analyses of population-based surveys suggest that one in four adults and three in four adolescents globally do not meet World Health Organization guideline levels of physical activity (Guthold et al., 2018). As countries develop economically, levels of inactivity increase. In some countries, levels of inactivity can be as high as 70%, which has been attributed to numerous factors, such as changing patterns of transportation, use of technology, urbanization, and changing cultural values. In most countries, girls, women, older adults, underprivileged groups, and people with disabilities and chronic diseases have more barriers to be physically active (World Health Organization, 2018).

Given the large-scale levels of inactivity and its association with increased chronic disease risk and maladaptive mental health outcomes, government health departments and public health organizations have sought to intervene and proactively promote increased participation in physical activity across all age groups through campaigns and initiatives (Lankford et al., 2014). While substantial resources have been invested in such interventions and they have demonstrated some limited success in changing levels of physical activity in specific groups, their efficacy have been shown to be highly variable and they have done little to shift the balance in levels of inactivity at the population level. The limited effectiveness and inconsistency in effects of interventions to change physical activity behavior may be because they do not have sufficient basis in behavioral theories that offer a fundamental understanding of the determinants of physical activity participation (Hagger & Weed, 2019). Recent research in the field of behavior change has sought to identify the potentially modifiable determinants of behaviors such as physical activity that could potentially serve as targets in interventions (Rothman, Klein, & Sheeran, 2020; Sheeran, Klein, & Rothman, 2017). Behavioral scientists, particularly those in psychology, have therefore aimed to identify such determinants and the processes by which they relate to behavior to provide formative research on which to base interventions (Hagger, Hankonen et al., 2020). They have also aimed to use this research to develop and test theory-based interventions. Central to this goal has been the application of motivational theories, which have been extensively applied to predict health behavior in many contexts and populations, with the goal of identifying targets for interventions (Rhodes, McEwan, & Rebar, 2019).

SDT has been at the forefront of research aiming to identify the motivational determinants of physical activity (Deci & Ryan, 1985; Ryan & Deci, 2017). As a general theory of motivation, SDT has considerable potential to provide an account of the determinants of behavior in multiple contexts, including physical activity. In addition, theorists and researchers have consistently applied methods and techniques derived from SDT to promote motivation and behavior change (see Ng et al., 2012; Ryan & Deci, 2017). As a consequence, the theory is well placed to identify the motivational determinants

of physical activity participation and inform the development of potentially efficacious interventions to promote physical activity participation. Unsurprisingly, the theory has been widely applied in physical activity contexts, and a substantive body of research has emerged that provides an evidence base for the prediction of physical activity and interventions to change physical activity behavior (see Hagger & Chatzisarantis, 2007; Teixeira et al., 2012).

## Psychological Need Satisfaction, Autonomous Motivation, and Physical Activity Participation

Central to SDT is the premise that satisfaction of three innate psychological needs—competence, autonomy and relatedness—is essential for self-growth, optimal functioning, and well-being and contributes to persistence on tasks and behaviors (Ryan & Deci, 2017). Competence is the need for producing desired outcomes and to experience mastery at the task; autonomy is the need to feel ownership of one's behavior; and relatedness is the need to feel that one can relate to others and with the social world in general. The extent to which individuals perceive a given behavior as likely to satisfy each psychological need is likely to determine the type of motivation they experience when performing the behavior, the extent to which they are likely to participate in that behavior in future, and the psychological outcomes they are likely to experience (Ryan & Deci, 2000). Furthermore, given that psychological need satisfaction is fundamental to optimal psychological functioning and well-being, individuals are motivated to seek out behaviors that are need-satisfying and develop a repertoire of such behaviors that are consistently need-satisfying (Hagger, Chatzisarantis, & Harris, 2006). Research has consistently demonstrated that those who report that engaging in a particular behavior leads to satisfaction of these needs are more likely to experience autonomous forms of motivation when performing that behavior in future and are more likely to intend to engage in that behavior in future (for reviews, see Ng et al., 2012; Ryan & Deci, 2017). Autonomous forms of motivation are more likely to lead to behavioral persistence because the behavior is viewed as emanating from the self and consistent with the individual's personally endorsed values. There is also likely a reciprocal effect between the experience of behaviors as autonomous and perceptions that it satisfies psychological needs. This means that individuals who experience behaviors that are autonomously motivated are likely to view them as need-satisfying and are likely to be motivated to perform them again in future. This represents a self-perpetuating and self-reinforcing mechanism that leads to behavioral persistence.

In the context of physical activity, many forms of recreation, such as hiking, walking, swimming, and cycling, if done autonomously, offer considerable opportunity for need satisfaction and yield adaptive outcomes such as positive affect, personal accomplishment or satisfaction, enjoyment, and well-being. Research suggests that individuals across the lifespan frequently cite fun and enjoyment as key motives for participation

in physical activity and sport (e.g., Allender, Cowburn, & Foster, 2006; Teixeira et al., 2012). Enjoyment and positive affective outcomes are hallmarks of autonomously motivated and need-satisfying behaviors, and research suggests that autonomous motivation and need satisfaction are key determinants of regular participation in physical activity. Based on these theoretical tenets, research applying SDT in physical activity contexts has consistently demonstrated that individuals who cite autonomous reasons for participating in physical activity and experience activities as enjoyable and need-satisfying are more likely to persist with physical activity (Dishman et al., 2018). Physical activity provides opportunities for fun and enjoyment, but also boredom and stress. There are individuals who associate physical activity with negative experiences. For example, negative experiences in physical education classes among young girls are the most frequently cited reason for not participating in physical activity (Cardinal, Yan, & Cardinal, 2013). Many adults cite low physical self-esteem and lack of competence in physical skills as main barriers to participation in physical activity (Allender et al., 2006). Among these groups, participation in physical activity is not likely to satisfy their psychological needs, and they are likely to cite external or self-pressuring reasons for participating in physical activities, such as social obligation or guilt, which are reasons that are not fully self-endorsed. While such reasons can be motivating, controlled motivation is associated with long-term desistance from physical activity as well as maladaptive outcomes such as negative affect and ill-being. Such behaviors are unlikely to be incorporated into an individual's repertoire of need-satisfying behaviors (Hagger et al., 2006).

Taken together, these theoretical bases and research evidence suggest that individuals who participate in regular physical activity in the long term are more likely to report autonomous motives and outcomes (e.g., enjoyment, satisfaction, positive affect). Such motives are consistent with need satisfaction and suggest that physically active behaviors are a key domain in which individuals can satisfy their basic needs. However, this is clearly not the case for all individuals. Those who report controlled motives with respect to physical activities are less likely to engage in regular physical activity. Although externally referenced factors or contingencies are motivating and can lead to persistence in the presence of those external factors (e.g., rewards, incentives) or externally referenced contingencies (e.g., acting out of obligation or guilt), they are unlikely to be the basis for long-term persistence (Ryan & Deci, 2017). This is because SDT stipulates that controlled regulated behavior will persist only as long as the controlling contingencies are present, and when they are removed the behavior is likely to desist. Furthermore, controlled regulated behaviors are unlikely to be met with adaptive outcomes that are indicative of optimal functioning and, to the contrary, often lead to maladaptive outcomes like negative affect and ill-being. This means that individuals without autonomous motives for participating in physical activity and who do not perceive activities as likely to satisfy basic psychological needs for competence or relatedness are unlikely to take up physical activity in the first place or persist long term in any activity program. This may present a somewhat bleak

outlook for individuals who do not view physical activity as need-satisfying. However, SDT provides a useful framework for how social agents (e.g., managers, leaders, teachers, peers) can display supportive behaviors and demonstrate the salient need-satisfying aspects of physical activity when interacting with those for whom they are responsible. Such behaviors and demonstrations will increase the likelihood that individuals will perceive physical activity as an autonomously motivated and need-satisfying behavior, which may, ultimately, lead to persistence with physical activity. This process is outlined in the next section.

## The Processes of Internalization

Organismic integration theory, a key subtheory of SDT, provides a theoretical basis for how behaviors that are not intrinsically motivated can nonetheless be transformed or "taken in" so that they are ultimately autonomously motivated and need-satisfying. This process is termed "internalization" and involves a shift in individuals' *perceived locus of causality* for acting from more externally referenced, or controlled, to more self-referenced, or autonomous. This shift in the relative autonomy of behavior is stimulated by the person finding value in the behavior of interest, as well as basic need satisfactions (Ryan & Deci, 2017). SDT specifies four main constructs or *behavioral regulations* that are situated at different positions along this continuum as a function of the degree of autonomy experienced (Ryan & Connell, 1989).

With respect to the continuum, intrinsic motivation and external regulation lie at the two extremes or poles. Intrinsic motivation is a prototypical form of autonomous motivation and reflects performing behaviors out of choice rather than because of external rewards or pressures. In this case, behaviors are performed for the sake of the behavior itself; examples are engrossing hobbies and pastimes like games. External regulation is a prototypical form of controlled motivation and is characterized by a low level of autonomy. When externally regulated, a person acts to conform with external controls such as contingent rewards or avoidance of punishment. In the context of physical activity, this might be a child performing an activity to avoid being scolded by their parents. Introjected regulation is a form of motivation that lies adjacent to external regulation on the continuum, and therefore reflects more controlled reasons for acting. Although there is no "tangible" reinforcement, the behavior is felt as "internally controlling" (Ryan, 1982) because there are rewarding and punishing contingencies inside the individual driving behavior. For example, a person might feel obliged to play tennis with their partner because they would feel too guilty to decline, or they exercise lest they face internal criticism for not doing what they "should." Identified regulation is performing the behavior because it is seen as having value or as serving an important, self-endorsed outcome. Technically, because they are instrumental, identified motives are extrinsic, but they are felt as internal because they are volitionally engaged and fulfill autonomous goals. This might be a person running on a treadmill to get fit or to feel good; they may not enjoy the

running itself, but they personally endorse the fitness goal it serves. Most of the reasons that individuals cite to perform physical activity behaviors can be characterized by one of these four behavioral regulations on the perceived locus of causality continuum. They represent a graduated framework for describing the extent to which physical activities are autonomous or controlled, but also a mechanism to chart how individuals might shift the reasons for performing activities from controlled to autonomous forms of regulation through the process of internalization.

SDT's taxonomy contains one additional category. An individual who does not have a clear reason or rationale for performing a behavior is said to be *amotivated*. For example, an individual who is ambivalent or apathetic toward performing physical activities will likely be amotivated. Researchers have also sought to extend the perceived locus of causality, introducing *integrated regulation*, which is a form of motivation characterized by full internalization of a particular behavior so that it becomes fully self-endorsed and consistent with all of one's values, identifications, and needs. However, integration is highly correlated in physical activity contexts with intrinsic motivation (McLachlan, Spray, & Hagger, 2011) and often does not achieve discriminant validity (Howard, Gagné, & Bureau, 2017).

Research examining the effects of perceived locus of causality in physical activity contexts has supported associations between autonomous forms of behavioral regulation and physical activity participation and adaptive outcomes (Chatzisarantis et al., 2003; Teixeira et al., 2012). For example, meta-analyses and systematic reviews have indicated that physical activity behaviors are positively associated with autonomous forms of motivation, particularly identified regulation (Teixeira et al., 2012; Ng et al., 2012). In addition, autonomous forms of motivation have been associated with perceived competence in physical activity and intentions to perform physical activity in future. By contrast, few studies have found relations between controlled forms of motivation and physical activity participation. Amotivation generally has a negative association with physical activity. Similarly, primary research studies have demonstrated that autonomous forms of motivation consistently predict physical activity over time (Sweet, Fortier, & Blanchard, 2014) and is a consistent predictor of physical activity participation across multiple age groups (Brunet & Sabiston, 2011), older adults (Pelssers et al., 2018), female samples (Craike et al., 2014; Edmunds et al., 2008; Silva et al., 2010), and young people (Owen et al., 2014). Furthermore, autonomous forms of motivation mediate relations between need satisfaction and physical activity participation (Hagger et al., 2006), suggesting a mechanism by which need satisfaction relates to physical activity behavior (e.g., Hagger et al., 2006; Ryan et al., 2008). Taken together, these findings provide consistent support for relations between autonomous motivation and actual participation in physical activity, while relations between physical activity and controlled forms of motivation and amotivation tend to be weaker and less consistent.

## Autonomy-Supportive Climate in Physical Activity

Given the link between autonomous motivation and persistence with physical activity, and the importance of internalization in shifting individuals' motives toward more autonomous forms (i.e., intrinsic motivation, identified regulation), researchers and practitioners have sought to identify intervention strategies based on SDT that aim to promote internalization in physical activity contexts (for reviews see Hagger, Moyers et al., 2020; Reeve & Cheon, 2020). One way to do so is to use the interpersonal context or "motivational climate" created by social agents in leadership or authority positions to promote individuals' internalization of physical activities and increase their autonomous motivation and need satisfaction toward those behaviors. Social agents in physical activity contexts such as instructors, peers, parents, or significant others can create a need-supportive motivational climate through their behaviors and the form in which they present activities and instructions. In particular, autonomy-supportive behaviors are key to the internalization process (Deci et al., 1994). Autonomy-supportive behaviors include providing choice, providing a rationale for the activity, initiating structure and experiences of success to the activities to support competence, supporting personally relevant and meaningful goal setting, engaging in active listening, building a sense of belonging to the group, and avoiding controlling language (e.g., Craike et al., 2011; Moustaka et al., 2012; Teixeira et al., 2020). This should be contrasted with the potential for social agents to undermine autonomous motivation and thwart or frustrate psychological needs. This may occur if social agents present activities using an authoritarian style or coerce the participants into participating in activities, set unrealistic goals, fail to provide a clear structure for activities and a framework for personal success, do not focus on relationship building, and use controlling language (see Fortier et al., 2007; Silva et al., 2010).

Studies have indicated that autonomy-supportive and need-supportive motivational climates or interpersonal styles created by social agents are associated with need satisfaction, autonomous motivation, and adaptive outcomes in exercise and physical activities contexts (e.g., Duda et al., 2014). A key indicator of these climates is the extent to which individuals in physical activity contexts (e.g., gym-goers and exercise class attendees, those in physical education classes, sport club attendees, children participating in physical activities at home) perceive the social agents in authority or leadership positions in those contexts (e.g., instructors, teachers, coaches, parents) support their psychological needs. Measures of perceived autonomy support in physical activity contexts have also been consistently related to autonomous motivation, need satisfaction, adaptive outcomes, and persistence with physical activity behaviors (Moustaka et al., 2012; Rutten, Boen, & Seghers, 2013). In contrast, contexts that fail to support autonomy and psychological needs, or even actively undermine autonomy and thwart needs, such as when social agents adopt a controlling motivational climate or interpersonal style, tend to be associated with need frustration, controlled forms of motivation, and maladaptive outcomes

(e.g., Moustaka et al., 2012; Rutten et al., 2013). Analogously, low perceived autonomy support is not associated with adaptive outcomes or persistence with physical activity behavior and is often linked to controlled forms of motivation.

Taken together, and consistent with SDT, research findings indicate that creation of a motivational climate or interpersonal context by social agents in authority positions in physical activity contexts is associated with adaptive motivational profiles and need satisfaction, as well as persistence in physical activities. Furthermore, the perception that salient others support autonomy and needs is associated with autonomous motivation, need satisfaction, and adaptive outcomes, while perceived lack of support is associated with controlled motivation, need frustration, and maladaptive outcomes. Research has indicated that these pathways are linked to physical activity through a motivational sequence outlined in mediational models in which relations between perceived autonomy support and physical activity persistence is mediated by autonomous forms of motivation and need satisfaction (Hagger et al., 2003; Ng et al., 2012; Ryan et al., 2008). Such findings highlight the imperative of promoting perceived autonomy support and the internalization of physical activity behaviors so that they are "taken in" to be autonomous in order to enhance uptake of and persistence with physical activity. Consistent with this notion, researchers have aimed to develop interventions based on SDT that provides autonomy and need support in order to promote internalization of physical activity behaviors. Such interventions are reviewed in the next section.

## Autonomy-Supportive Interventions and Autonomy-Supportive Training Programs

Given the importance of autonomy- and need-supportive behaviors to the promotion of autonomous motivation, which might ultimately lead to persistence in physical activity participation, researchers have developed autonomy-supportive training programs designed to train social agents to consistently display autonomy-supportive behaviors and language (Cheon Reeve, & Moon, 2012; Cheon & Reeve, 2013; Reeve & Cheon, 2020). Such interventions aim to change the behavior of the social agents responsible for engendering the autonomy- and need-supportive motivational climates in physical activity contexts that may foster autonomous motivation and need support. Many of the interventions aim to train social agents to use autonomy-supportive behaviors and language on a regular basis followed by a period of implementation with the group or population of interest in which the trained behaviors are displayed or communicated (e.g., a coach instructing athletes, a gym instructor working with clients). The effects of the intervention in changing perceived autonomy support, autonomous motivation, need satisfaction, and, ultimately, persistence with physical activity behavior is then evaluated, usually alongside a control or comparison group that does not receive instruction or communication. Such research designs provide important information on the efficacy of behavioral

interventions based on SDT, with keen attention paid to comparing the specific content related to promotion of internalization (autonomy-supportive behaviors and language) relative to content that does not have this goal.

Preeminent among interventions that have the goal of training social agents to display and utilize autonomy-supportive behaviors and language are autonomy-supportive training programs (for review, see Reeve & Cheon, 2020). These have been consistently developed in educational contexts, particularly physical education. For example, Cheon et al. (2012) developed an autonomy-supportive training program to train physical education teachers to promote autonomous motivation and need support toward activities in physical education classes. The program involved a five- to six-hour three-part program of instruction administered over the course of five or six months, in which physical education teachers were provided with an instructional workshop involving interactive presentations with video content, group discussions, and the opportunity to practice autonomy-supportive behaviors. Research applying this program has demonstrated effectiveness in terms of the behaviors displayed by teachers, evaluated through observation, but also increased autonomy support toward physical activities performed in physical education lessons. More broadly, interventions using content similar to Reeve and Cheon's (2020)) autonomy-supportive training programs have demonstrated effectiveness in promoting perceived autonomy support, autonomous motivation and need support, and physical activity engagement and persistence in other physical activity and exercise contexts (Fortier et al., 2007; Ginoux, Isoard-Gautheur, & Sarrazin, 2019; Pedersen, Halvari, & Williams, 2018; Silva et al., 2010). Overall, the research suggests that such programs can be effective in changing the behavior of social agents to be more autonomy-supportive, which has a concomitant effect on motivational and behavioral outcomes in physical activity contexts.

## Integration of SDT with Other Theories

A relatively recent trend in the application of SDT in physical activity contexts has been the integration of SDT with other theories, such as theories of social cognition, to assist in explaining the processes by which SDT constructs are translated into subsequent action. One line of research has been the integration of SDT with the theory of planned behavior (Ajzen, 1991), a preeminent social cognition theory that aims to predict target behaviors based on sets of antecedent beliefs that individuals have regarding performing those behaviors in future (Hagger & Chatzisarantis, 2009). The integration adds to research by elucidating processes that may be implied by a given theory but have not been explicitly stated or tested. In the case of integrating SDT with the theory of planned behavior, constructs from the theory of planned behavior provide a means to explain how forms of motivation from SDT lead to future behavioral enactment by affecting social cognition beliefs. This is consistent with Deci and Ryan's (1985) original contention that SDT has an organizing function such that individuals' beliefs will fall into line with their

motives for a particular behavior if the individual perceives the behavior will likely be autonomously motivated and satisfy psychological needs. The theory of planned behavior, therefore, provides a means by which individuals strategically align their beliefs with their motives in order to actively seek out opportunities to perform behaviors that will be felt as autonomous and satisfy needs.

In the integrated model, the sets of beliefs from the theory of planned behavior, that is, individuals' attitudes, subjective norms, and perceived behavioral control, are conceptualized as mediators of the effects of autonomous motives on behaviors such as participation in physical activity (Hagger & Chatzisarantis, 2009). According to the model, individuals citing autonomous reasons for engaging in physical activity in future are more likely to have positive attitudes toward the behavior, expect significant others will support their actions, and express control over physical activity participation. Given that such beliefs are proposed in the theory of planned behavior as the immediate antecedents of intention to perform physical activity in the future, forming such beliefs is strategically important to execute future physical activity participation. Beliefs, therefore, have utility in enabling individuals to act based on their autonomous motives and need satisfaction. Predictions of the integrated model, particularly the mediation of the effects of autonomous motives on physical activity through beliefs and intentions predicted by the theory of planned behavior, have been supported in numerous studies (e.g., Chan et al., 2020; Hagger & Chatzisarantis, 2009; Jacobs et al., 2011). Importantly, a meta-analysis of such studies supported the key premise that relations between autonomous forms of motivation and health behaviors, including physical activity participation, were mediated by the social cognition variables from the theory of planned behavior, particularly attitudes and perceived behavioral control and intentions (Hagger & Chatzisarantis, 2009). Recent research has also supported directional relations between autonomous motivation and the beliefs and intentions with respect to physical activity participation in the theory of planned behavior. A cross-lagged panel design demonstrated that effects of autonomous motivation on beliefs and intentions for physical activity were larger than reciprocal effects in the opposite direction, which in many cases were nonsignificant (Chan et al., 2020).

The integrated model has also been suggested as a potential guide for interventions, such that intervention designers have multiple potential targets, such as change in autonomous motivation through autonomy support and change in the belief-based constructs that are the antecedents of intentions, such as attitudes and perceived behavioral control. In one such example, groups of PE teachers were trained to either present physical activities to participating children in lessons using autonomy-supportive behaviors, targeting change in autonomous motivation, or providing information on physical activities targeting change in the salient beliefs that underpin attitudes (Chatzisarantis & Hagger, 2009). Results indicated that both aspects of the intervention resulted in change in children's physical activity outside school, but the mechanisms were different: effects of the autonomy-supportive components on physical activity participation occurred through

perceived autonomy support, autonomous motivation, and intentions, while effects of the information component occurred through attitudes, intentions, and behavior. These findings provide some preliminary support for an intervention based on the integrated model in physical activity where multiple constructs are targets for change.

Other integrated approaches have been adopted in specific applied physical activity contexts. A prime example is the trans-contextual model of motivation (Hagger et al., 2003; Hagger & Chatzisarantis, 2016), which is based on the integration of self-determination theory (Deci & Ryan, 1985), the theory of planned behaviour (Ajzen, 1991), and Vallerand's (1997) hierarchical model of motivation. The model aims to explain how autonomy support provided by teachers in an educational context (e.g., physical education) relates to autonomous motivation toward activities in the same context (e.g., physical activity participation in class) and autonomous motivation, beliefs, and intentions toward, and actual participation in, activities outside of school (e.g., leisure-time physical activity). The model was originally developed in the physical educational context to evaluate how teachers' support for autonomy in physical education may translate to physical activity outside of school, a key goal of physical education, but has since been applied in other contexts, such as sport injury prevention and recovery (e.g., Lee et al., 2019, 2021) and doping prevention in sport (Chan et al., 2015).

Research applying the trans-contextual model in physical activity contexts has generally supported these three premises. Specifically, prospective correlational studies have supported the model in multiple national contexts (e.g., Hagger et al., 2005, 2009; Shen, McCaughtry, & Martin, 2008; Wallhead, Hagger, & Smith, 2010), and a meta-analytic review of such research has also confirmed its predictive validity (Hagger & Chatzisarantis, 2016). Research has also demonstrated that its effects hold even when controlling for effects of perceived autonomy support from other sources like peers and parents (Hagger et al., 2005) and when including psychological need satisfaction as an additional mediator (Barkoukis et al., 2010). Recent research has also demonstrated that the model is effective in accounting for change in autonomous motivation, intentions, and physical activity behavior (Kalajas-Tilga et al., 2022). Of the research conducted thus far, it seems the model offers some promise in predicting physical activity across physical education and leisure-time contexts and providing a theoretical account for the processes involved.

## Future Directions

An important future direction of research is the further establishment of mechanisms within SDT, that is, *how* constructs within the theory (e.g., behavioral regulations, perceived autonomy support, psychological need satisfaction) relate to behavior. Such research provides valuable information not only on the strength and direction of relations among SDT constructs but also on the intermediary factors that explain these relations (i.e., mediating constructs or variables) or factors that might magnify or diminish the strength of these effects (i.e., moderating constructs or variables). For example, theorists

have proposed SDT process models in which effects of perceived autonomy support relate to outcomes such as physical health and behavioral participation such as physical activity participation are mediated by need satisfaction and forms of motivation from the perceived locus of causality, and research has supported their predictions (Hagger et al., 2006; Ryan et al., 2008). Researchers have also begun to explore how synthesizing research across many studies and testing these models using the synthesized data may shed light on whether the weight of evidence is consistent with theoretical predictions. For example, Ng et al. (2012) tested Ryan et al.'s (2008) process model by synthesizing previous research testing relations among its component constructs using meta-analysis and testing the model using path analysis. Their research found proposed indirect effects of perceived autonomy support on health-related outcomes, including in physical activity contexts, mediated by psychological need satisfaction and autonomous motivation. Recently, researchers have applied this technique to test unique models inferred from SDT but which have not been previously tested using synthesized data. For example, Hagger and Hamilton (2021) tested a unique model in which individual differences in self-determined and controlled motivation, autonomy, and control causality orientations were related to behaviors, including physical activity, mediated by autonomous and controlled forms of motivation. The model was tested by applying a meta-analytic structural equation model on previous research examining relations between causality orientations and forms of motivation in SDT. This kind of research provides the next step in evaluating the accumulating evidence on mechanisms within SDT and provides additional formative research on which researchers may base interventions to promote physical activity motivation and behavior change.

A key avenue for future research is to further elucidate which methods or *techniques* utilized in SDT-based interventions in physical activity contexts are most effective in changing autonomous motivation, need support, and behavior. Although much work has been done in the education contexts (e.g., Reeve & Jang, 2006) and in the development of autonomy-supportive intervention programs (e.g., Cheon et al., 2012; Reeve & Cheon, 2020) to identify the behaviors and language that social agents use to change behavior, it is only recently that researchers have begun to systematically identify and classify the motivation and behavior change techniques that comprise SDT interventions. Recently, a research consortium developed a set of motivation and behavior change techniques based on a content analysis of previous SDT interventions, theory descriptions, and expert consensus (Teixeira et al., 2020). The techniques were organized according to the primary psychological need targeted by each technique, with recognition that some techniques target more than one need.

The classification is an important step forward in creating a systematic way of describing SDT-based interventions. It paves the way for researchers to develop interventions adopting trials with factorial designs for SDT interventions that test the efficacy of isolated SDT-based techniques from the classification in changing motivation and behavior, and

their interactions. This work is very much in its early stages, and trials are needed to identify which specific techniques are effective in interventions and the constructs (e.g., perceived autonomy support, need satisfaction, motivational orientation from the perceived locus of causality) that mediate their effects on physical activity. This has not hitherto been the case for many SDT-based interventions aiming to promote change in physical activity because researchers have tended to use multiple techniques simultaneously, precluding the isolation of the effects of individual techniques. Such work would move the field toward efficacious physical activity interventions that are also optimally efficient. It would also be important to test these interventions and their mechanisms across multiple contexts and populations in order to establish the generalizability of techniques. This would entail the examination of moderators of SDT-based intervention effects in physical activity contexts (cf. Rothman & Sheeran, 2021). These are key avenues for future research based on the recently developed classification of SDT techniques.

Alongside this, it is imperative to test the mechanisms by which SDT-based interventions work in changing behavior. Such research would entail identifying the theory-based mediators of the effects of the motivation and behavior change techniques used in SDT-based interventions (e.g., the techniques based on Teixeira et al.'s [2020] classification) in changing autonomous motivation and behavior in physical activity contexts. These analyses establish the mechanisms of change, that is, the processes by which the intervention is proposed to affect physical activity change based on the theoretical constructs they are purported to change (Hagger, Hankonen et al., 2020; Rothman et al., 2020). Researchers have advocated such tests in research applying SDT interventions to change physical activity behavior, such as the role of measures of perceived autonomy support and autonomous motivation in mediating autonomy-supportive interventions on physical activity behavior change (e.g., Chatzisarantis & Hagger, 2009). Recent research has also sought to establish the mechanisms of these types of intervention across studies adopting SDT using meta-analysis and structural equation modeling (Rhodes, Boudreau, Weman-Josefsson & Ivarsson, 2021; Sheeran et al., 2020). However, to date, research syntheses have focused on SDT-based interventions that adopt multiple techniques and have not tested the isolated effects of the individual techniques from Teixeira et al.'s (2020) taxonomy. This is an avenue for future research, and researchers are strongly advised to test the main and interactive effects of individual motivation and behavior change techniques on motivation and behavior in physical activity contexts.

Most SDT-based interventions aimed at changing physical activity behavior have tended to adopt autonomy-supportive training programs or similar to promote an autonomy-supportive climate and promote autonomous motivation and physical activity participation. However, such approaches are not the only types of intervention that have been used to foster autonomous motivation and behavior change in physical activity contexts. Alternative interventions have communicated activities to the target population using autonomy-supportive language using self-enactable techniques delivered by

text-based messages that do not involve social agents (see Knittle et al., 2020). For example, researchers have communicated information about physical activities using mobile phone text messages (e.g., Kinnafick, Thøgersen-Ntoumani, & Duda, 2016) and social media (e.g., Wang, Leng, & Kee, 2015). These approaches adopt autonomy-supportive language and avoid use of controlling language to present exercise-related information and prompt individuals to perform self-administered exercises that foster autonomous motivation (e.g., setting autonomous goals, developing self-referenced means to chart performance). However, such interventions are relatively sparse and their efficacy is not unequivocal (e.g., Cowdery et al., 2015). Future research that systematically evaluates the efficacy of text-based messages adopting specific self-determination theory motivation and behavior change techniques is needed, as well as more interactive content using mobile phone and other technologies, to provide a comprehensive evidence base for their efficacy. Likely moderators will be the level of engagement and attention paid to the messages, and researchers and practitioners would do well to identify means to get participants in such interventions to engage more closely with the intervention content and test such engagement through intervention fidelity evaluations (Quested et al., 2017).

## Conclusion

Self-determination theory has been applied extensively in physical activity contexts. Research has demonstrated that autonomous forms of motivation are consistently related with psychological need satisfaction, adaptive outcomes (e.g., psychological well-being), and uptake of and persistence with physical activity participation across a broad range of contexts and populations. Individuals who view physical activity as autonomous and need-satisfying are often those who persist with behavior. In contrast, while there is research that has associated participation in physical activities with more controlled forms of motivation from SDT, effect sizes tend to be much smaller and often fail to achieve statistical significance in primary studies. Furthermore, need frustration is often negatively associated with physical activity participation. Research integrating SDT with social cognition theories also demonstrates that individuals who experience physical activity participation as autonomous and need-satisfying are more likely to form adaptive beliefs (positive attitudes, norms, and perceived behavioral control) and intentions to perform physical activity in future. Autonomy-supportive training programs have been developed in physical activity contexts. These programs aim to train social agents like teachers, parents, and instructors to adopt autonomy-supportive behaviors and language when working with groups in physical activity contexts to foster autonomous motivation, need satisfaction, and physical activity participation. Future research is needed to elucidate the specific techniques utilized in SDT-based interventions that are most effective in promoting physical activity and the mechanisms involved. Research is also needed to test the efficacy of interventions delivered by means other than through social agents, such as text, online, or

smartphone-based interventions that use SDT-informed messaging. Overall, we predict a bright future for the application of SDT as a means to increase physical activity participation with the goal of promoting optimal health and preventing chronic illness.[1]

## References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Allender, S., Cowburn, G., & Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: A review of qualitative studies. *Health Education Research*, *21*(6), 826–835. https://doi.org/10.1093/her/cyl063

Anderson, E., & Durstine, J. L. (2019). Physical activity, exercise, and chronic diseases: A brief review. *Sports Medicine and Health Science*, *1*(1), 3–10. https://doi.org/10.1016/j.smhs.2019.08.006

Barkoukis, V., Hagger, M. S., Lambropoulos, G., & Torbatzoudis, H. (2010). Extending the trans-contextual model in physical education and leisure-time contexts: Examining the role of basic psychological need satisfaction. *British Journal of Educational Psychology, 80*, 647–670. https://doi.org/10.1348/000709910 X487023

Berger, B. G., & Owen, D. R. (1992). Mood alteration with yoga and swimming: Aerobic exercise may not be necessary. *Perceptual and Motor Skills, 75*(3 Pt 2), 1331–1343. https://doi.org/10.2466/pms.1992.75.3f.1331

Biddle, S. J. H., Fox, K. R., & Boutcher, S. H. (2000). *Physical activity and psychological well-being*. Routledge.

Blair, S. N., & Morris, J. N. (2009). Healthy hearts—and the universal benefits of being physically active: Physical activity and health. *Annals of Epidemiology, 19*, 253–256. https://doi.org/10.1016/j.annepidem.2009.01.019

Booth, F. W., Roberts, C. K., & Laye, M. J. (2012). Lack of exercise is a major cause of chronic diseases. *Comprehensive Physiology*, *2*(2), 1143–1211. https://doi.org/10.1002/cphy.c110025

Bouchard, C., Shephard, R. J., & Stephens, T. (1994). *Physical activity, fitness, and health: International proceedings and consensus statement*. Human Kinetics.

Brunet, J., & Sabiston, C. M. (2011). Exploring motivation for physical activity across the adult lifespan. *Psychology of Sport and Exercise*, *12*(2), 99–105. https://doi.org/10.1016/j.psychsport.2010.09.006

Cardinal, B. J., Yan, Z., & Cardinal, M. K. (2013). Negative experiences in physical education and sport: How much do they affect physical activity participation later in life? *Journal of Physical Education, Recreation & Dance*, *84*(3), 49–53. https://:10.1080/07303084.2013.767736

Carvalho, A., Rea, I. M., Parimon, T., & Cusack, B. J. (2014). Physical activity and cognitive function in individuals over 60 years of age: A systematic review. *Clinical Interventions in Aging, 9*, 661–682. https://doi.org/10.2147/CIA.S55520

Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports*, *100*(2), 126–131.

Chan, D. K. C., Dimmock, J. A., Donovan, R. J., Hardcastle, S., Lentillon-Kaestner, V., & Hagger, M. S. (2015). Self-determined motivation in sport predicts motivation and intention of anti-doping behaviors: A perspective from the trans-contextual model. *Journal of Science and Medicine in Sport*, *18*(3), 315–322. https://doi.org/10.1016/j.jsams.2014.04.001

Chan, D. K. C., Zhang, L., Lee, A. S. Y., & Hagger, M. S. (2020). Reciprocal relations between autonomous motivation from self-determination theory and social cognition constructs from the theory of planned behavior: A cross-lagged panel design in sport injury prevention. *Psychology of Sport and Exercise, 48*, 101660. https://doi.org/10.1016/j.psychsport.2020.101660

Chatzisarantis, N. L. D., & Hagger, M. S. (2009). Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation. *Psychology and Health*, *24*(1), 29–48. https://doi.org/10.1080/08870440701809533

Chatzisarantis, N. L. D., Hagger, M. S., Biddle, S. J. H., Smith, B., & Wang, C. K. J. (2003). A meta-analysis of perceived locus of causality in exercise, sport, and physical education contexts. *Journal of Sport and Exercise Psychology, 25*, 284–306. https://doi.org/10.1123/jsep.25.3.284

---

[1] We dedicate this chapter to our dear colleague and friend, Nikos L. D. Chatzisarantis.

Cheon, S. H., & Reeve, J. (2013). Do the benefits from autonomy-supportive PE teacher training programs endure? A one-year follow-up investigation. *Psychology of Sport and Exercise*, *14*(4), 508–518. https://doi.org/10.1016/j.psychsport.2013.02.002

Cheon, S. H., Reeve, J., & Moon, I. (2012). Experimentally based, longitudinally designed, teacher-focused intervention to help physical education teachers be more autonomy supportive toward their students. *Journal of Sport and Exercise Psychology*, *34*(3), 365–396. https://doi.org/10.1123/jsep.34.3.365

Cowdery, J., Majeske, P., Frank, R., & Brown, D. (2015). Exergame apps and physical activity: The results of the ZOMBIE trial. *American Journal of Health Education*, *46*(4), 216–222. https://doi.org/10.1080/19325037.2015.1043063

Craike, M. J., Polman, R., Eime, R., Symons, C., Harvey, J., & Payne, W. (2014). Associations between behavior regulation, competence, physical activity, and health for adolescent females. *Journal of Physical Activity and Health, 11*(2), 410–418. https://doi.org/10.1123/jpah.2012-0070

Craike, M. J., Symons, C., Eime, R. M., Payne, W. R., & Harvey, J. T. (2011). A comparative study of factors influencing participation in sport and physical activity for metropolitan and rural female adolescents. *Annals of Leisure Research*, *14*(4), 355–368. https://doi.org/10.1080/11745398.2011.639405

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality, 62*, 119–142. https://doi.org/10.1111/j.1467-6494.1994.tb00797.x

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.

Dishman, R. K., McIver, K. L., Dowda, M., Saunders, R. P., & Pate, R. R. (2018). Self-efficacy, beliefs, and goals: Moderation of declining physical activity during adolescence. *Health Psychology*, *38*(6), 483–493. https://doi.org/10.1037/hea0000734

Duda, J. L., Williams, G. C., Ntoumanis, N., Daley, A., Eves, F. F., Mutrie, N., Rouse, P. C., Lodhia, R., Blamey, R. V., & Jolly, K. (2014). Effects of a standard provision versus an autonomy supportive exercise referral programme on physical activity, quality of life and well-being indicators: A cluster randomised controlled trial. *International Journal of Behavioral Nutrition and Physical Activity*, *11*(10). https://doi.org/10.1186/1479-5868-11-10

Edmunds, J., Ntoumanis, N., & Duda, J. L. (2008). Testing a self-determination theory-based teaching style intervention in the exercise domain. *European Journal of Social Psychology, 38*, 375–388. https://doi.org/10.1002/ejsp.463

Fortier, M. S., Sweet, S. N., O'Sullivan, T. L., & Williams, G. C. (2007). A self-determination process model of physical activity adoption in the context of a randomized controlled trial. *Psychology of Sport and Exercise*, *8*(5), 741–757. https://doi.org/10.1016/j.psychsport.2006.10.006

Ginoux, C., Isoard-Gautheur, S., & Sarrazin, P. (2019). Workplace Physical Activity Program (WOPAP) study protocol: A four-arm randomized controlled trial on preventing burnout and promoting vigor. *BMC Public Health*, *19*(1), 289. https://doi.org/10.1186/s12889-019-6598-3

Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2018). Worldwide trends in insufficient physical activity from 2001 to 2016: A pooled analysis of 358 population-based surveys with 1.9 million participants. *Lancet Global Health*, 6(10), e1077-e1086. https://doi.org/10.1016/S2214-109X(18)30357-7.

Hagger, M. S., & Chatzisarantis, N. L. D. (2007). Advances in self-determination theory research in sport and exercise. *Psychology of Sport and Exercise*, 8(5), 597–599. https://doi.org/10.1016/j.psychsport.2007.06.003

Hagger, M. S., & Chatzisarantis, N. L. D. (2009). Integrating the theory of planned behaviour and self-determination theory in health behaviour: A meta-analysis. *British Journal of Health Psychology*, *14*(2), 275–302. https://doi.org/10.1348/135910708X373959

Hagger, M. S., & Chatzisarantis, N. L. D. (2016). The trans-contextual model of autonomous motivation in education: Conceptual and empirical issues and meta-analysis. *Review of Educational Research*, *86*(2), 360–407. https://doi.org/10.3102/0034654315585005

Hagger, M. S., Chatzisarantis, N. L. D., Barkoukis, V., Wang, C. K. J., & Baranowski, J. (2005). Perceived autonomy support in physical education and leisure-time physical activity: A cross-cultural evaluation of the trans-contextual model. *Journal of Educational Psychology*, *97*(3), 376–390. https://doi.org/10.1037/0022-0663.97.3.376

Hagger, M. S., Chatzisarantis, N. L. D., Culverhouse, T., & Biddle, S. J. H. (2003). The processes by which perceived autonomy support in physical education promotes leisure-time physical activity intentions and behavior: A trans-contextual model. *Journal of Educational Psychology*, *95*(4), 784–795. https://doi.org/10.1037/0022-0663.95.4.784

Hagger, M. S., Chatzisarantis, N. L. D., & Harris, J. (2006). From psychological need satisfaction to intentional behavior: Testing a motivational sequence in two behavioral contexts. *Personality and Social Psychology Bulletin, 32*, 131–138. https://doi.org/10.1177/0146167205279905

Hagger, M. S., Chatzisarantis, N. L. D., Hein, V., Pihu, M., Soós, I., Karsai, I., Lintunen, T., & Leemans, S. (2009). Teacher, peer, and parent autonomy support in physical education and leisure-time physical activity: A trans-contextual model of motivation in four cultures. *Psychology and Health*, 24(6), 689–711. https://doi.org/10.1080/08870440801956192

Hagger, M. S., & Hamilton, K. (2021). General causality orientations in self-determination theory: Meta-analysis and test of a process model. *European Journal of Personality, 35* (5),710-735. https://doi.org/10.1177/0890207020962330

Hagger, M. S., Hankonen, N., Chatzisarantis, N. L. D., & Ryan, R. M. (2020). Changing behavior using self-determination theory. In M. S. Hagger, L. D. Cameron, K. Hamilton, N. Hankonen, & T. Lintunen (Eds.), *The handbook of behavior change* (pp. 104–119). Cambridge Handbooks in Psychology. Cambridge University Press. https://doi.org/10.1017/9781108677318.008

Hagger, M. S., Moyers, S., McAnally, K., & McKinley, L. E. (2020). Known knowns and known unknowns on behavior change interventions and mechanisms of action. *Health Psychology Review*, 14(1), 199–212. https://doi.org/10.1080/17437199.2020.1719184

Hagger, M. S., & Weed, M. E. (2019). Debate: Do behavioral interventions work in the real world? *International Journal of Behavioral Nutrition and Physical Activity, 16*, 36. https://doi.org/10.1186/s12966-019-0795-4

Howard, J. L., Gagné, M., & Bureau, J. S. (2017). Testing a continuum structure of self-determined motivation: A meta-analysis. *Psychological Bulletin*, *143*(12), 1346–1377. https://doi.org/10.1037/bul0000125

Jacobs, N., Hagger, M. S., Streukens, S., De Bourdeaudhuij, I., & Claes, N. (2011). Testing an integrated model of the theory of planned behaviour and self-determination theory for different energy-balance related behaviours and intervention intensities. *British Journal of Health Psychology*, 16(1), 113–134. https://doi.org/10.1348/135910710X519305

Kalajas-Tilga, H., Hein, V., Koka, A., Tilga, H., Raudsepp, L., & Hagger, M. S. (2022). Application of the trans-contextual model to predict change in leisure time physical activity. *Psychology & Health, 37*(1), 62-86. https://doi.org/10.1080/08870446.2020.1869741

Kinnafick, F.-E., Thøgersen-Ntoumani, C., & Duda, J. (2016). The effect of need supportive text messages on motivation and physical activity behaviour. *Journal of Behavioral Medicine*, *39*(4), 574–586. https://doi.org/10.1007/s10865-016-9722-1

Knittle, K., Heino, M. T. J., Marques, M. M., Stenius, M., Beattie, M., Ehbrecht, F., Hagger, M. S., Hardeman, W., & Hankonen, N. (2020). The compendium of self-enactable techniques to change and self-manage motivation and behaviour v1. 0. *Nature Human Behavior, 4*, 215–223. https://doi.org/10.1038/s41562-019-0798-9

Lankford, T., Wallace, J., Brown, D., Soares, J., Epping, J. N., & Fridinger, F. (2014). Analysis of physical activity mass media campaign design. *Journal of Physical Activity and Health*, *11*(6), 1065. https://doi.org/10.1123/jpah.2012-0303

Laredo-Aguilera, J. A., Cobo-Cuenca, A. I., Santacruz-Salas, E., Martins, M. M., Rodríguez-Borrego, M. A., López-Soto, P. J., & Carmona-Torres, J. M. (2019). Levels of physical activity, obesity and related factors in young adults aged 18–30 during 2009–2017. *International Journal of Environmental Research and Public Health, 16*, 4033.

Lee, A. S. Y., Yung, P. S. H., Mok, K.-M., Hagger, M. S., & Chan, D. K. C. (2019). Psychological processes of ACL-patients' post-surgery rehabilitation: A prospective test of an integrated theoretical model. *Social Science & Medicine, 244*, 112646. https://doi.org/10.1016/j.socscimed.2019.112646

Lee, A. S. Y., Standage, M, Hagger, M. S., & Chan, D. K. C. (2021). Applying the trans-contextual model to promote sport injury prevention behaviors among secondary school students. Scandinavian Journal of Medicine and Science in Sports, 31(9), 1840–1852. Httpe://doi: 10.1111/sms.14002. Epub 2021 Jul 6. PMID: 34174104; PMCID: PMC8456917.

Leon, A. S. (Ed.). (1997). *Physical activity and cardiovascular health: A national consensus*. Human Kinetics.

McGinnis, J. M. (1992). The public health burden of a sedentary lifestyle. *Medicine and Science in Sports and Exercise*, *24*(Supplement), S196–S200.

McLachlan, S., Spray, C., & Hagger, M. S. (2011). The development of a scale measuring integrated regulation in exercise. *British Journal of Health Psychology*, 16(4), 722–743. https://doi.org/10.1348/2044-8287.002009

Moustaka, F. C., Vlachopoulos, S. P., Kabitsis, C., & Theodorakis, Y. (2012). Effects of an autonomy-supportive exercise instructing style on exercise motivation, psychological well-being and exercise attendance in middle age women. *Journal of Physical Activity & Health*, *9*, 138–150.

Ng, J. Y. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-determination theory applied to health contexts. *Perspectives on Psychological Science, 7*(4), 325–340. https://doi.org/10.1177/1745691612447309

Owen, K. B., Smith, J., Lubans, D. R., Ng, J. Y., & Lonsdale, C. (2014). Self-determined motivation and physical activity in children and adolescents: A systematic review and meta-analysis. *Preventive Medicine., 67*, 270–279. https://doi.org/10.1016/j.ypmed.2014.07.033

Pate, R. R., Pratt, M., Blair, S. N., Haskell, W. L., Macera, C. A., Bouchard, C., Buchner, D., Ettinger, W. Heath, G. W., King, A. C., Kriska, A., Leon, A. S., Marcus, B. H., Morris, J., Paffenbarger Jr, R. S., Patrick, K, Pollock, M. L., Rippe, J. M., Sallis, J., & Wilmore, J. H. (1995). Physical activity and public health: A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA, 273*, 402–407.

Pedersen, C., Halvari, H., & Williams, G. C. (2018). Worksite intervention effects on motivation, physical activity, and health: A cluster randomized controlled trial. *Psychology of Sport and Exercise, 35*, 171–180. https://doi.org/10.1016/j.psychsport.2017.11.004

Pelssers, J., Hurkmans, E., Scheerder, J., Vanbeselaere, N., Vos, S., Smits, T., & Boen, F. (2018). Acting one's age in physical exercise: Do perceived age norms explain autonomous motivation among older adults? *Journal of Aging and Physical Activity*, *26*(4), 1–26. https://doi.org/10.1123/japa.2016-0290

Powell, K. E., Casperen, C. J., Koplan, J. P., & Ford, E. S. (1989). Physical activity and chronic disease. *America Journal of Clinical Nutrition, 49*, 999–1006.

Quested, E., Ntoumanis, N., Thøgersen-Ntoumani, C., Hagger, M. S., & Hancox, J. (2017). Evaluating quality of implementation in physical activity interventions based on theories of motivation: Current challenges and future directions. *International Review of Sport and Exercise Psychology*, *10*(1), 252–269. https://doi.org/10.1080/1750984X.2016.1217342

Raglin, J. S. (1990). Exercise and mental health: Beneficial and detrimental effects. *Sports Medicine*, *9*(6), 323–329.

Reeve, J., & Cheon, S. H. (2020). Autonomy supportive interventions. In M. S. Hagger, L. D. Cameron, K. Hamilton, N. Hankonen, & T. Lintunen (Eds.), *The handbook of behavior change* (pp. 510–522). Cambridge University Press. https://doi.org/10.1017/97811086773180.035

Reeve, J., & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology, 98*, 209–218. https://doi.org/10.1037/0022-0663.98.1.209

Rhodes, R. E., Boudreau, F., Weman-Josefsson, K., & Ivarsson, A. (2021). Mediators of physical activity behavior change interventions among adults: A systematic review and meta-analysis. *Health Psychology Review, 15*(2), 272-286. https://doi.org/10.1080/17437199.2019.1706614

Rhodes, R. E., McEwan, D., & Rebar, A. L. (2019). Theories of physical activity behaviour change: A history and synthesis of approaches. *Psychology of Sport and Exercise*, *42,* 100–109. https://doi.org/10.1016/j.psychsport.2018.11.010

Rothman, A. J., Klein, W. M. P., & Sheeran, P. (2020). Moving from theoretical principles to intervention strategies: Applying the experimental medicine approach. In M. S. Hagger, L. D. Cameron, K. Hamilton, N. Hankonen, & T. Lintunen (Eds.), *The handbook of behavior change* (pp. 285–299). Cambridge University Press. https://doi.org/10.1017/97811086773180.020

Rothman, A. J., & Sheeran, P. (2021). The operating conditions framework: Integrating mechanisms and moderators in health behavior interventions. *Health Psychology, 40(12), 845-857.* https://doi.org/10.1037/hea0001026

Rutten, C., Boen, F., & Seghers, J. (2013). The relation between environmental factors and pedometer-determined physical activity in children: The mediating role of autonomous motivation. *Pediatric Exercise Science*, *25*(2), 273–287. https://www.doi.org/10.1123/pes.25.2.273.

Ryan, R. (1982). Control and information in intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology, 43*, 450–461.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749–761.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*, 54–67.

Ryan, R. M., & Deci, E. L. (2008). A self-determination theory approach to psychotherapy: The motivational basis for effective change. *Canadian Psychology and Health, 49*, 186–193.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., Patrick, H., Deci, E. L., & Williams, G. C. (2008). Facilitating health behaviour change and its maintenance: Interventions based on self-determination theory. *European Health Psychologist*, *10*(1), 2–5.

Santos, D. A., Silva, A. M., Baptista, F., Santos, R., Vale, S., J., M., & Sardinha, L. B. (2012). Sedentary behavior and physical activity are independently related to functional fitness in older adults. *Experimental Gerontology.*, *47*(12), 908–912. https://doi.org/10.1016/j.exger.2012.07.011

Sheeran, P., Klein, W. M. P., & Rothman, A. J. (2017). Health behavior change: Moving from observation to intervention. *Annual Review of Psychology*, *68*(1), 573–600. https://doi.org/10.1146/annurev-psych-010416-044007

Sheeran, P., Wright, C. E., Avishai, A., Villegas, M. E., Lindemans, J. W., Klein, W. M. P., Rothman, A. J., Miles, E., & Ntoumanis, N. (2020). Self-determination theory interventions for health behavior change: Meta-analysis and meta-analytic structural equation modeling of randomized controlled trials. *Journal of Consulting and Clinical Psychology*, *88*(8), 726–737. https://doi.org/10.1037/ccp0000501

Shen, B., McCaughtry, N., & Martin, J. (2008). Urban adolescents' exercise intentions and behaviors: An exploratory study of a trans-contextual model. *Contemporary Educational Psychology*, *33*(4), 841–858. https://doi.org/10.1016/j.cedpsych.2007.09.002

Silva, M. N., Vieira, P. N., Coutinho, S. R., Minderico, C. S., Matos, M. G., Sardinha, L. B., & Teixeira, P. J. (2010). Using self-determination theory to promote physical activity and weight control: A randomized controlled trial in women. *Journal of Behavioral Medicine*, *33*(2), 110–122. https://doi.org/10.1007/s10865-009-9239-y.

Sweet, S. N., Fortier, M. S., & Blanchard, C. M. (2014). Investigating motivational regulations and physical activity over 25 weeks. *Journal of Physical Activity & Health*, *11*(5), 1052–1056. https://doi.org/10.1123/jpah.2012-0057

Teixeira, P. J., Carraça, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, physical activity, and self-determination theory: A systematic review. *International Journal of Behavioral Nutrition amd Physical Activity*, *9*(78). https://doi.org/10.1186/1479-5868-9-78

Teixeira, P. J., Marques, M. M., Silva, M. N., Brunet, J., Duda, J., Haerens, L., La Guardia, J., Lindwall, M., Londsdale, C., Markland, D., Michie, S., Moller, A. C., Ntoumanis, N., Patrick, H., Reeve, J., Ryan, R. M., Sebire, S., Standage, M., Vansteenkinste, M., Weinstein, N., Weman-Josefsson, K., Williams, G., & Hagger, M. S. (2020). Classification of techniques used in self-determination theory-based interventions in health contexts: An expert consensus study. *Motivation Science, 6*, 438–455. https://doi.org/10.1037/mot0000172

U.S. Department of Health and Human Services. (2018). *Physical activity guidelines for Americans*. https://health.gov/our-work/physical-activity/current-guidelines

Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. Zanna (Ed.), *Advances in experimental social psychology* (pp. 271–360). Academic Press.

Wallhead, T. L., Hagger, M. S., & Smith, D. T. (2010). Sport education and extra-curricular sport participation: An examination using the trans-contextual model of motivation. *Research Quarterly for Exercise and Sport*, *81*(4), 442–455. https://doi.org/10.1080/02701367.2010.10599705

Wang, J. C. K., Leng, H. K., & Kee, Y. H. (2015). Use of Facebook in physical activity intervention programme: Test of self-determination theory. *International Journal of Sport Psychology*, *46*(3), 210–224. https://doi.org/10.7352/IJSP 2015.46.210

World Health Organization. (2010). *Global recomendations on physical activity for health*. https://www.who.int/dietphysicalactivity/global-PA-recs-2010.pdf

World Health Organization. (2018). *World health statistics 2018: Monitoring health for the sustainable development goals*. https://apps.who.int/iris/bitstream/handle/10665/272596/9789241565585-eng.pdf?sequence=1&isAllowed=y

World Health Organization. (2019). *World health statistics 2019: Monitoring health for the SDGs, sustainable development goals*. https://www.who.int/publications/i/item/world-health-statistics-2019-monitoring-health-for-the-sdgs-sustainable-development-goals

World Health Organization. (2020). WHO guidelines on physical activity and sedentary behavior. https://www.who.int/publications/i/item/9789240015128

# The Interplay between Basic Psychological Needs and Sleep in Self-Determination Theory

Rachel Campbell *and* Maarten Vansteenkiste

## Abstract

Grounded in self-determination theory (SDT), this chapter provides an overview of the nascent literature on the dynamic interplay between basic psychological needs and the physical need for sleep, thereby covering three recent lines of research. The chapter reviews recent studies indicating that psychological need-based experiences relate to diverse self-reported and objective indicators of sleep at both the between- and within-person level in nonclinical and clinical samples. It presents evidence from diary and experimental research demonstrating a reciprocal effect of sleep on psychological need-based experiences. Finally, it discusses evidence for intervening mechanisms that help to explain these associations, focusing especially on the role of arousal processes, subjective energy levels, and present-moment awareness. The chapter reflects on the limitations of these findings, as well as their implications for research on the interplay between SDT's basic psychological needs and other physical needs.

**Key Words:** self-determination theory, sleep, basic psychological needs, physical needs, intervening mechanisms

## Introduction

We are all familiar with the consequences of poor sleep. After a night of restless sleep, it is common to feel fatigued, irritable, and struggle to concentrate the next day (Baum et al., 2014; Fuligni & Hardway, 2006; Poh, Chong, & Chee, 2016). However, the costs of poor sleep can be far more damaging and wide-ranging. Regular sleeplessness puts people at risk for a range of serious health problems, including obesity, heart disease, immune dysfunction, and even greater risk of mortality (Chattu et al., 2018). Sleep disturbance not only affects physical health; it also increases vulnerability for mental health problems such as anxiety (Pires et al., 2016) and depression (Pigeon & Perlis, 2007) and has been put forward as a transdiagnostic risk factor for the development of psychopathology (Harvey et al., 2011).

Troublingly, the prevalence of sleep disturbance in the general population is high and on the rise (Ford, Cunningham, & Croft, 2015). Average sleep duration has decreased

significantly since the 1980s, with up to 40% of the general public in the USA reporting six or fewer hours of sleep a night on average (Ford et al., 2015; Jones, 2013). This is considerably below public health recommendations, which state that adults need at least seven hours of sleep per night to function optimally (Watson et al., 2015). Sleep disturbances are not limited to adults but are highly prevalent across diverse age groups (e.g., Lund et al., 2010; Gradisar, Gardner, & Dohnt, 2011). Overall, these prevalence rates signify that a substantial proportion of the general population fail to get this fundamental physical need adequately met.

## Physical and Psychological Needs

Self-determination theory (SDT; Ryan & Deci, 2017) identifies the satisfaction of basic psychological needs (autonomy, competence, relatedness) as critical for humans to thrive and flourish (Vansteenkiste, Ryan, & Soenens, 2020). Yet all individuals of course also possess basic *physical* needs, such as the need for sufficient, good-quality sleep, the fulfillment of which is equally essential for healthy functioning. As noted in the 1940s by drive theory (Hull, 1943), the satisfaction of physiological needs for oxygen, thirst, hunger, and sleep is critical for organisms to survive. These physiological needs, referred to as "drives," function according to homeostatic principles with their deprivation prompting need-fulfilling behaviors to restore this imbalance. For example, when a person is hungry they are motivated to eat until satiated. Maslow's (1943) hierarchy of needs also posited physiological needs as well as the physical need for safety and security as critical lower-level needs that can take priority over higher-level needs (e.g., for self-esteem or self-actualization; see also Chen et al., 2015; Rasskazova, Ivanova, & Sheldon, 2016).

SDT's basic psychological needs share a number of features with physical needs, including their *inherent, essential,* and *universal* character (Ryan, 1995; Vansteenkiste, Soenens, & Ryan, this volume). Both types of needs are already operative among newborn babies and remain critical throughout the lifespan. Moreover, their deprivation and chronic frustration is assumed to result in impoverished functioning and degradation among all individuals regardless of their age, gender, or cultural background (e.g., Rodriguez-Meirinhos et al., 2020). Much like malnutrition due to poverty constitutes a threat to one's physical health, the frustration of autonomy, competence, and relatedness, especially if chronic, yields ill-being and problem behavior (Ryan, Deci, & Vansteenkiste, 2016).

Yet, unlike physical needs, basic psychological needs do not function according to homeostatic principles, such that their satisfaction leads to a satiation point. While the benefits of eating nutritious food and sleeping longer level off after an optimal amount is reached, the same is not true for psychological needs. Greater psychological need satisfaction is said to yield greater well-being in a linear fashion, as a person cannot experience too much volition, intimacy, or effectiveness. Although a shortage of either physical or

psychological need satisfaction is problematic, the satisfaction of psychological needs is especially critical for people to psychologically thrive and flourish.

Despite the fundamental importance of both types of needs for well-being, historically in SDT indicators of physical health have typically been examined only as outcomes of psychological need-based experiences (e.g., Di Domenico and Fournier, 2014; Ng et al., 2012; Ryan, Bernstein, & Brown, 2010). For example, previous findings have shown that individuals who experience low satisfaction or support for their basic psychological needs display more physiological arousal in response to external stressors exhibited by elevated blood pressure (Weinstein et al., 2016b) and higher cortisol levels (Quested et al., 2011). Although previous findings demonstrate the potential protective benefits of psychological need satisfaction for physical health, they do not address the likely reciprocal effects of physical functioning on psychological need experiences. In other words, psychological need frustration may not only obstruct the effective regulation of physical needs; the deprivation of physical needs may also interfere with the optimal regulation of psychological needs. Ideally, to achieve a richer and more comprehensive understanding of individuals' health and well-being, the fulfillment of both psychological needs and physical needs should be considered together, as an exclusive focus on either one is incomplete.

Recent advancements within the SDT literature include burgeoning evidence that basic psychological needs and physical needs are dynamically and reciprocally related. In the remainder of this chapter we focus on the interplay between psychological needs and the *physical need for sleep,* in part because sleep has been perhaps most rigorously examined within the SDT literature (Campbell, 2017). We discuss three specific research lines that have been pursued in this nascent literature. First, we review recent work that examined whether psychological need-based experiences relate to diverse sleep outcomes, thereby focusing on between- and within-person differences. Second, we describe evidence for the reciprocal effect of sleep on psychological need-based experiences. Third, we discuss evidence for intervening mechanisms that help to explain these associations (see Figure 37.1 for an overview).

## The Role of Psychological Need-Based Experiences in Sleep

Initial evidence for an association between basic psychological needs and indicators of sleep was provided by a cross-sectional study among a community sample of adults. Findings from this study indicated that people who experienced less psychological need satisfaction during the past month reported poorer subjective sleep quality and somewhat longer sleep duration (Campbell et al., 2015). Similar findings were observed in a cross-sectional study among HIV-positive individuals with experiences of psychological need satisfaction relating to better self-reported sleep quality, which, in turn, related to better physical and mental health (Campbell et al., 2019). Together, these studies indicate that between-person differences in psychological need satisfaction are associated with subjective sleep outcomes in both nonclinical and clinical samples. Yet the strength of
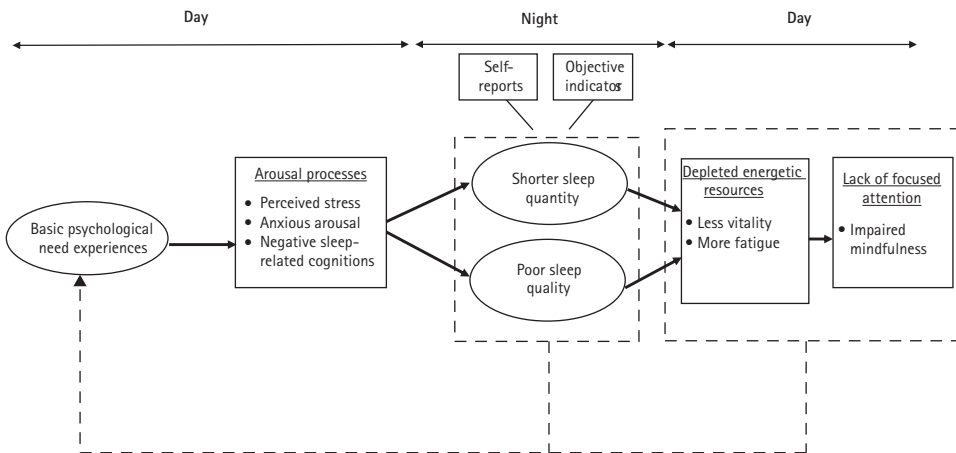
**Figure 37.1** Overview of the interplay between basic psychological needs and the physical need for sleep

the psychological need–sleep association appears to be dependent on the sleep outcome under investigation, with perceived sleep quality being more strongly predicted than sleep quantity (i.e., number of hours asleep).

Most individuals go through periods in life when they struggle to sleep and experience poor sleep quality. Various studies have provided evidence for such within-person fluctuations in sleep (e.g., Campbell, Vansteenkiste et al., 2018; Campbell, Soenens, Beyers et al., 2018; Howell & Sweeny, 2019; Campbell et al., 2021), with fluctuations in psychological need-based experiences relating to these moment-to-moment differences. For example, a short-term longitudinal study assessed emerging adults' psychological need-based experiences, sleep, and daytime functioning weekly as they prepared for exams, during the exam period, and afterward during their summer vacation (Campbell, Soenens, Beyers et al., 2018). As expected, significant mean-level changes were detected with participants' psychological need-based experiences, sleep, and daytime functioning deteriorating during the exam period and then recovering beyond initial levels when it was over. Holiday periods of course provide an ideal opportunity to replenish one's psychological needs, thereby enhancing one's energy levels. Correlated change analyses further indicated that students' psychological need-based experiences and sleep evolved in tandem: as participants' need-based experiences worsened during the exam period, their sleep quality and daytime functioning deteriorated, whereas subsequent increases in psychological need satisfaction following the exam period were accompanied by improvements in sleep quality and daytime functioning. Similar to the cross-sectional work, the association between changes in psychological need-based experiences and changes in sleep quantity across each transition was less robust.

A short-term longitudinal study of law graduates examined participants' psychological need-based experiences and sleep disruption as they awaited uncertain news (i.e., the result of their performance on the California bar exam; Howell & Sweeny, 2019).

Findings similarly indicated that within-person fluctuations in psychological need satisfaction co-varied with self-reported sleep disruption throughout this stressful period. In addition, graduates who experienced greater psychological need satisfaction relative to their peers also reported less sleep disruption on average throughout the waiting period. More recently, another short-term longitudinal study with a heterogeneous sample of more than 5,000 adults similarly examined the psychological need–sleep association during a particularly uncertain and destabilizing time, namely the initial phase of the COVID-19 pandemic in Belgium (Vermote et al., 2021). Results indicated that Belgian citizens who experienced more psychological need frustration during the first 10 days of lockdown also reported a reduction in sleep quality one week later, an effect that emerged even after controlling for differences in socio-demographic characteristics and worry throughout this uncertain period. Overall, these studies suggest that bolstering psychological need satisfaction during stressful and uncertain times may help to minimize interference with the effective regulation of good-quality sleep.

Psychological need-based experiences not only play a role in periodic variations in sleep; they have also been shown to co-vary with sleep-related outcomes from day to day. An advantage of diary methodology is that it allows for an examination of daily experiences as they occur in participants' own natural environment, thereby increasing the ecological validity of findings (Iida et al., 2012). One such diary study conducted among individuals with chronic fatigue syndrome (CFS; Campbell, Vansteenkiste et al., 2018), a patient group that commonly suffers from sleep disturbance (Nisenbaum et al., 2003), demonstrated that on days they experienced higher frustration of their psychological needs, rather than low need satisfaction, they also reported poorer daily sleep quality. Findings from another diary study among adolescents further indicated the day-to-day association between psychological need frustration and sleep was not limited to self-reported sleep outcomes but also extended to an objective quantitative indicator of sleep, namely sleep quantity assessed by wrist actigraphy (Campbell et al., 2021).

Other studies have demonstrated that psychological need-based experiences even predict sleep outcomes over much longer time intervals. For example, after controlling for a comprehensive range of possible confounding variables, findings from a longitudinal study among university students indicated that higher psychological need satisfaction predicted longer self-reported weekday sleep duration and better subjective sleep quality across two university semesters (Tavernier, Hill, & Adrien, 2019). Remarkably, results from another large-scale longitudinal study examining a nationwide sample of more than 3,000 individuals in the USA revealed that the frustration of psychological needs even predicted poorer self-reported sleep quality two years later (Uysal, Aykutoglu, & Ascigil, 2020). This effect was observed after accounting for a diverse range of socio-demographic and health-related factors.

In sum, studies using cross-sectional, longitudinal, and diary designs have provided evidence that basic psychological need-based experiences relate to self-reported and

objective indicators of sleep, at both the between- and within-person level in diverse nonclinical (i.e., adolescents, emerging adults, and adults) and clinical (i.e., HIV, CFS patients) samples. These findings provide further evidence for the robust effects of basic psychological needs by demonstrating their role in regulating the critical human need for sleep. Interestingly, the findings observed in clinical samples indicate that psychological need-based experiences even play a role in the sleep of individuals who suffer from impoverished physical functioning. This is important to note because one might argue that in these clinical groups, impoverished physical functioning may dominate so heavily that psychological factors make no difference to physical health. These results speak against this idea as it seems that even among individuals who suffer from sleep disturbance, depleted energy, and compromised physical health, basic psychological needs still contribute to physical well-being, thereby further testifying to the universal character of SDT's needs.

Overall, previous findings not only demonstrated that people who experienced less satisfaction of their psychological needs for autonomy, competence, and relatedness reported worse sleep quality but also indicated that on days and weeks that people experienced more frustration of these psychological needs they reported poorer sleep quality than usual. However, these previous studies had some limitations that could be addressed in future research. Although a variety of study designs were used to examine the role of psychological need-based experiences in predicting sleep, all of these methods produced findings that are essentially correlational in nature, precluding conclusions about the direction of effects. To address this, experimental work is needed to infer whether psychological need frustration precedes rather than follows from poor sleep. For example, future experimental research could examine the impact of inducing feelings of psychological need satisfaction or frustration before bedtime (e.g., Weinstein, Khabbaz, & Legate, 2016a) on subsequent quality and quantity of sleep at night. Moreover, although some previous studies included an objective assessment of sleep, others assessed sleep only using self-reports, which may have inflated some of the observed associations due to shared method variance. Ideally, any future studies would use a combination of subjective and objective methods, such as wrist actigraphy (Sadeh, 2011) or polysomnography (Iber et al., 2007), to assess sleep and also include a more diverse set of qualitative and quantitative sleep indicators.

## Reciprocal Associations between Psychological Need Experiences and Sleep

While the focus in the previous section was on the role of psychological need-based experiences in predicting sleep-related outcomes, abundant research (e.g., Fuligni & Hardway, 2006; Galambos, Dalton, & Maggs, 2009) indicates that the quality and quantity of people's sleep at night also contributes to psychological functioning the following day. This suggests that the psychological need–sleep association is unlikely to be a one-way street. Within the SDT literature this issue of reciprocity has recently been examined in

two types of studies: diary studies and experimental studies. While diary studies allow for an examination of the *reciprocal* relation between daily psychological need-based experiences and sleep at night, experimental studies allow for stricter inferences about the actual *causal* association between sleep and daily psychological need-based functioning.

Three recent diary studies among nonclinical (Campbell et al., 2021) and clinical (Campbell, Vansteenkiste et al., 2018) samples examined whether quality and quantity of sleep at night contributes to day-to-day variation in daily psychological need-based experiences. Findings from a diary study among CFS patients indicated that poorer subjective sleep quality at night was associated with less daily psychological need satisfaction and more daily need frustration the following day (Campbell, Vansteenkiste et al., 2018). However, day-to-day variation in self-reported sleep quantity was unrelated to next-day psychological need experiences. These reciprocal dynamics were further examined in two other diary studies among adolescents (Campbell et al., 2021). Findings from the first diary study indicated that longer self-reported sleep latency (i.e., time taken to fall asleep) and shorter sleep duration were related to more psychological need frustration the following day. The second diary study also found that poorer subjective sleep quality was associated with more need frustration the next day; yet day-to-day variability in quantitative sleep indicators, this time assessed objectively via actigraphy, was unrelated to next-day need experiences. Overall, these studies provide evidence for the reciprocal relation between self-reported sleep indicators and daily psychological need-based experiences, although more research is needed to replicate prior work and shed light on the variability in the observed effects across studies.

While the diary studies examined the relation between *naturally occurring* day-to-day variation in quality and quantity of sleep and psychological need-based experiences the following day, an experimental study among healthy adults examined the effect of *experimentally induced* sleep debt (Campbell, Soenens, Weinstein et al., 2018). A limitation of the diary studies is that they could not exclude the possibility that a third, unmeasured variable may account for the association between sleep and psychological need-based experiences. Moreover, the day-to-day variation in sleep quantity in the diary studies may have been too limited to have a robust effect on people's psychological need-based experiences the next day. The experimental study addressed these caveats by applying a strict randomization procedure, thereby limiting the possibility for a third variable to confound the results. Rather than examining the role of both qualitative and quantitative sleep indicators, the experimental study involved a reduction in the *quantity* of individuals' sleep. Specifically, in the experimental study participants were required to restrict their sleep to five hours or less per night for three consecutive nights.

Results revealed that although participants reported significantly increased fatigue after one night of sleep restriction, it took three consecutive nights of sleep debt before they reported reduced psychological need satisfaction. These findings suggest that for sleep debt to have an effect on individuals' psychological need-based functioning, it may need

to be deprived below a certain level (i.e., less than five hours of sleep a night) and accumulated across days. Notably, for participants to experience their psychological needs as being frustrated rather than merely dissatisfied, the sleep deprivation may need to be more extreme (e.g., less than four hours of sleep) and prolonged across more days, an issue that could be explored in future work. Moreover, given that the findings from diary studies indicated that daily variation in sleep quality, rather than sleep quantity, was more consistently predictive of next-day psychological need experiences, future experimental research could examine whether manipulating sleep quality has a more pronounced effect on psychological need-based functioning. This could be achieved, for example, by interrupting participants' sleep at regular intervals throughout the night (e.g., Finan, Quartana, & Smith, 2015) and examining the effect on next-day psychological need-based functioning.

These recent findings provide initial evidence that basic psychological need-based experiences and the physical need for sleep are reciprocally related. The deprivation of the physical need for sleep may constitute a threat for psychological need satisfaction, whereas psychological need frustration is likely to interfere with the fulfillment of the physical need for sleep. Given this evidence for reciprocity, one question that arises is whether both types of needs independently or synergistically contribute to individuals' well-being. Interestingly, results from a cross-sectional study among people living with HIV (Campbell et al., 2019) indicated that, when psychological need satisfaction and sleep quality were entered simultaneously in the prediction of well-being, both variables yielded a unique association with mental health. This finding provides some preliminary evidence that psychological need satisfaction and sleep quality play distinct contributory roles in people's psychological well-being.

## Toward a Deeper Understanding of the Psychological Needs–Sleep Relation: Intervening Mechanisms

Several studies have shed light on variables that intervene in the reciprocal relations between psychological need-based experiences and sleep. Within the field of sleep medicine, theories of chronic sleep disturbance (e.g., Espie et al., 2006; Harvey, 2002; Riemann et al., 2010) posit that dysfunctional cognitive and somatic arousal processes play a critical role in the precipitation and maintenance of poor sleep. Drawing from these theories, SDT-based studies have examined the intervening role of anxious arousal or symptoms of stress (e.g., tension and difficulty relaxing), as well as negative sleep-related thoughts (i.e., ruminating about the consequences of not getting enough sleep) in the association between psychological need-based experiences and sleep indicators (see Figure 37.1).

The first study to shed light on the explanatory role of symptoms of stress in the need-sleep association was the study we previously reviewed of university students facing an examination period (Campbell, Soenens, Beyers et al., 2018). In this study, the finding that an increase in psychological need frustration as participants entered the exam period was accompanied by a deterioration in sleep quality was completely explained by an

increase in symptoms of stress during this transition. Further evidence for the explanatory role of stress was provided by a diary study among adolescents (Campbell et al., 2021). Specifically, results indicated that on days that adolescents experienced more daily psychological need frustration, they also reported higher daily symptoms of stress, which in turn contributed to poorer daily sleep quality and shorter objective sleep quantity (assessed via actigraphy). The large-scale study conducted by Uysal and colleagues (2020) similarly demonstrated that psychological need frustration predicted both poorer subjective and objective sleep outcomes two years later, through (i.e., accounted for by) anxious arousal (e.g., symptoms of anxiety such as shaky hands or pounding heart). These findings extend previous work on the role of psychological need-based experiences in stress reactivity (for an overview, see Weinstein & Ryan, 2011) by further demonstrating that need frustration confers risk for a maladaptive pattern of symptoms of stress and anxiety and subsequent sleep disturbance.

Although stress and anxious arousal are often experienced throughout the day, other mechanisms may be more at play directly before people fall asleep, and may therefore be more proximally related to sleep. A prospective study examined the explanatory role of negative sleep-related cognitions (Fichten et al., 1998), which were reported by a group of individuals with unexplained chronic fatigue upon awakening after spending one night in a sleep laboratory (Campbell et al., 2017). Despite the different study design and sample, the results largely mirror the pattern of associations observed in other studies. Specifically, psychological need frustration during the past week, rather than low need satisfaction, related to higher symptoms of stress during the same week and, subsequently, more negative sleep-related cognitions before falling asleep in a sleep laboratory. These negative sleep-related cognitions, in turn, related to poorer subjective and objective sleep outcomes, the latter of which were assessed by polysomnography.

A few studies have also identified intervening variables that help to explain why poor sleep interferes with daily need-based experiences. For example, three previous diary studies (Campbell, Vansteenkiste et al., 2018; Campbell et al., 2021) found that poorer sleep at night was associated with higher fatigue the following day, which related to lower psychological need satisfaction and higher need frustration throughout the same day. Furthermore, in the experimental sleep deprivation study, in addition to participants reporting reduced psychological need satisfaction after three days of sleep restriction, they also reported an impaired capacity to be mindful (Campbell, Soenens, Weinstein et al., 2018). Findings from an integrated model examining within-person change using latent change models indicated that increased fatigue and subsequent impaired mindful attention completely explained why participants reported reduced psychological need satisfaction after three days of sleep deprivation (Campbell, Soenens, Weinstein et al., 2018). Together, these results suggest that following poor sleep, people may struggle to effectively engage in, seek out, or respond to opportunities for psychological need satisfaction due to both a lack of energy and impaired present-moment awareness.

To summarize, recent research indicates that the pathways through which basic psychological needs and sleep reciprocally relate to one another are different, with cognitive and somatic arousal processes explaining why need frustration obstructs sleep at night, and higher daily fatigue and impaired mindful attention explaining why poor sleep at night interferes with psychological need experiences (see Figure 37.1). However, an important limitation of previous studies is that intervening mechanisms were assessed using self-reports, which may have inflated the observed associations due to shared method variance. Future studies could try to overcome this problem by using objective methods to assess explanatory mechanisms. For example, saliva samples could be collected to measure levels of the stress hormone cortisol (e.g., Sladek & Doane, 2015), and pre-sleep thoughts could be measured objectively by asking participants to place a tape recorder on their bedside table and say aloud whatever is going through their mind when they have difficulty falling asleep (e.g., Wicklow & Espie, 2000). Future studies could also assess negative pre-sleep thoughts more broadly rather than focusing solely on sleep-related negative thoughts, which may also be rooted in experiences of stress and psychological need frustration.

In addition to a deeper exploration of intervening mechanisms, future research could also examine potential moderators of the reciprocal psychological need–sleep association. For example, given that (a) higher trait mindfulness has been shown to relate to better sleep quality via need satisfaction (Campbell et al., 2015, 2019) and (b) sleep deprivation reduces psychological need satisfaction via impaired mindfulness (Campbell et al., 2015), one possibility is that the psychological need frustration–poor sleep relation (and vice versa) may be attenuated in individuals who are generally more mindful (e.g., Visser et al., 2015). Rather than responding in a dysfunctional way to need-frustrating experiences, individuals higher in dispositional mindfulness may respond more adaptively (e.g., Weinstein, Brown, & Ryan, 2009), thereby eliciting less stress and fewer negative pre-sleep cognitions. Mindfulness may also play a protective role in the poor sleep-need frustration association, as the enhanced awareness typical of mindful individuals may result in more acceptance of poor sleep, perhaps eliciting less daytime dysfunction. As a result, individuals higher in dispositional mindfulness may be more capable of effectively selecting and engaging in need-satisfying activities after a poor night's sleep.

**Implications of Sleep Research for Research on Other Physical Needs**

SDT-based sleep research provides preliminary evidence that basic psychological and physical needs can reciprocally influence one another. Given the fundamental importance of both types of needs for health and well-being, longitudinal or experimental research is needed to further explore whether the reciprocal dynamics observed in sleep research also extend to other fundamental physical needs (e.g., for food, environmental or financial safety/security). Although several previous studies have examined associations between basic psychological needs and *eating regulation* (Boone et al., 2014; Pelletier & Dion, 2007; Verstuyf et al., 2013), *sex* (Brunell & Webster, 2013; Smith, 2007), and the *need for*

*safety* (e.g., Chen et al., 2015; Rasskazova et al., 2016; Tay & Diener, 2011), a more in-depth investigation of the interplay with these and other physical needs is warranted. This would enable exploration of whether the observed reciprocal associations in sleep research are (dis)similar across different physical needs. Ideally, future research on this topic would adopt a multimethod approach and seek to identify underlying mechanisms as well as potential moderators of the association between physical and psychological needs.

Assuming the fulfillment of both physical and psychological needs is important for healthy functioning, future research could also continue to examine (a) the independent contributions of both types of needs to indicators of well-being and optimal functioning and (b) whether the effect of psychological need satisfaction on wellness is dependent on the fulfillment of diverse physical needs (moderation). Some cross-sectional studies have already begun to address this issue by demonstrating both psychological need satisfaction and environmental/financial security to yield unique associations with well-being (Chen et al., 2015; Rasskazova et al., 2016; Tay & Diener 2011), even among individuals living in physically unsafe and economically deprived environments (Chen et al., 2015). Of note, these associations were not moderated by perceived safety/security (Chen et al., 2015; Rasskazova et al., 2016), suggesting that the effect of psychological need satisfaction on well-being was not dependent on people's level of perceived safety. Another cross-sectional study similarly demonstrated that resource scarcity (i.e., lack of food, lack of clean water, low household income) did not moderate the association between psychological need satisfaction and higher self-esteem in adolescent girls living in rural Malawi (Van Egmond et al., 2020). Together, these studies suggest that the satisfaction of basic psychological needs even contributes to well-being among individuals living in impoverished cultures where basic physical needs are not met. Yet, future research is needed to further explore the unique and interactive effects of psychological need-based experiences and a variety of physical needs on diverse indicators of healthy functioning using multiwave longitudinal designs.

The fulfillment of physical needs may also help to explain, in part, the robust effects of psychological need satisfaction on well-being (Ryan & Deci, 2017; Vansteenkiste & Ryan, 2013), with both sets of needs thus forming a mediational sequence. SDT-based sleep research provided some evidence to support this by demonstrating that sleep quality partially accounts for the association between psychological need satisfaction and better mental well-being in people living with HIV (Campbell et al., 2019). Conversely, given the potential reciprocity between both types of needs, the reverse is equally plausible, namely that psychological need satisfaction may be a key mechanism through which physical need fulfillment contributes to health and wellness. Supporting this, some studies have found psychological need satisfaction mediates associations between financial security/income inequality and indicators of well-being (Di Domenico & Fournier, 2014; Rasskazova et al., 2016). A study by Dupuis and Newby-Clark (2016) also found that participants who experienced experimentally induced economic threat, compared to those

in a no-threat condition, reported less autonomy and competence satisfaction, which, in turn, undermined their well-being. Thus, there is some evidence to suggest that physical need fulfilment may lay the groundwork for psychological need satisfaction, and vice versa, both of which subsequently predict well-being.

Future research should continue to explore these dynamics to draw a more complete picture of the interplay between psychological and physical needs in the prediction of well-being. We hope the evidence reviewed in this chapter and suggested directions for future research will inspire further endeavors in this area to advance our understanding of the conjoint role of basic psychological and physical needs in health and well-being.

## References

Baum, K. T., Desai, A., Field, J., Miller, L. E., Rausch, J., & Beebe, D. W. (2014). Sleep restriction worsens mood and emotion regulation in adolescents. *Journal of Child Psychology and Psychiatry*, *55*(*2*), 180–190.

Boone, L., Vansteenkiste, M., Soenens, B., Van der Kaap-Deeder, J., & Verstuyf, J. (2014). Self-critical perfectionism and binge eating symptoms: A longitudinal test of the intervening role of psychological need frustration. *Journal of Counseling Psychology*, *61*(3), 363–373.

Brunell, A. B., & Webster, G. D. (2013). Self-determination and sexual experience in dating relationships. *Personality and Social Psychology Bulletin*, *39*(7), 979–987.

Campbell, R. (2017). *Basic psychological needs and sleep: A multi-method inquiry into their relation and underlying mechanisms in non-clinical and clinical samples*. Unpublished manuscript. Ghent University, Faculty of Psychology and Educational Sciences.

Campbell, R., Soenens, B., Beyers, W., & Vansteenkiste, M. (2018). University students' sleep during an exam period: The role of basic psychological needs and stress. *Motivation and Emotion, 42*(6), 671–681.

Campbell, R., Soenens, B., Weinstein, N., & Vansteenkiste, M. (2018). Impact of partial sleep deprivation on psychological functioning: Effects on mindfulness and basic psychological need satisfaction. *Mindfulness*, *9*(4), 1123–1133.

Campbell, R., Tobback, E., Delesie, L., Vogelaers, D., Mariman, A., & Vansteenkiste, M. (2017). Basic psychological need experiences, fatigue, and sleep in individuals with unexplained chronic fatigue. *Stress & Health*, *33*(5), 645–655.

Campbell, R., Vansteenkiste, M., Delesie, L. M., Mariman, A. N., Soenens, B., Tobback, E., Van der Kaap-Deeder, J., & Vogelaers, D. P. (2015). Examining the role of psychological need satisfaction in sleep: A self-determination theory perspective. *Personality and Individual Differences*, *77*, 199–204.

Campbell, R., Vansteenkiste, M., Delesie, L. M., Soenens, B., Tobback, E., Vogelaers, D., & Mariman, A. (2019). The role of psychological need satisfaction, sleep, and mindfulness in the health related quality of life of people living with HIV. *Journal of Health Psychology*, *24*(4), 535–545.

Campbell, R., Vansteenkiste, M., Delesie, L., Tobback, E., Mariman, A., & Vogelaers, D. (2018). Reciprocal associations between daily need-based experiences, energy, and sleep in chronic fatigue syndrome. *Health Psychology*, *37*(12), 1168–1178.

Campbell, R., Vansteenkiste, M., Soenens, S., Vandenkerckhove, B., & Mouratidis, A. (2021). Toward a better understanding of the reciprocal relations between adolescent psychological need experiences and sleep. *Personality and Social Psychology Bulletin*, *47*(3), 377–394.

Chattu, V. K., Manzar, M. D., Kumary, S., Burman, D., Spence, D. W., & Pandi-Perumal, S. R. (2018). The global problem of insufficient sleep and its serious public health implications. *Healthcare*, *7*(1), 1.

Chen, B., Van Assche, J., Vansteenkiste, M., Soenens, B., & Beyers, W. (2015). Does psychological need satisfaction matter when environmental or financial safety are at risk? *Journal of Happiness Studies*, *16*(3), 745–766.

Di Domenico, S. I., & Fournier, M. A. (2014). Socioeconomic status, income inequality, and health complaints: A basic psychological needs perspective. *Social Indicators Research, 119*(3), 1679–1697.

Dupuis, D. R., & Newby-Clark, I. R. (2016). Economic threat undermines the satisfaction of psychological needs for competence and autonomy. *Journal of Applied Social Psychology*, *46*(2), 94–104.

Espie, C. A., Broomfield, N. M., MacMahon, K. M., Macphee, L. M., & Taylor, L. M. (2006). The attention-intention-effort pathway in the development of psychophysiologic insomnia: A theoretical review. *Sleep Medicine Reviews*, *10*(4), 215–243.

Fichten, C. S., Libman, E., Creti, L., Amsel, R., Tagalakis, V., & Brender, W. (1998). Thoughts during awake times in older good and poorer sleepers: The self-statement test: 60+. *Cognitive Therapy and Research, 22*(1), 1–20.

Finan, P. H., Quartana, P. J., & Smith, M. T. (2015). The effects of sleep continuity disruption on positive mood and sleep architecture in healthy adults. *Sleep, 38*(11), 1735–1742.

Ford, E. S., Cunningham, T. J., & Croft, J. B. (2015). Trends in self-reported sleep duration among US adults from 1985 to 2012. *Sleep, 38*(5), 829–832.

Fuligni, A. J., & Hardway, C. (2006). Daily variation in adolescents' sleep, activities, and psychological well-being. *Journal of Research on Adolescence, 16*(3), 353–377.

Galambos, N. L., Dalton, A. L., & Maggs, J. L. (2009). Losing sleep over it: Daily variation in sleep quantity and quality in Canadian students' first semester of university. *Journal of Research on Adolescence, 19*(4), 741–761.

Gradisar, M., Gardner, G., & Dohnt, H. (2011). Recent worldwide sleep patterns and problems during adolescence: A review and meta-analysis of age, region, and sleep. *Sleep Medicine*, *12*(2), 110–118.

Harvey, A. G. (2002). A cognitive model of insomnia. *Behavior Research and Therapy*, *40*(8), 869–893.

Harvey, A. G., Murray, G., Chandler, R. A., & Soehner, A. (2011). Sleep disturbance as transdiagnostic: Consideration of neurobiological mechanisms. *Clinical Psychology Review, 31*(2), 225–235.

Howell, J. L., & Sweeny, K. (2019). Fulfilling psychological needs predicts less sleep disruption and worry while awaiting uncertain news. *Stress and Health*, *35*(3), 277–288.

Hull, C. L. (1943). *Principles of behaviour*. Appleton-Century-Crofts.

Iber, C., Ancoli-Israel, S., Chesson, A. L., & Quan, S. F. (2007). *The AASM manual for the scoring of sleep and associated events: Rules, terminology and technical specifications*. ASSM.

Iida, M., Shrout, P. E., Laurenceau, J.-P., & Bolger, N. (2012). Using diary methods in psychological research. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol. 1: Foundations, planning, measures, and psychometrics* (pp. 277–305). American Psychological Association.

Jones, J. (2013). In U.S., 40% get less than recommended amount of sleep. Gallup, December 5–8. Retrieved from: http://www.gallup.com/poll/166553/less-recommended-amount-sleep.aspx

Lund, H. G., Reider, B. D., Whiting, A. B., & Prichard, J. R. (2010). Sleep patterns and predictors of disturbed sleep in a large population of college students. *Journal of Adolescent Health, 46*(2), 124–132.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*, 370–396.

Nisenbaum, R., Jones, J. F., Unger, E. R., Reyes, M., & Reeves, W. C. (2003). A population-based study of the clinical course of chronic fatigue syndrome. *Health and Quality of Life Outcomes*, *1*, 49.

Ng, J. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-Determination Theory Applied to Health Contexts: A Meta-Analysis. Perspe*ctives on psychological science*: a journal of the Association for Psychological Science, 7(4), 325–340.

Pelletier, L., & Dion, S. C. (2007). An examination of general and specific motivational mechanisms for the relations between body dissatisfaction and eating behaviors. *Journal of Social and Clinical Psychology*, *26*(3), 303–333.

Pigeon, W. R., & Perlis, M. L. (2007). Insomnia and depression: Birds of a feather? *International Journal of Sleep Disorders, 1*(3), 82–91.

Pires, G. N., Bezerra, A. G., Tufik, S., & Andersen, M. L. (2016). Effects of acute sleep deprivation on state anxiety levels: a systematic review and meta-analysis. *Sleep Medicine, 24*, 109–118.

Poh, J. H., Chong, P. L. H., & Chee, M. W. L. (2016). Sleepless night, restless mind: Effects of sleep deprivation on mind wandering. *Journal of Experimental Psychology: General, 145*(10), 1312–1318.

Quested, E., Bosch, J. A., Burns, V. E., Cumming, J., Ntoumanis, N., & Duda, J. L. (2011). Basic psychological need satisfaction, stress-related appraisals, and dancers' cortisol and anxiety responses. *Journal of Sport and Exercise Psychology*, *33*(6), 828–846.

Rasskazova, E., Ivanova, T., & Sheldon, K. (2016). Comparing the effects of low-level and high-level worker need-satisfaction: A synthesis of the self-determination and Maslow need theories. *Motivation and Emotion*, *40*(4), 541–555.

Riemann, D., Spiegelharder, K., Feige, B., Volderholzer, U., Berger, M., Perlis, M., & Nissen, C. (2010). The hyperarousal model of insomnia: A review of the concept and its evidence. *Sleep Medicine Reviews*, *14*(1), 19–31.

Rodriguez-Meirinhos, A., Antolin-Suarez, L., Brenning, K., Vansteenkiste, M., & Oliva, A. (2020). A bright and a dark path to adolescents' functioning: The role of need satisfaction and need frustration across gender, age, and socioeconomic status. *Journal of Happiness Studies*, *21*, 95–116.

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality, 63*(3), 397–427.

Ryan, R. M., Bernstein, J. H., & Brown, K. W. (2010) Weekends, work, and well-being: Psychological need satisfactions and day of the week effects on mood, vitality and physical symptoms. *Journal of Social and Clinical Psychology, 29*(1), 95–122.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., Deci, E. L., & Vansteenkiste, M. (2016). Autonomy and autonomy disturbances in self-development and psychopathology: Research on motivation, attachment, and clinical process. In D. Cicchetti (Ed.), *Developmental psychopathology* (3rd ed., pp. 1–54). John Wiley & Sons.

Sadeh, A. (2011). The role and validity of actigraphy in sleep medicine: An update. *Sleep Medicine Reviews, 15*(4), 259–267.

Sladek, M. R., & Doane, L. D. (2015). Daily diary reports of social connection, objective sleep, and the cortisol awakening response during adolescents' first year of college. *Journal of Youth and Adolescence, 44*(2), 298–316.

Smith, C. V. (2007). In pursuit of "good" sex: Self-determination and the sexual experience. *Journal of Social and Personal Relationships*, *24*(1), 69–85.

Tavernier, R., Hill, G. C., & Adrien, T. V. (2019). Be well, sleep well: An examination of directionality between basic psychological needs and subjective sleep among emerging adults at university. *Sleep Health, 5*(3), 288–297.

Tay, L., & Diener, E. (2011). Needs and subjective well-being around the world. Journal of personality and social psychology, 101(2), 354–365.

Uysal, A., Aykutoglu, B., & Ascigil, E. (2020). Basic psychological need frustration and health: Prospective associations with sleep quality and cholesterol. *Motivation and Emotion*, *44*, 209–225.

Van Egmond, M. C., Omarshah, T., Berges, A. N., Benton, J., Zalira, U., & Morrell, F. (2020). The relationship between caregivers' gender equality norms and girls' need satisfaction and selfesteem under conditions of resource scarcity, *Motivation and Emotion*, *44,*257–269. https://doi.org/10.1007/s11031-019-09808-3.

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. Journal of Psychotherapy Integration, 23(3), 263–280. https://doi.org/10.1037/a0032359

Vansteenkiste, M., Ryan, R., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion, 44*, 1–31.

Vermote, B., Waterschoot, J., Morbée, S., Van der Kaap-Deeder, J., Schrooyen C., Soenens, B., Ryan, R., & Vansteeniste, M. (2021). Do psychological needs play a role in times of uncertainty? Associations with well-being during the COVID-19 crisis. *Journal of Happiness Studies*, 23(*1*), 257–283. https://doi.org/10.1007/s10902-021-00398-x

Verstuyf, J., Vansteenkiste, M., Soenens, B., Boone, L., & Mouratidis, A. (2013). Daily ups and downs in women's binge eating symptoms: The role of basic psychological needs, general self-control and emotional eating. *Journal of Social and Clinical Psychology*, *32*(3), 335–361.

Visser, P. L., Hirsch, J. K., Brown, K. W., Ryan, R. M., & Moynihan, J. A. (2015). Components of sleep quality as mediators of the relation between mindfulness and vitality among older adults. *Mindfulness*, *6*(4), 723–731. doi:10.1007/s12671-014-0311-5.

Watson, N. F., Badr, M. S, Belenky, G., Bliwise, D. L., Buxton, O. M., Buysse, D., Dinges, D. F., Gangwisch, J., Grandner, M. A., Kushida, C., Malhotra, R. K., Martin, J. L., Patel, S. R., Quan, S. F., & Tasali, E. (2015). Recommended amount of sleep for a healthy adult: A joint consensus statement of the American Academy of Sleep Medicine and Sleep Research Society. *Sleep*, *38*(6), 843–844.

Weinstein, N., Brown, K. W., & Ryan, R.M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal of Research in Personality*, *43*(3), 374–385.

Weinstein, N., Khabbaz, F., & Legate, N. (2016a). Enhancing need satisfaction to reduce psychological distress in Syrian refugees. *Journal of Consulting and Clinical Psychology, 84*(7), 645–650.

Weinstein, N., Legate, N., Kumashiro, M., & Ryan, R. M. (2016b). Autonomy support and diastolic blood pressure: Long term effects and conflict navigation in romantic relationships. *Motivation and Emotion, 40*(2), 212–225.

Weinstein, N., & Ryan, R. M. (2011). A self-determination theory approach to understanding stress incursion and responses. *Stress and Health, 27*(1), 4–17.

Wicklow, A., & Espie, C. A. (2000). Intrusive thoughts and their relationship to actigraphic measurement of sleep: Towards a cognitive model of insomnia. *Behaviour Research and Therapy, 38*(7), 679–693.

# Clinical and Health Applications

# Facilitating Health Behavior Change: A Self-Determination Theory Perspective

Nikos Ntoumanis *and* Arlen C. Moller

## Abstract

Over the past decade, research applying self-determination theory (SDT) in the health domain has been prolific, arguably more so than in any other applied domain. This chapter reviews the evidence, both empirical and meta-analytic, on the application of SDT to promote health outcomes and behaviors. These behaviors range from simple and infrequent (e.g., receiving vaccinations) to complex behaviors repeated or abstained from over long periods of time (e.g., consuming healthy foods, engaging in physical activity, abstaining from smoking and excessive alcohol use). The chapter also reviews a recent classification system of motivation and behavior change techniques (MBCTs), and discusses the use of rewards to incentivize health behaviors and the significance of interventions shifting from in-person, face-to-face delivery to digital delivery formats. Numerous suggestions are offered for future theoretical and applied research, spanning conceptual, empirical, and methodological issues

**Key Words:** health behavior change, digital health, motivation and behavior change techniques, financial incentives, diet, physical activity, weight management, smoking, alcohol, medication adherence

The number of applied research studies guided by self-determination theory (SDT) has grown steadily over the past decade in multiple domains. Looking closer at this growth, a search on the Scopus database shows that SDT research outputs in almost all life domains have increased linearly in the years 2010–2019. Interestingly, the most prolific area of applied SDT research during the past decade has been "health," with 184 publications recorded in 2019 (when searching for "self-determination theory" and "health"), followed closely by "education" with 178 outputs. By comparison, the number of publications on SDT and "health" was 38 in 2009 and 84 in 2015. Adding other relevant search terms such as "exercise" increases the number of unique publications. This increase of about 484% in research outputs on SDT and "health" from 2010 to 2019 is not surprising.

To a large extent, it reflects a wider trend in the desire to understand and facilitate health behavior change in an era in human history when noncommunicable diseases (e.g., cardiovascular, cancer, respiratory, diabetes) are responsible for a growing proportion of

all deaths globally (in 2018 over 71%; World Health Organization, 2018). Health-related behaviors, such as smoking, consuming unhealthy diets and alcohol, and lack of sufficient physical activity (PA), increase the risk of dying from noncommunicable diseases and have consistently been the leading causes of preventable death, especially among wealthy postindustrialized countries, for several decades. Even in the midst of a historic global pandemic (i.e., COVID-19), motivating people to adopt critical health behaviors (i.e., receive COVID-19 vaccination) can be challenging. Thus, governments, health organizations, policymakers, scientists, and the public are all interested in understanding how to best support changes in a wide variety of health behaviors, ranging from those that are simple and infrequent (e.g., receive vaccinations) to behaviors that are complex and require sustained motivation engagement for long periods of time (e.g., follow a healthy diet).

In this chapter, we will review evidence on how SDT has been applied to promote behavior change in relation to some key health behaviors and outcomes. We will review evidence from empirical studies and from meta-analyses. We will also present a recent classification system of motivation and behavior change techniques that underpin SDT interventions in the health context. Also, given the increasing use of rewards to incentivize health behaviors and outcomes in the health psychology and behavioral medicine literature, we use SDT to review the conditions under which the use of such rewards can be beneficial or harmful. Presently, most SDT-guided interventions on health behaviors are delivered face-to-face, but the number of interventions delivered digitally via mobile phones/tablets/text messages or the internet (websites, emails) is on the rise. Such a trend is reflective of a wider trend in the medical and health behavior literatures toward using digital health interventions for increasing efficacy (behavior change under ideal or tightly controlled conditions), effectiveness (behavior change under messy, real-world conditions), reach (the number of people whose behavior can be changed), and theory testing (see Moller et al., 2017). We review applications of such technology (e.g., apps), as well as other novel digital technologies (e.g., virtual reality and social robotics) to facilitate SDT-informed interventions. We conclude the chapter by presenting suggestions for future theoretical and applied research on the applications of SDT in the health domain. In particular, we focus on how SDT can be used alongside other widely researched theoretical frameworks of behavior change to provide a more comprehensive understanding of the multitude of personal, social, policy, and environmental factors that influence the adoption and maintenance of health behaviors.

## Empirical and Meta-analytic Evidence on the Applications of SDT to Promote Health Behaviors and Outcomes

The first meta-analysis of the applications of SDT in the health domain by Ng et al. (2012) identified only 32 intervention studies. A few years later, the number of such studies increased substantially, resulting in three recent meta-analytic reviews which relied exclusively on evidence from experimental studies (Gillison et al., 2019, $k$ = 74;

Ntoumanis et al., 2021, *k* = 73; Sheeran et al., 2020, *k* = 65). These three reviews identified that physical activity is by far the most widely researched behavior in this field. Body weight/body fat is the most widely researched health outcome. Other, much less frequently targeted behaviors in such intervention work include diet, medication adherence, smoking abstinence, alcohol consumption, and dental hygiene behaviors. Physical health outcomes researched in this literature, in addition to body weight/fat, include physical fitness, regulation of blood glucose and blood lipid levels, dental health, and perceived health. Psychological health outcomes studied include general psychological well- and ill-being, quality of life, vitality, positive and negative affect, and self-esteem. In this section, we will briefly present some of the applications of SDT in the health domain. Given the volume of the undertaken work, we will limit our review to randomized controlled trials (RCTs) published primarily within the past five years from the writing of this chapter (end of 2020), giving priority to RCTs that included both behavior initiation and maintenance phases. We will also selectively highlight applications of SDT targeting a variety of key health behaviors and health outcomes. More detailed presentation of some of these applications can be found in other chapters in this *Handbook*, as well as in the aforementioned meta-analyses.

*Physical Activity*

Studies focusing on physical activity promotion have been carried out in a variety of community and clinical contexts. School physical education (PE) has been a widely popular context for some of these studies. For instance, Lonsdale et al. (2019) reported the findings from a cluster RCT in which 1,421 grade 8 students in Australia were randomly allocated to a SDT condition versus standard practice. This SDT-informed intervention trained the teachers (via workshops, online learning, implementation tasks, and mentoring sessions) to deliver lessons using need-supportive language, to maximize movement and skill development, and to reduce task transition time. The authors reported significant differences in students' moderate to vigorous physical activity during lessons (primary outcome) between the two arms, particularly for those who were taught by teachers with poorer behaviors at baseline (as rated by observers). These differences were small, though: +4 mins/lesson at postintervention (7–8 months after baseline) and +2 mins/lesson at the maintenance period (14–15 months). The intervention also significantly improved teacher behaviors (e.g., building competence, being supportive) and reduced students' sedentary time during PE lessons but had no effects on students' physical activity levels outside these lessons or on students' motivation. Students with lower autonomous motivation and relatedness and higher amotivation at baseline showed significant improvements from baseline to postintervention in terms of moderate to vigorous physical activity.

Other studies in schools have not been able to detect differences in physical activity. For instance, Jago et al. (2019) recruited 335 children ages 8 to 10 years from primary schools in England and trained teaching assistants to deliver an afterschool physical

activity program. Similar to Lonsdale et al. (2019), the teachers in the Jago et al. trial were trained to be need-supportive while providing opportunities for activity and skill development. The results of the trial showed no significant differences in any physical activity or motivation-related variable. Whether the differences in the findings with regard to physical activity between the two trials are due to the differences in expertise in those who were trained (or the context in which the intervention was applied) is unknown. Other community settings/population groups in which SDT interventions have been applied to promote physical activity include sport clubs, gyms, universities, workplaces, retirement homes, underserved populations, weight loss programs, and non-context-specific web-based interventions (1).

In clinical settings, physical activity has been targeted in RCTs delivered to physiotherapy patients and to patients with Type II diabetes, rheumatoid arthritis, cancer, asthma, or coronary artery disease. For instance, Fenton et al. (2021) reported the results of a RCT in which 115 U.K. patients with rheumatoid arthritis were randomly allocated to an intervention (one-to-one consultation with exercise advisor who was trained in need-supportive communication) or control (no consultation). The results of a structural equation modeling analysis showed that participants in the experimental arm reported significantly greater increases in autonomous motivation (from baseline to end of intervention at three months) and decreases in controlled motivation for physical activity. Increases in autonomous motivation (but not decreases in controlled motivation) predicted increases in moderate to vigorous physical activity and subjective vitality. However, there were no significant direct effects from the intervention on physical activity.

*Weight Management and/or Diet*
SDT has also been applied to promote weight management, psychological well-being, and positive body image in overweight and obese individuals. For instance, Kwasnicka et al. (2020) recruited 130 Australian men with a body mass index ≥ 28 kg/m$^2$ in a 12-week intervention which took place in the premises of two professional Australian football rules clubs. The intervention trained community coaches in the experimental arm to offer a nutrition, physical activity, and health-behavior change program using need-supportive language. The control group was provided standard information about nutrition and physical activity and did not participate in the 12-week program. The results showed significant differences between arms at the end of the intervention in terms of weight loss (primary outcome) of about 3.3 kg. Significant improvements were also reported in favor of the intervention group in terms of higher moderate to vigorous physical activity, lower high-fat foods and sugar consumption, and higher sleep quality, self-esteem, and psychological need satisfaction. However, there were no between-arm differences in terms of waist circumference, sedentary behavior, fruit/vegetable or alcohol consumption. Unfortunately, this study had a very short follow-up. In an earlier study based on SDT, Santos et al. (2015) examined predictors of three-year weight loss maintenance in 154 Portuguese women who

participated in an intensive (12-month) RCT. The authors found that women with poor body image but higher intrinsic motivation to exercise were more likely to maintain weight loss than women with poor body image and lower intrinsic motivation. Participants with high exercise autonomous motivation were three times more likely to have lost more than 10% of their weight than participants with lower autonomous motivation.

Diet-focused interventions have also been delivered in studies in which weight management is not a trial outcome. For instance, Nansel et al. (2015) reported the results of a family-based RCT to improve dietary quality in U.S. youth with Type I diabetes. This was a dyadic intervention (136 youth-parent dyads), with 66 dyads receiving dietary advice in nine in-clinic sessions (six core sessions during the first 7 months, three booster sessions during months 9–15) and 70 dyads not receiving such advice. The sessions were designed using principles of SDT as well as other self-regulation theories. The trial findings showed significant improvements at both the end of intervention and at a follow-up (18 months) in terms of dietary quality (e.g., consumption of whole grains, whole fruits, vegetables), but there were no between-arm differences in glycemic control (HbA1c).

### Alcohol and Tobacco Consumption

By comparison to other behavioral health targets, recent intervention studies on alcohol and tobacco consumption from a SDT perspective are relatively limited in numbers (although there are more studies based on motivational interviewing which have used SDT measures; such studies are not reviewed here). Caudwell, Mullan, & Hagger (2018) reported the results of an online RCT on alcohol consumption and alcohol-related harm in Australian undergraduate students ($n$ = 202). The students were randomly assigned to one of four intervention conditions in a 2 (autonomy support: present/absent) × 2 (implementation intention: present/absent) design. Participants received national guidelines on alcohol consumption and weekly SMS messages over a four-week period. The results showed no between-group differences; however, there were significant reductions across all groups over time in the alcohol-related outcome variables. Some of the limitations of this study were that it relied on self-reported measures and that the assessment period was rather brief for assessing sustained changes.

In terms of tobacco consumption, Williams and colleagues conducted a series of trials collectively known as the Smokers' Health Project. The first trial randomly assigned 1,006 U.S. smokers to one of two arms, SDT-informed or community care (Williams et al., 2006). The SDT-informed intervention met four times over six months with counselors trained to support autonomy and perceived competence for tobacco abstinence. Relative to community care, the SDT-informed intervention significantly increased 12-month prolonged tobacco abstinence. Williams et al. (2016) reported the results from the second Smokers' Health Project trial, which aimed to reduce tobacco dependence by randomly allocating U.S. smokers to one of three SDT arms. These were an intensive treatment arm (IT; $n$ = 172: 6-month intensive intervention with the goal to guide participants

toward autonomous decision-making about tobacco use, including not stopping smoking), extended need support arm ($n$ = 324: as IT but 12 months long), or a harm reduction arm ($n$ = 324: also provided need support and recommended medication use for participants who did not want to stop smoking completely within 30 days but who were willing to reduce their cigarette use by half). The results showed that the latter two conditions, which had more extensive intervention contact time, resulted in better two-month prolonged abstinence rates and use of first-line medication for smoking cessation. Hence, in the context of this study, the quantity of need support (in terms of attending additional sessions) seemed to make a difference in terms of the obtained outcomes.

A recently published RCT by Li and colleagues (2020) randomized 1,571 Chinese smokers, presenting at hospital emergency departments in Hong Kong, to a very brief SDT-based intervention (a one-minute discussion and provision of choice regarding their quit schedule) or psychoeducation control group (smoking cessation leaflets). At six months, the brief SDT-based intervention had higher biochemically validated abstinence rate (6.7% vs. 2.8%; assessed using both an exhaled carbon monoxide test and a saliva cotinine test).

### Dental Hygiene

Oral hygiene has bidirectional relations with systemic disease, including cardiovascular disease, stroke, respiratory infections, pancreatic cancer, diabetes, and dementia (Haumschild & Haumschild, 2009), yet many people struggle to adhere to behaviors that support dental and oral hygiene. To date, nearly all experimental studies to promote dental behaviors and dental/oral hygiene using SDT principles have been led by Anne Halvari and Hallgeir Halvari. For instance, Halvari et al. (2019) reported the results of a RCT in which 138 Norwegian patients at a dental clinic were randomly allocated to an experimental arm (their dental hygienist received SDT training on communication skills) or a control arm (no such training was offered). The results of a structural equation modeling analysis showed that patients in the intervention arm, compared to those in the control arm, reported greater autonomy support by their dental hygienist and had decreases in dental plaque and gingivitis over a 5.5 month period.

### Medication Adherence

Medication adherence is another highly consequential health behavior that many people struggle with. Adherence rates for prescribed medications vary considerably (depending on factors like age, disease, and methodology), but average estimates of adherence are low, about 40% to 50%. In the United States, it has been estimated that poor medication adherence results in nearly 125,000 deaths every year and 10% of hospital and 23% of nursing home admissions (Possidente, Bucci, & McClain, 2005). Recent SDT interventions to promote medication adherence are relatively rare. However, Williams et al.'s (2006) SDT-informed Smokers' Health Project increased medication adherence (+30.8%; average of 29.90 days) relative to a community care group (+15.8%; average

of 7.80 days). More recently, Vian et al. (2018) reported on an intervention to increase adherence to medication among 115 HIV-positive patients in China. The intervention used text reminders and need-supporting counseling over a six-month period; adherence was measured with a wireless pill container. The results showed significant (albeit small; $\beta=.07$) improvements in adherence in favor of the intervention arm, but these effects were not mediated by any SDT construct assessed in that study (i.e., autonomy support, competence, motivational regulations). A limitation of the study was that it recruited participants with high baseline values on adherence, competence, and identified regulation, thus creating ceiling effects.

## Meta-analytic Evidence

In the past two years, three meta-analyses have been published on the applications of SDT in the health domain. All three had some differences in their study eligibility criteria and tested similar as well as unique research questions. We will interpret the reported Hedge's $g$ effect sizes using Lovakov and Agadullina's (2021) empirically derived thresholds for Cohen's $d$, rather than Cohen's rules of thumb regarding $d$: small = 0.15; medium = 0.36; large = 0.65. (Note that Cohen's $d$ *and* Hedge's $g$ are almost identical when sample size is large.) Gillison et al. (2019) examined the effects of SDT-informed intervention studies on psychological need satisfaction and motivation as outcomes ($k$ = 74). The authors found that these studies had a large effect on perceived autonomy support (Hedge's $g$ = 0.84) and autonomy need satisfaction ($g$ = 0.81). The effects on competence need satisfaction ($g$ = 0.63) and autonomous motivation ($g$ = 0.41) were medium to large, whereas the effect on relatedness ($g$ = 0.28) was small to medium. It is noteworthy that the effects on controlled motivation and amotivation were not coded by the authors. The SDT techniques/strategies (e.g., acknowledging perspectives, providing rationale) used in the included studies were also individually coded; meta-regression analysis showed that these techniques had limited independent effect on the motivation-related outcomes. This finding led Gillison et al. to conclude that promoting need-supportive communication requires the application of multiple techniques. One of the limitations of this meta-analysis was that it did not examine the impact of SDT-informed interventions on health behaviors or health outcomes.

A more recent meta-analysis by Ntoumanis et al. (2021) addressed this limitation ($k$ = 73). This review showed that SDT-based interventions supported health behaviors relative to control groups. The effect size of this comparison was medium to large at the end of the intervention period ($g$ = 0.45) and small to medium at follow-up ($g$ = 0.28). The effects of SDT interventions on physical health (end of intervention: $g$ = 0.13; follow-up: $g$ = 0.25) and psychological health were small to medium (end of intervention: $g$ = 0.29; follow-up: $g$ = 0.14). The authors also reported effect sizes for motivation-related outcomes, which were generally smaller in size than those reported by Gillison et al. (2019); see Table 38.1. With regard to physical health, the observed effect at follow-up is important, given that benefits in many physical health outcomes require the sustainment of

**Table 38.1** Effect Sizes and Heterogeneity Tests for Changes in SDT Variables, Health Behaviors, and Health Outcomes Following Outlier Removal, as Reported in Ntoumanis et al. (2020) Meta-analysis

| | $k$ | $g$ | 95% CI | $p$ | $Q$ | $p$ | $I^2$ |
|---|---|---|---|---|---|---|---|
| 01a. Need support - End of intervention | 19 | 0.739 | 0.445, 1.033 | <.01 | 149.42 | <.01 | 88.0 |
| 01b. Need support - Follow-up | 6 | 1.129 | -0.351, 2.609 | .13 | 467.68 | <.01 | 98.9 |
| 02a. Competence - End of intervention | 20 | 0.267 | 0.100, 0.435 | <.01 | 90.30 | <.01 | 79.0 |
| 02b. Competence - Follow-up | 10 | 0.329 | 0.046, 0.611 | .02 | 58.08 | <.01 | 84.5 |
| 03a. Autonomy - End of intervention | 16 | 0.404 | 0.174, 0.633 | <.01 | 87.30 | <.01 | 82.8 |
| 03b. Autonomy - Follow-up | 6 | 0.250 | -0.013, 0.512 | .06 | 18.38 | <.01 | 72.8 |
| 04a. Relatedness - End of intervention | 13 | 0.242 | -0.008, 0.493 | .06 | 68.69 | <.01 | 82.5 |
| 04b. Relatedness - Follow-up | 6 | 0.027 | -0.199, 0.254 | .81 | 13.81 | .02 | 63.8 |
| 05a. Combined need satisfaction - End of intervention | 21 | 0.343 | 0.172, 0.514 | <.01 | 152.49 | <.01 | 86.9 |
| 05b. Combined need satisfaction - Follow-up | 10 | 0.276 | 0.037, 0.514 | .02 | 60.19 | <.01 | 85.0 |
| 06a. Autonomous motivation - End of intervention | 35 | 0.334 | 0.211, 0.457 | <.01 | 116.10 | <.01 | 70.7 |
| 06b. Autonomous motivation - Follow-up | 13 | 0.223 | 0.071, 0.375 | <.01 | 22.2 | .04 | 45.9 |
| 07a. Controlled motivation - End of intervention | 18 | 0.071 | -0.042, 0.184 | .22 | 30.01 | .03 | 43.4 |
| 07b. Controlled motivation - Follow-up | 6 | 0.017 | -0.239, 0.273 | .90 | 16.14 | <.01 | 69.0 |
| 08a. Amotivation - End of intervention | 13 | -0.074 | -0.257, 0.174 | .71 | 32.27 | <.01 | 62.8 |
| 08b. Amotivation - Follow-up | 5 | -0.255 | -0.535, 0.025 | .07 | 8.56 | .07 | 53.3 |
| 09a. Health behavior - End of intervention | 46 | 0.402 | 0.288, 0.515 | <.01 | 221.72 | <.01 | 79.7 |
| 09b. Health behavior - Follow-up | 27 | 0.267 | 0.163, 0.371 | <.01 | 72.90 | <.01 | 64.3 |
| 10a. Physical health - End of intervention | 15 | 0.130 | 0.003, 0.257 | .04 | 21.22 | .10 | 34.0 |
| 10b. Physical health - Follow-up | 13 | 0.245 | -0.012, 0.502 | .06 | 114.64 | <.01 | 89.5 |
| 11a. Psychological health - End of intervention | 22 | 0.294 | 0.135, 0.452 | <.01 | 78.00 | <.01 | 73.1 |
| 11b. Psychological health - Follow-up | 10 | 0.137 | -0.087, 0.361 | .23 | 36.71 | <.01 | 75.5 |

*Note.* $k$ = number of independent data sets, $g$ = Hedge's effect size, $Q$ and $I$ = homogeneity tests.

health behaviors over a long period of time. Increases in autonomous motivation and need support at the end of the intervention were associated with positive changes in health behaviors at the end of the intervention and at follow-up. Further, increases in autonomous motivation, relatedness, autonomy, and competence need satisfaction, and need support at the end of the intervention were positively associated with increases in psychological health (but not physical health). There was not a sufficient number of studies to examine these associations at intervention follow-up. Similar to Gillison et al. (2019), Ntoumanis et al. (2021) also coded the SDT techniques used in the included intervention studies. they also found no particularly strong pattern between specific SDT techniques and physical or psychological health. The two meta-analyses used their own custom-made classification system to code the SDT techniques used in the included interventions. The need for a standardized classification system of SDT-informed techniques has been recently addressed by Teixeira et al. (2020); see next section of this chapter for more details.

Ntoumanis et al. (2021) concluded that SDT-informed interventions positively affect indices of health, but these effects are modest and heterogeneous and are mainly driven by increases in self-determined motivation and need support from social agents. The authors also offered several directions for future research. These include the need to increase the number of intervention studies with (1) long-term follow-ups (six months), (2) other health behaviors besides physical activity, (3) health outcomes (not just motivation and health behaviors), (4) disease management focus (e.g., medication adherence among populations with specific chronic conditions) and not just primary prevention focus (e.g., promoting physical activity in the general population), and (5) measures of cost-effectiveness and comparative effectiveness with other healthcare interventions. We elaborate on some of these recommendations in the final section of our chapter.

Sheeran et al. (2020) too published a meta-analysis of SDT intervention studies in the health domain. Their reported average effect size from these studies on health behaviors was small to medium (Cohen's $d$ = 0.23); however, it reflected intervention effects at follow-up only, hence it is fairly similar to the effect size reported by Ntoumanis et al. (2021; $g$ = 0.28;with large sample sizes, $d$ and $g$ produce identical values). Using meta-analytic structural equation modeling, Sheeran et al. showed that autonomous motivation and perceived competence mediated intervention effects on health behaviors. However, both direct and indirect effects were small. The authors noted that the "intervention dose" of SDT interventions (e.g., contact time, number of sessions, intervention duration) was not associated with effect sizes. Similar null effects for intervention duration were reported in the Ntoumanis et al. (2021) meta-analysis. Such findings led Sheeran et al. (2020) to the suggestion that brief SDT interventions could be as effective as longer ones; however, "intervention dose" speaks to the quantity, not the quality or fidelity, of the interventions "dose."

## Classification System of Motivation and Behavior Change Techniques

SDT-informed interventions aim to create conditions within which individuals will experience psychological need satisfaction, self-determined motivation, and support for the pursuit of intrinsic goals or aspirations. To date, in most cases, such conditions are created by individuals in positions of authority/expertise (e.g., health practitioner, fitness instructor) or a significant person in one's life (e.g., a parent, spouse, or peer), or a technological medium (social robots, avatars, text messages). For person-delivered interventions, influential individuals are trained to communicate and act in ways that are labeled "need-supportive." Over the years, a number of need-supportive "behaviors" or "techniques" have been proposed; however, until recently, there has been no systematic attempt to group them and develop a classification system. This is problematic in terms of both theory advancement and theory application, as in the SDT literature there has been no consistent way in which SDT interventions have been operationalized. Such inconsistency (and often vagueness in terms of application details) creates considerable variability in how SDT techniques have been applied to promote health behavior change. Furthermore, RCTs tend to compare bundled interventions, which include multiple SDT techniques, to control groups. Collectively, this lack of precision has hampered attempts at replication and at identification of the most potent ingredients, or combinations of techniques, in such interventions.

To address this criticism, Teixeira et al. (2020) used an iterative expert ($n$ = 18) consensus procedure to identify unique motivation and behavior change techniques (MBCTs). A MBCT was defined as "a distinct, observable and replicable component of an intervention, designed to influence a person's behavior directly or indirectly by impacting the person's perceptions of autonomy, relatedness, and/or competence need satisfaction in relation to a particular behavior or group of related behaviors" (p. 443). Following a number of iterations, a final classification of 21 MBCTs was produced, 7 of them corresponding to the support for each of the three psychological needs. Examples include "provide a meaningful rationale" and "provide choice" (autonomy support), "encourage asking of questions" and "use empathetic listening" (relatedness support), and "address obstacles for change" and "assist in setting optimal challenge" (competence support). For each MBCT, the authors provided a label, a detailed definition, and a function description. For instance, the function description for providing a meaningful rational is "highlights and reinforces motives/reasons that could form the basis of autonomous motivation." This classification effort explicitly acknowledged that each of the MBCTs, although they primarily map on one psychological need, can also map on two or all three psychological needs. This pattern is to be expected, given that all three psychological needs are interrelated to a fairly high degree, especially as efforts to measure these constructs move from specific-granular to higher levels in terms of time or context (Ryan & Deci, 2017).

The use of this classification system should increase the consistency in both the operationalization and reporting of each MBCT in future SDT interventions. It can also help

with the development of measurement tools to assess, monitor, and enhance intervention fidelity in such interventions (e.g., Borrelli, 2011). Moreover, this classification system can facilitate more accurate comparisons within and across studies and the drawing of appropriate conclusions in future reviews of this area. For instance, researchers could test which combinations of MBCTs produce the strongest effects for different target behaviors, across different health settings, cultures, "significant others," and target population groups. One obvious limitation of this important collective classification effort is that it has not yet included MBCTs that are need-indifferent (e.g., being unresponsive to others' opinions) or need-thwarting (e.g., using guilt tactics; see Bhavsar et al., 2019). Hence, in the future, an expanded classification system is needed to consider the potential inclusion of such MBCTs. While it would be unethical for SDT-informed researchers to intentionally employ MBCTs of this kind (i.e., need-indifferent or -thwarting), formalizing a classification system of these MBCTs would allow researchers to observe and understand better when such techniques are in operation in various applied health contexts. Those insights could help inform ways to intentionally *decrease* the spontaneous use of techniques that are need-indifferent or -thwarting in future interventions.

## Using Rewards to Motivate Health Behavior Change

One of the most frequently employed behavior change techniques (BCTs) in behavioral medicine research and practice is the provision of rewards in various forms (often financial). In the United States, recent surveys of employee wellness programs have estimated that more than 86% of U.S. employers offer financial incentives for health-related behaviors, and their use is subsidized by tax provisions. Yet evidence from well-designed trials have reported mixed results for reward effectiveness. While rewards are often effective at *initiating* health behavior change in numerous contexts, interventions that heavily feature rewards frequently report poor long-term behavioral maintenance (e.g., changes in diet, physical activity, weight loss). This pattern is consistent with cognitive evaluation theory (CET), the mini-theory of SDT concerned with interpreting the influence of external factors, such as rewards. CET predicts and research has found that contingent rewards tend to increase controlled motivation, as opposed to autonomous motivation (Moller, Ntoumanis, & Williams, 2019). When the reward contingencies are removed, the controlled motivation is extinguished, and without support for autonomous motivation, the targeted health behaviors return to baseline levels or worse. Several studies have documented this unintended undermining pattern in behavioral health contexts, wherein those rewarded for healthy behavior change ended up weighing more and/or enjoying healthy behaviors less (Paul-Ebhohimhen & Avenell, 2008; Moller et al., 2012, 2014).

For this reason, unsurprisingly, the provision of rewards is a behavior change technique that did not make the list of 21 SDT-informed MBCTs identified by Teixeira et al. (2020). Nevertheless, applying CET can help interventionists minimize risks if and when using rewards. CET posits that rewards for health behavior change are best offered

in ways that minimize autonomy-thwarting (e.g., by offering choice about features of the reward and creating an autonomy-supportive interpersonal context when offering them) and maximize competence satisfaction (e.g., by presenting rewards as informational, that is, as useful indicators of effort or performance quality). CET would predict that the risks of using rewards to motivate health behavior change are likely highest when behaviors are complex and require long-term maintenance. Nevertheless, it is worth noting that using rewards introduces risks even when targeting simple, one-off health behaviors (e.g., vaccinations), such as increasing the likelihood of dishonest reporting or using unhealthy strategies to meet health targets.

## SDT and Digital Health

Over the past three decades, one of the most profound developments in behavioral medicine, and nearly every facet of life, has been the proliferation of digital technologies. This has been regarded as the beginning of a digital revolution in behavioral medicine, with sweeping implications for theory building, application, and reach (Moller et al., 2017). The variety of digital health technologies that exist is staggering and still rapidly expanding. These include wearable sensor technologies that monitor a wide range of health-related metrics, mobile apps that support health behavior change, embodied and virtual support-providing agents (i.e., social robots, avatars, and chat bots), as well as virtual and augmented reality. Despite this variety, in each of these cases, the design and use of digital health technologies can be informed by SDT (e.g., by assessing the degree to which such technologies support or thwart basic psychological needs).

Researchers are already using general taxonomies of behavior change techniques to assess the quality of digital health technologies (e.g., see Yang, Maher, & Conroy, 2015). A natural extension of this will be for SDT researchers to evaluate digital health technologies using SDT-informed taxonomies of MBCTs that map onto supporting psychological needs (Teixeira et al., 2020; Villalobos-Zúñiga & Cherubini, 2020). Additionally, we see potential for some digital health technologies to not just mimic but in some contexts surpass traditional in-person SDT-informed behavioral health interventions. In particular, with regard to relatedness support, research on the hyperpersonal model (Walther, 1996) suggests that people frequently experience more positive interpersonal connections using computer-mediated technologies. Emerging evidence also suggests that, in at least some contexts, some people are more willing to disclose and discuss stigmatized health conditions to a robot rather than to a person (Uchida et al., 2017).

Additionally, as more behavioral health interventions shift from in-person to digital contexts, it is important to note that the cost of collecting very large data sets, including passively collected digital traces, is dropping precipitously. The availability of these "big data" sets makes new research study designs and data analytic strategies possible. This includes large factorial and fractional factorial designs and other optimization trial designs,

such as the sequential multiple-assignment randomized trial and the micro-randomized trial, close relatives of the factorial design (Collins, 2018).

## Suggestions for Future Research and Applied Work

*Content, Delivery, and Evaluation of SDT-Informed Interventions*

In this final section of the chapter, we offer some thoughts and suggestions on potential avenues for future basic and applied work to support health behavior change based on SDT principles. We discuss ideas which could potentially improve current practice in terms of how intervention work is designed, delivered, and reported. We also identify opportunities for new methodologies, applications, and ideas stemming from other theoretical frameworks of health behavior change.

**Multiple health behaviors.** As mentioned earlier, the vast majority of SDT-informed intervention studies have focused on the promotion of PA. Of course, there are more studies on other health behaviors collectively, but the majority of these studies are correlational in nature. For SDT to become more widely accepted—within the health psychology, public health, medical, and policymaking communities—it is imperative to increase the volume of studies that test the feasibility and efficacy of SDT *interventions* on other health behaviors (e.g., alcohol and tobacco use are some of the most prevalent modifiable behavioral risk factors; Yusuf et al., 2020), "new" health behaviors that have become more salient during the recent pandemic (e.g., social distancing, handwashing), as well as in terms of disease management (e.g., medication adherence, vaccinations).

**Team science.** These efforts require the assembly of multidisciplinary teams. SDT experts, many of whom are trained in psychology/behavioral sciences, can benefit from seeking out collaborators with other health-related expertise (e.g., epidemiologists, implementation science, hospital administration, health economics and policy). For instance, health economists could estimate cost savings and improvements in quality of life. As an illustration, in a weight loss trial partly based on SDT, Kwasnicka et al. (2020) calculated the direct costs associated with program setting up and delivery and then estimated the incremental cost-effectiveness per each additional participant in the intervention (vs. control) arm achieving a 5% weight loss at three months and reporting better scores in terms of quality-adjusted life years (Herdman et al., 2011). Health economists can also assess the comparative effectiveness of SDT-informed interventions with other current types of healthcare interventions. Another research expertise that is visibly absent from but could benefit SDT-informed interventions is that offered by implementation scientists. Implementation science provides the know-how and tools to facilitate the adoption of research findings into health promotion and health services, hence creating health, social, and potentially economic impacts (Bauer et al., 2015). For an example of an implementation-stage SDT-informed intervention, see Lubans et al.'s (2016) multiphase school-based fitness intervention employing smartphone technology and the Reach, Effectiveness, Adoption, Implementation and Maintenance framework (Glasgow

et al., 1999). Another implementation framework SDT researchers may consider is the Consolidated Framework for Implementation Research (Kirk et al., 2017).

In addition to health economists and implementation scientists, SDT researchers in the health domain could benefit from collaborating with (where relevant) medical and allied healthcare practitioners, sociologists, anthropologists, civil engineers, architects, designers, IT specialists, and technologists. Such interdisciplinary efforts will undoubtedly require more effort, time, and expense but potentially hold greater promise in terms of adding richness, contextual relevance, scalability, and wider acceptability and sustainability of SDT-informed interventions. Such efforts will also be reflective of the fact that health behavior change is influenced at multiple levels (see the socio-ecological model; e.g., Bauman et al., 2012). In addition to individual and socio-contextual-level variables (which are the foci of most SDT-informed interventions), cultural norms, national policies, and the physical environment influence how we interpret our health status and subsequently respond by engaging in (or avoiding) certain behaviors.

**Intervention dose.** So far, we have discussed how SDT-informed interventions on health behavior change can benefit from expanding the scope of health behaviors and outcomes they cover and by involving multidisciplinary teams. In addition, the methodology with which such interventions are designed and delivered can be improved and diversified. There is wide variability in the literature in terms of intervention duration and intensity. This broad range could reflect variability in behaviors and contexts, expertise of trainers and trainees in these interventions, time availability constraints, or personal preferences and beliefs of researchers about optimal "intervention dose." It is thus perhaps unsurprising that a recent meta-analysis by Sheeran et al. (2020) reported no association between intervention duration and the size of intervention effects. We urge future researchers to provide more details regarding the intensity and duration of their interventions so that future meta-analyses can provide more guidance regarding optimal training "dose" for SDT interventions in various community and clinical settings. The content of such interventions could be described in more systematic ways to facilitate replication and research synthesis efforts using the Teixeira et al. (2020) MBCT list, as well as the TIDIER checklist (Hoffman et al., 2014). Further, making intervention manuals freely accessible to everyone will not only help with such efforts but can also contribute to the Open Science initiative (Nosek et al., 2015).

**Intervention content refinement.** Another aspect of the methodology of SDT-informed interventions that could be improved involves content refinement. Meta-analyses by both Gillison et al. (2019) and Ntoumanis et al. (2021) reported that intervention effects associated with relatedness satisfaction were small and often nonsignificant. Ntoumanis et al. suggested that this finding is due to the fact that SDT interventions in the health domain typically focus on autonomy and competence need satisfaction (for which, perhaps unsurprisingly, the meta-analytic evidence of effectiveness is much stronger). Interestingly, in some other applied contexts (e.g., workplace; Slemp et al.,

2018) meta-analytic evidence shows somewhat stronger effect sizes for relatedness compared to the other two needs (with the caveat that such evidence is based on correlational studies). The Teixeira et al. (2020) classification included seven MBCTs for each of the three needs. This classification offers the opportunity for researchers to include a more balanced repertoire of need-supportive strategies, so that their relative (additive and synergistic) effects can be more fairly compared.

The content of SDT interventions could also benefit from focusing more on not only strengthening autonomous motivation but also increasing internalization, that is, shifting the motivational impetus from controlled motivation and amotivation to autonomous motivation. Simply reducing controlled motivation for health behaviors without replacing it with autonomous motivation could inadvertently result in net harm (i.e., negative health outcomes). Ntoumanis et al. (2021) and Sheeran et al. (2020) found that the average effects of SDT interventions on controlled motivation and amotivation have been small and nonsignificant. Autonomous motivation, controlled motivation, and amotivation are fairly independent constructs. (The Ng et al. [2012] meta-analysis reported correlations in the range of −.26 to +.44.) Practically speaking, interventions should focus not only on increasing feelings of enjoyment and/ or personal value of targeted behavior(s) but also on identifying and challenging pressures (from within and outside the individual) or feelings of helplessness for change. Controlled motivation results from experiences of need-thwarting social environments (Ntoumanis et al., 2018) and has been associated with maladaptive health behaviors/outcomes (e.g., bulimic symptomatology; Pelletier et al., 2004). In a study that involved training fitness instructors in SDT-based communication style, Ntoumanis et al. (2017) reported that exercise clients felt their instructors became more autonomy- and relatedness-supportive and less controlling over time. (No significant changes were perceived for competence support.) More intervention studies are needed which address both supportive and thwarting aspects of interpersonal communication. In addition, need-indifferent behaviors (Bhavsar et al., 2019; Quested et al., 2018) might be relevant in the health domain in terms of developing intervention content that covers a broader range of maladaptive communication styles. For instance, a healthcare practitioner can be indifferent to their patients' preferences and needs without using pressuring language or guilt tactics.

Challenges in training others to be need-supportive have been discussed in the SDT field (e.g., Ntoumanis et al., 2018). Personality dispositions (e.g., dominance orientation), personal beliefs about the ease of adopting and the effectiveness of applying different communication styles, time constraints, cultural norms within an organization or at a broader level, are all important variables to consider when designing and delivering SDT-informed interventions in the health domain. Some of these factors would be almost impossible to fully overcome within project budget constraints (e.g., wider cultural norms), but others (e.g., norms within an organization and personal beliefs) can be considered when

designing an intervention in order to improve its effectiveness. These considerations are central to the discipline of implementation science.

**Research methods.** In terms of methodology, SDT researchers will do well to take heed of several methodological advancements in the field (for an excellent read, see Hekler et al., 2020). Given space constraints, we will exemplify only one of them. Collins (2018) proposed an engineering-inspired innovative methodological framework, the Multiphase Optimization Strategy (MOST), to build behavioral interventions that are systematic, efficient, and cost-effective. An optimization trial identifies intervention components that provide the best outcomes within economic and scalability constraints. In such a trial, different key intervention components are identified and combinations of those are tested to identify which ones produce outcomes that are efficacious within economical constraints and can be scalable. Optimization trials use factorial or fractional factorial designs that are more efficient at testing multiple experimental hypotheses (using the same number of participants), relative to traditional multi-arm RCTs (see Collins, 2018). The most optimal components are then chosen to develop an "intervention package" that is then tested in a RCT. MOST has been used with considerable success to optimize health-related trials (e.g., smoking cessation, weight loss; see the review in Collins, 2018) but has not yet been widely implemented in SDT-informed intervention trials. MOST could be used to develop an "optimal package" of MBCTs and/or to combine SDT-informed techniques with other theoretical approaches or tools (e.g., telehealth vs. in-person) for health behavior change. For an example of the latter approach, see the study protocol of Gwadz et al. (2017), which aims to improve HIV care for vulnerable populations using SDT and social-cognitive theory.

**Fidelity.** So far, we have focused on intervention development and delivery of SDT-informed health behavior change interventions. The evaluation of such trials is also very important. Quested et al. (2017) have argued for the need to develop more systematic process evaluations to rate the quality and consistency in SDT training for intervention staff (i.e., fidelity). They suggested that such evaluation is particularly relevant to interventions which adopt a "train the trainer" model. In such studies, researchers train others (e.g., nurses, fitness instructors, spouses) to adopt a need-supportive interpersonal style toward others (e.g., patients, clients, participants). Variations in training and implementation (the researchers' training of trainers, as well as the trainers' implementation of need-supportive strategies) can explain differences in operationalization and potentially efficacy of interventions. One of the advantages of digital health interventions is the potential for "perfect" fidelity as executed by an app or messaging program, although this might come with a cost of high rigidity.

In the few SDT studies that have reported intervention fidelity, it was assessed via checklists of frequencies of need-supportive behaviors exhibited via the trainers. For instance, Sebire et al. (2016) used independent observers to rate the frequency of need-supportive communication used by dance instructors in a trial aiming to increase

adolescent girls' physical activity. Quested et al. (2017) suggested that fidelity assessments in SDT-informed interventions should focus less on the frequency of communication strategies and more on their perceived potency or quality. For instance, feedback such as "Well done" is a positive reinforcement and might support competence need satisfaction to some degree, but is not sufficiently specific (what was done well?) to help sustain perceptions of competence very well, particularly in the postintervention phase.

**Primary- and secondary-order public health impact.** In ascertaining the multifaceted impact of SDT-informed interventions, it is often interesting to study the lived experiences of not just those who were the end users of the intervention but also those who delivered it. As an example, Hancox, Quested et al. (2018) interviewed exercise instructors who were trained to be more need-supportive and less need-thwarting. The instructors also completed self-reflective diaries detailing their experiences of implementing these strategies. The interviews and diaries identified both facilitators and challenges in the implementation of training. In a further process evaluation paper, Hancox, Thøgersen-Ntoumani et al. (2018) reported the benefits the instructors perceived they derived from the training (e.g., enjoyment, perceptions of competence, beneficial applications of SDT principles to other areas of their lives). Such evaluation exercises can provide rich information to facilitate the content and delivery of future similar interventions. Furthermore, such data may reveal secondary intervention benefits in terms of staff members' health, well-being, and professional development.

**Community-based participatory research.** Consumer and stakeholder involvement in research is increasingly becoming the mainstream approach in health-related research (Boaz et al., 2018). Such involvement is not limited to those who are involved in the research process; it is extended to friends, caregivers, or family members of the participants, policymakers, clinical planners, health policy officers, health nongovernment organizations, health promotion practitioners, health consumer councils, and public health advocates. Consumer and other stakeholder involvement is recommended for all phases of the research, not just at the evaluation phase. Future SDT-informed interventions can do more to embrace the community-based participatory research movement, which is philosophically aligned with promoting the autonomy of all stakeholders involved and documenting such efforts.

### Consideration of Other Theoretical Frameworks of Motivation and Behavior Change

In implementing SDT-informed interventions, some researchers have integrated concepts from other theories of motivation and behavior change. Sometimes such models or theories can generate competing hypotheses; in other cases, they can be integrated to explain health behavior with greater nuance, potentially resulting in more effective interventions. SDT researchers would do well to consider and investigate both possibilities more often.

**Complementary BCTs.** Many health interventions incorporate various behavior change techniques (Bohlen et al., 2020) such as planning, goal setting, and barrier identification for the end users of the intervention. As an example, Aunger et al. (2019) reported

on a protocol for a trial that was informed by SDT and included several complementary behavior change techniques (e.g., goal setting, feedback on behavior) to reduce sitting time among older adults undergoing orthopedic surgery. With the development of the MBCT classification by Teixeira et al. (2020), researchers will do well to consider whether such behavior change techniques are in essence MBCTs. Other behavior change techniques have also been used to help individuals trained in SDT principles to apply such principles more effectively. For instance, Hancox et al. (2015) reported in a trial protocol how and when each of the chosen behavior change techniques would be incorporated in a communication training program for fitness instructors. With regard to the behavior change technique of "prompt self-monitoring of behavior," instructors were advised to keep a self-reflection diary on their instructional style and experiences of becoming more need-supportive and less need-thwarting throughout the intervention. Of course, training in behavior change techniques does not necessarily ensure that participants' self-determined motivation and health behaviors will improve. If such techniques are communicated in need-thwarting ways (e.g., perceptions that planning for action are externally imposed), otherwise effective behavior change techniques could undermine autonomous motivation.

**Models specifying different self-regulatory challenges.** The reason many behavior change techniques are used in SDT-informed and other intervention studies in the health domain is because many behavioral scientists consider motivation only one part of successful goal striving (Sheeran & Webb, 2016). Being distracted by temptations or undesirable affective states, having to deal with competing goals, and even forgetting to act are some examples of self-regulatory challenges and failures that can derail people, even when their needs are satisfied or their motivation for goal striving is autonomous. Models of self-regulation, particularly with regard to goal striving, can shed light on situations in which autonomous motivation facilitates health behavior change and also on situations where individuals, notwithstanding their strong and autonomous intentions, fail to achieve their goals. For instance, models of dual goal management (e.g., Fernandez & Kruglanski, 2019) can be utilized to understand how simultaneously pursuing two goals which can compete for resources (e.g., time, effort) can interfere with goal progress and attainment, even if both goals are pursued for autonomous reasons (e.g., failing to achieve diet goals because one also values socializing with friends). As another example of multiple goal striving, a deeply valued goal can sometimes become too difficult or even unattainable over time (Ntoumanis & Sedikides, 2018). Being flexible in goal striving sometimes means giving up on goals (e.g., playing high-injury-risk sports at an old age) and adopting new compatible goals (e.g., pick up limited or no-contact sports), even if the original goals are still strongly valued. While one could argue that each of these self-regulatory challenges could alternatively be explained using SDT's concept of competence support and related MBCTs (e.g., setting optimally challenging goals), pragmatically integrating alternative but complementary models of common self-regulatory challenges can be helpful.

**Bridging the intention-behavior gap**. At a theoretical level, SDT researchers could consider integrating key SDT constructs with constructs from other models of health behavior that more directly address the intention-behavior gap. For instance, the health action process model (Schwarzer, Lippke, & Luszczynska, 2011) includes a volition phase which is subdivided into a planning phase (action and coping plans), action phase (action control), and maintenance phase (maintenance self-efficacy). A good example of integrating SDT with models that differentiate motivation and volition phases is Hagger and Chatzisarantis's (2014) Integrated Behavior Change model for physical activity. This model integrates concepts from SDT with other theories, including the theory of planned behavior and the dual systems perspective. According to the model, the well-established association between autonomous motivation and physical activity change posited by SDT could be mediated by a number of theory of planned behavior variables (i.e., attitudes, subjective norms, perceived behavioral control, intention). Further, action planning is postulated to moderate the effects of intentions on behavior. One important aspect of the model by Hagger and Chatzisarantis is that it acknowledges that behavior is influenced not only by deliberate processes, such as motives and attitudes, but also by impulsive mechanisms that operate beyond the conscious awareness of individuals, such as implicit attitudes and implicit motivation. This model can be applied and tested with other health behaviors, besides physical activity.

In general, SDT-informed interventions have tended to focus primarily on reflective processes, but integrative theoretical approaches and intervention efforts using SDT could also consider to a greater extent automatic processes and pathways such as affective evaluations, implicit attitudes and beliefs, approach or avoidance biases, and habitual responses to internal, social, and environmental cues (see dual process models; Houlihan, 2018; Rhodes, McEwan, & Rebar, 2019). For instance, Verplanken and Sui (2019) and Caldwell et al. (2018), without referring explicitly to SDT, have shown that linking new habits to one's identity can facilitate the maintenance of new habitual behaviors.

**Integrating models of group-level factors.** Moving from the individual to the group level, and given that many health behavior change interventions are delivered in group settings (e.g., exercise classes), it is important to consider group-level factors that facilitate positive health behavior change. For instance, measures of group need satisfaction (i.e., whether my group feels autonomous, related, or competent) can be developed to examine whether they can predict levels of engagement and adherence to health behaviors, over and above individual need satisfaction. Further, theories that focus on group behaviors and have been applied to the health domain should also be considered in the SDT literature. Jetten et al. (2017) argue that when group membership provides individuals with a positive sense of social identity (i.e., meaning, support, and agency), health is positively impacted. However, when such psychological resources are not available in a group, being a member of a group can threaten and potentially harm health (e.g., substance abuse

users). Social identity factors are likely to have a significant influence on individual and group need satisfaction or frustration of group members.

## Conclusions

An overall conclusion from the three recent meta-analyses on the experimental applications of SDT in the health domain (Gillison et al., 2019; Ntoumanis et al., 2021; Sheeran et al., 2020) is that interventions produce moderate to large increases in motivation-related constructs (need support, need satisfaction, autonomous motivation) and small to moderate increases in terms of health behaviors and health outcomes. Such discrepancy in the size of effects for motivation-related variables versus health behavior/outcome variables is not surprising, given that the former are more proximal than the latter. In addition to methodological reasons (e.g., it is often easier to detect changes in self-reported motivation than objective health outcomes), one should also consider that participants' need satisfaction and autonomous motivation are important outcomes of SDT interventions in their own right, and not just means for attaining behavioral goals (Ryan & Deci, 2017). These arguments align with biomedical guidelines (e.g., Catapano et al., 2016) on supporting patient autonomy and self-efficacy for change. If individuals decide not to change their health behavior and it reflects an informed individual choice, this decision should be respected. We hope that advancements in the conceptualization, design, implementation, reporting, and evaluation of SDT interventions will further strengthen the utility and acceptability of the theory among researchers, policymakers, and practitioners in diverse fields of health research.

## References

Aunger, J. A., Greaves, C. J., Davis, E. T., & Greig, C. A. (2019). A novel behavioural INTErvention to REduce Sitting Time in older adults undergoing orthopaedic surgery (INTEREST): Protocol for a randomised controlled feasibility study. *Pilot and Feasibility Studies*, *5*, 54. https://doi.org/10.1186/s40814-019-0437-2

Bauer, M. S., Damschroder, L., Hagedorn, H., Smith, J., & Kilbourne, A. M. (2015). An introduction to implementation science for the non-specialist. *BMC Psychology*, *3*(1), 32. https://doi.org/10.1186/s40359-015-0089-9

Bauman, A., Reis, R., Sallis, J., Wells, J., Loos, R., & Martin, B. (2012). Correlates of physical activity: Why are some people physically active and others not? *The Lancet*, *380*(9838), 258–271. https://10.1016/s0140-6736(12)60735-1

Bhavsar, N., Ntoumanis, N., Quested, E., Gucciardi, D., Thøgersen-Ntoumani, C., Ryan, R., Reeve, J., & Bartholomew, K. J. (2019). Conceptualizing and testing a new tripartite measure of coach interpersonal behaviors. *Psychology of Sport and Exercise, 44*, 107–120. https://doi.org/10.1016/j.psychsport.2019.05.006

Boaz, A., Hanney, S., Borst, R., O'Shea, A., & Kok, M. (2018). How to engage stakeholders in research: Design principles to support improvement. *Health Research Policy and Systems*, *16*(1), 60. https://doi.org/10.1186/s12961-018-0337-6

Bohlen, L. C., Michie, S., de Bruin, M., Rothman, A. J., Kelly, M. P., Groarke, H., Carey, R. N., Hale, J., & Johnston, M. (2020). Do combinations of behavior change techniques that occur frequently in interventions reflect underlying theory? *Annals of Behavioral Medicine*, *54*(11), 827–842. https://doi.org/10.1093/abm/kaaa078

Borrelli, B. (2011). The assessment, monitoring, and enhancement of treatment fidelity in public health clinical trials. *Journal of Public Health Dentistry*, *71*(s1), S52–S63. https://doi.org/10.1111/j.1752-7325.2011.00233.x

Caldwell, A. E., Masters, K. S., Peters, J. C., Bryan, A. D., Grigsby, J., Hooker, S. A., Wyatt, H. R., & Hill, J. O. (2018). Harnessing centred identity transformation to reduce executive function burden for maintenance of health behaviour change: The Maintain IT model. *Health Psychology Review*, *12*(3), 231–253. https://doi.org/10.1080/17437199.2018.1437551

Catapano, A. L., Graham, I., De Backer, G., Wiklund, O., Chapman, M. J., Drexel, H., Hoes, A. W., Jennings, C. S., Landmesser, U., Pedersen, T. R., Reiner, Ž., Riccardi, G., Taskinen, M. R., Tokgozoglu, L., Verschuren, W., Vlachopoulos, C., Wood, D. A., Zamorano, J. L., Cooney, M. T., & ESC Scientific Document Group (2016). 2016 ESC/EAS guidelines for the management of dyslipidaemias. *European Heart Journal*, *37*(39), 2999–3058. doi:10.1093/eurheartj/ehw272

Caudwell, K. M., Mullan, B. A., & Hagger, M. S. (2018). Testing an online, theory-based intervention to reduce pre-drinking alcohol consumption and alcohol-related harm in undergraduates: A randomized controlled trial. *International Journal of Behavioral Medicine*, *25*(5), 592–604. https://doi.org/10.1007/s12529-018-9736-x

Collins, L. M. (2018). *Optimization of behavioral, biobehavioral, and biomedical interventions: The Multiphase Optimization Strategy (MOST)*. Springer.

Fenton, S., Veldhuijzen van Zanten, J. J., Metsios, G. S., Rouse, P. C., Yu, C. A., Ntoumanis, N., Kitas, G. D., & Duda, J. L. (2021). Testing a self-determination theory-based process model of physical activity behavior change in rheumatoid arthritis: Results of a randomized controlled trial. *Translational Behavioral Medicine* *11*(2), 369–380. https://doi.org/10.1093/tbm/ibaa022

Fernandez, J. R., & Kruglanski, A. W. (2019). The psychology of multiple goal pursuit: Choices, configurations, and commitments. *Journal of the Association for Consumer Research*, *4*(1), 5–12. https://doi.org/10.1086/700845

Gillison, F. B., Rouse, P., Standage, M., Sebire, S. J., & Ryan, R. M. (2019). A meta-analysis of techniques to promote motivation for health behaviour change from a self-determination theory perspective. *Health Psychology Review*, *13*(1), 110–130. doi:10.1080/17437199.2018.1534071

Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *American Journal of Public Health*, *89*(9), 1322–1327. https://doi.org/10.2105/ajph.89.9.1322

Gwadz, M. V., Collins, L. M., Cleland, C. M., Leonard, N. R., Wilton, L., Gandhi, M., Scott Braithwaite, R., Perlman, D. C., Kutnick, A., & Ritchie, A. S. (2017). Using the Multiphase Optimization Strategy (MOST) to optimize an HIV care continuum intervention for vulnerable populations: A study protocol. *BMC Public Health*, *17*(1), 383. https://doi.org/10.1186/s12889-017-4279-7

Hagger, M. S., & Chatzisarantis, N. L. (2014). An integrated behavior change model for physical activity. *Exercise and Sport Sciences Reviews*, *42*(2), 62–69. https://doi.10.1249/JES.0000000000000008

Halvari, A., Halvari, H., Deci, E. L., & Williams, G. C. (2019). Autonomy-supportive dental treatment, oral health-related eudaimonic well-being and oral health: A randomized clinical trial. *Psychology & Health*, *34*(12), 1421–1436. https://doi.org/10.1080/08870446.2019.1613546

Hancox, J. E., Quested, E., Thøgersen-Ntoumani, C., & Ntoumanis, N. (2015). An intervention to train group exercise class instructors to adopt a motivationally adaptive communication style: A quasi-experimental study protocol. *Health Psychology and Behavioral Medicine*, *3*(1), 190–203. https://doi.10.1080/21642850.2015.1074075

Hancox, J. E., Quested, E., Thøgersen-Ntoumani, C., Ntoumanis, N. (2018). Putting self-determination theory into practice: Application of adaptive motivational principles in the exercise domain. *Qualitative Research in Sport, Exercise and Health, 10*(1), 75–91. https://doi.org/10.1080/2159676X.2017.1354059

Hancox, J. E., Thøgersen-Ntoumani, C., Quested, E., & Ntoumanis, N. (2018). Feasibility of training group exercise class instructors to adopt a motivationally adaptive communication style. *International Journal of Sport and Exercise Psychology*, *49*(1),17–34.

Haumschild, M. S., & Haumschild, R. J. (2009). The importance of oral health in long-term care. *Journal of the American Medical Directors Association*, *10*(9), 667–671.https://doi.org/10.1016/j.jamda.2009.01.002

Hekler, E., Tiro, J. A., Hunter, C. M., & Nebeker, C. (2020). Precision health: The role of the social and behavioral sciences in advancing the vision. *Annals of Behavioral Medicine*, *54*(11), 805–826. https://doi.org/10.1093/abm/kaaa018

Herdman, M., Gudex, C., Lloyd, A., Janssen, M., Kind, P., Parkin, D., Bonsel, G., & Badia, X. (2011). Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Quality of Life*

*Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, *20*(10), 1727–1736. https://doi.org/10.1007/s11136-011-9903-x

Hoffmann, T., Glasziou, P., Boutron, I., Milne, R., Perera, R., Moher, D., Altman, D., Barbour, V., Macdonald, H., Johnston, M., Lamb, S., Dixon-Woods, M., McCulloch, P., Wyatt, J., Chan, A., & Michie, S. (2014). Better reporting of interventions: Template for intervention description and replication (TIDieR) checklist and guide. *British Medical Journal*, *7*(348), g1687. https://doi.org/10.1136/bmj.g1687

Houlihan, S. (2018). Dual-process models of health-related behaviour and cognition: A review of theory. *Public Health*, *156*(1), 52–59. https://doi.org/10.1016/j.puhe.2017.11.002

Jago, R., Tibbitts, B., Sanderson, E., Bird, E. L., Porter, A., Metcalfe, C., Powell, J. E., Gillett, D., & Sebire, S. J. (2019). Action 3:30R: Results of a cluster randomised feasibility study of a revised teaching assistant–led extracurricular physical activity intervention for 8 to 10 year olds. *International Journal of Environmental Research and Public Health*, *16*(1), 131. https://doi.org/10.3390/ijerph16010131

Jetten, J., Haslam, S. A., Cruwys, T., Greenaway, K. H., Haslam, C., & Steffens, N. K. (2017). Advancing the social identity approach to health and well-being: Progressing the social cure research agenda. *European Journal of Social Psychology*, *47*(7), 789–802. https://doi.org/10.1002/ejsp.2333

Kirk, M. A., Kelley, C., Yankey, N., Birken, S. A., Abadie, B., & Damschroder, L. (2016). A systematic review of the use of the Consolidated Framework for Implementation Research. *Implementation Science 11*, 72. https://doi.org/10.1186/s13012-016-0437-z

Kwasnicka, D., Ntoumanis, N., Hunt, K., Gray, C. M., Newton, R. U., Gucciardi, D. F., Thøgersen-Ntoumani, C., Olson, J. L., McVeigh, J., Kerr, D. A., Wyke, S., Morgan, P. J., Robinson, S., Makate, M., & Quested, E. (2020). A gender-sensitised weight loss and healthy living program for overweight and obese men in Australian Football League settings (Aussie-FIT): A pilot randomised controlled trial. *PLOS Medicine 17*(8), e1003136. https://doi.org/10.1371/journal.pmed.1003136

Li, W., Ho, K. Y., Wang, M. P., Cheung, D., Lam, K., Xia, W., Cheung, K. Y., Wong, C., Chan, S., & Lam, T. H. (2020). Effectiveness of a brief self-determination theory–based smoking cessation intervention for smokers at emergency departments in Hong Kong: A randomized clinical trial. *JAMA Internal Medicine*, *180*(2), 206–214. https://doi.org/10.1001/jamainternmed.2019.5176.

Lonsdale, C., Lester, A., Owen, K. B., White, R. L., Peralta, L., Kirwan, M., Diallo, T., Maeder, A. J., Bennie, A., MacMillan, F., Kolt, G. S., Ntoumanis, N., Gore, J. M., Cerin, E., Cliff, D. P., & Lubans, D. R. (2019). An internet-supported school physical activity intervention in low socioeconomic status communities: Results from the Activity and Motivation in Physical Education (AMPED) cluster randomised controlled trial. *British Journal of Sports Medicine*, *53*(6), 341–347. https://doi.org/10.1136/bjsports-2017-097904

Lovakov, A., & Agadullina, E. R. (2021). Empirically derived guidelines for effect size interpretation in social psychology. *European Journal of Social Psychology.* Advance online publication. https://doi.org/10.1002/ejsp.2752

Lubans, D. R., Smith, J. J., Peralta, L. R., Plotnikoff, R. C., Okely, A. D., Salmon, J., Eather, N., Dewar, D. L., Kennedy, S., Lonsdale, C., Hilland, T. A., Estabrooks, P., Finn, T. L., Pollock, E., & Morgan, P. J. (2016). A school-based intervention incorporating smartphone technology to improve health-related fitness among adolescents: Rationale and study protocol for the NEAT and ATLAS 2.0 cluster randomised controlled trial and dissemination study. *BMJ Open*, *6*(6), e010448. https://doi.org/10.1136/bmjopen-2015-010448

Moller, A. C., Buscemi, J., McFadden, H. G., Hedeker, D., & Spring, B. (2014). Financial motivation undermines potential enjoyment in an intensive diet and activity intervention. *Journal of Behavioral Medicine*, *37*(5), 819–827. https://doi.org/10.1007/s10865-013-9542-5

Moller, A. C., McFadden, H. G., Hedeker, D., & Spring, B. (2012). Financial motivation undermines maintenance in an intensive diet and activity intervention. *Journal of Obesity*, 1–8, https://doi.org/10.1155/2012/740519

Moller, A. C., Merchant, G., Conroy, D., West, R., Hekler, E., Kuglar, K., & Michie, S. (2017). Applying and advancing behavior change theories and techniques in the context of digital health interventions. *Journal of Behavioral Medicine, 40*(1), 85–98. https://doi.org/10.1007/s10865-016-9818-7

Moller, A. C., Ntoumanis, N., & Williams, G. C. (2019). Financial incentives may influence health behaviors, but do we end up with less than we paid for? A self-determination theory perspective. *Annals of Behavioral Medicine*, *53*(11), 939–941. https://doi.org/10.1093/abm/kaz038

Nansel, T. R., Laffel, L. M., Haynie, D. L., Mehta, S. N., Lipsky, L. M., Volkening, L. K., Butler, D. A., Higgins, L. A., & Liu, A. (2015). Improving dietary quality in youth with type 1 diabetes: Randomized

clinical trial of a family-based behavioral intervention. *International Journal of Behavioral Nutrition and Physical Activity*, *12*, 58. https://doi.org/10.1186/s12966-015-0214-4

Ng, J., Ntoumanis, N., Thøgersen-Ntoumani, E. C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-determination theory applied to health contexts: A meta-analysis. *Perspectives on Psychological Science, 7*, 325–340. https://doi.org/10.1177/1745691612447309

Nosek, B. A., Alter, G., Banks, G. C., Borsboom, D., Bowman, S. D., Breckler, S. J., Buck, S., Chambers, C. D., Chin, G., Christensen, G., Contestabile, M., Dafoe, A., Eich, E., Freese, J., Glennerster, R., Goroff, D., Green, D. P., Hesse, B., Humphreys, M., Ishiyama, J., Karlan, D., Kraut, A., Lupia, A., Mabry, P., Madon, T., Malhotra, N., Mayo-Wilson, E., McNutt, M., Miguel, E. Levy Paluck, E., Simonsohn, U., Soderberg, C., Spellman, B. A., Turitto, J., VandenBos, G., Vazire,, S., Wagenmakers, E. J., Wilson, R., & Yarkoni, T. (2015). Scientific standards: Promoting an open research culture. *Science 348*(6242), 1422–1425. https://doi.org/10.1126/science.aab2374

Ntoumanis, N., Ng, Y. Y., Prestwich, A., Quested, E., Hancox, J. E., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Lonsdale, R. M., & Williams, G. C. (2021). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health Psychology Review, 15*(2), 214-244. https://doi.org/10.1080/17437199.2020.1718529

Ntoumanis, N., Quested, E., Reeve, J., & Cheon, S. H. (2018). Need supportive communication: Implications for motivation in sport, exercise, and physical activity. In B. Jackson, J. A. Dimmock, & J. Compton (Eds.), *Persuasion and communication in sport, exercise, and physical activity* (pp. 155–169). Routledge.

Ntoumanis, N., & Sedikides, C. (2018). Holding on to the goal or letting it go and moving on? A tripartite model of goal striving. *Current Directions in Psychological Science*, *27*(5), 363–368. https://doi.org/10.1177/0963721418770455

Ntoumanis, N., Thøgersen-Ntoumani, C., Quested, E., & Hancox, J. (2017). The effects of training group exercise class instructors to adopt a motivationally adaptive communication style. *Scandinavian Journal of Medicine & Science in Sports*, *27*(9), 1026–1034. https://doi.org/10.1111/sms.12713

Paul-Ebhohimhen, V., & Avenell, A. (2008). Systematic review of the use of financial incentives in treatments for obesity and overweight. *Obesity Reviews*, *9*(4), 355–367. https://doi.org/ 10.1111/j.1467-789X.2007.00409.x.

Pelletier, L. G., Dion, S. C., Slovinec-D'Angelo, M., & Reid, R. (2004). Why do you regulate what you eat? Relationships between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment. *Motivation and Emotion*, *28*(3), 245–277. https://doi.org/10.1023/B:MOEM.0000040154.40922.14

Possidente, C. J., Bucci, K. K., & McClain, W. J. (2005). Motivational interviewing: A tool to improve medication adherence? *American Journal of Health-System Pharmacy*, *62*(12), 1311–1314. https://doi.org/10.1093/ajhp/62.12.1311

Quested, E., Ntoumanis, N., Stenling, A., Thogersen-Ntoumani, C., & Hancox, J. E. (2018). The Need-Relevant Instructor Behaviours Scale (NIBS): Development and initial validation. *Journal of Sport and Exercise Psychology, 40*, 259–268. https://doi.org/10.1123/jsep.2018-0043

Quested, E., Ntoumanis, N., Thøgersen-Ntoumani, C., Hagger, M. S., & Hancox, J. (2017). Evaluating quality of implementation in physical activity interventions based on theories of motivation. *International Review of Sport and Exercise Psychology*, *10*(1), 252–269. https://doi.org/10.1080/1750984X.2016.1217342

Rhodes, R. E., McEwan, D., & Rebar, A. L. (2019). Theories of physical activity behaviour change: A history and synthesis of approaches. *Psychology of Sport and Exercise*, *42*, 100–109. https://doi.org/10.1016/j.psychsport.2018.11.010

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development and wellness*. Guilford Press.

Santos, I., Mata, J., Silva, M. N., Sardinha, L. B., & Teixeira, P. J. (2015). Predicting long-term weight loss maintenance in previously overweight women: A signal detection approach. *Obesity*, *23*(5), 957–964. https://doi.org/10.1002/oby.21082

Schwarzer, R., Lippke, S., & Luszczynska, A. (2011). Mechanisms of health behavior change in persons with chronic illness or disability: The Health Action Process Approach (HAPA). *Rehabilitation Psychology*, *56*(3), 161–170. https://10.1037/a0024509

Sebire, S. J., Kesten, J. M., Edwards, M. J., May, T., Banfield, K., Tomkinson, K., Blair, P. S., Bird, E. L., Powell, J. E., & Jago, R. (2016). Using self-determination theory to promote adolescent girls' physical

activity: Exploring the theoretical fidelity of the Bristol Girls Dance Project. *Psychology of Sport and Exercise*, *24*, 100–110. https://doi.org/10.1016/j.psychsport.2016.01.009

Sheeran, P., & Webb, T. L. (2016). The intention-behavior gap. *Social and Personality Psychology Compass*, *10*(9), 503–518. https://doi.org/10.1111/spc3.12265

Sheeran, P., Wright, C. E., Avishai, A., Villegas, M. E., Lindemans, J. W., Klein, W. M. P., Rothman, A. J., Miles, E., & Ntoumanis, N. (2020). Self-determination theory interventions for health behavior change: Meta-analysis and meta-analytic structural equation modeling of randomized controlled trials. *Journal of Consulting and Clinical Psychology*, *88*(8), 726–737. https://doi.org/10.1037/ccp0000501

Slemp, G. R., Kern, M. L., Patrick, K. J., & Ryan, R. M. (2018). Leader autonomy support in the workplace: A meta-analytic review. *Motivation and Emotion*, *42*(5), 706–724. https://doi.org/10.1007/s11031-018-9698-y

Teixeira, P. J., Marques, M. M., Silva, M. N., Brunet, J., Duda, J., Haerens, L., La Guardia, J., Lindwall, M., Londsdale, C., Markland, D., Michie, S., Moller, A. C., Ntoumanis, N., Patrick, H., Reeve, J., Ryan, R. M., Sebire, S., Standage, M., Vansteenkinste, M., Weinstein, N., Weman-Josefsson, K., Williams, G. C., & Hagger, M.S. (2020). A classification of motivation and behavior change techniques used in self-determination theory-based interventions in health contexts. *Motivation Science*, *6*(4), 438–455. http://dx.doi.org/10.1037/mot0000172

Uchida, T., Takahashi, H., Ban, M., Shimaya, J., Yoshikawa, Y., & Ishiguro, H. (2017). A robot counseling system—What kinds of topics do we prefer to disclose to robots?. In *2017 26th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)* (pp. 207–212). IEEE. https://doi.org/10.1109/ROMAN.2017.8172303

Verplanken, B., & Sui, J. (2019). Habit and identity: Behavioral, cognitive, affective, and motivational facets of an integrated self. *Frontiers in Psychology, 9*, 1664–1078. https://doi.org/10.3389/fpsyg.2019.01504

Vian, T., Bachman DeSilva, M., Cabral, H. J., Williams, G. C., Gifford, A. L., Zhong, L., Xie, W., Gill, C. J., & Sabin, L. L. (2018). The role of motivation in predicting antiretroviral therapy adherence in China. *Journal of Health Psychology*, *23*(14), 1895–1904. https://doi.org/10.1177/1359105316672922

Villalobos-Zúñiga, G., & Cherubini, M. (2020). Apps that motivate: A taxonomy of app features based on self-determination theory. *International Journal of Human-Computer Studies*, *140*, 102449. https://doi.org/10.1016/j.ijhcs.2020.102449

Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research*, *23*(1), 3–43. https://doi.org/10.1177/009365096023001001

Williams, G. C., McGregor, H., Sharp, D., Kouides, R. W., Lévesque, C. S., Ryan, R. M., & Deci, E. L. (2006). A self-determination multiple risk intervention trial to improve smokers' health. *Journal of General Internal Medicine*, *21*(12), 1288–1294. https://doi-org/10.1111/j.1525-1497.2006.00621.x

Williams, G. C., Niemiec, C. P., Patrick, H., Ryan, R. M., & Deci, E. L. (2016). Outcomes of the Smoker's Health Project: A pragmatic comparative effectiveness trial of tobacco-dependence interventions based on self-determination theory. *Health Education Research*, *31*(6), 749–759. https://doi.org/10.1093/her/cyw046

World Health Organization. (2018). *Noncommunicable diseases*. June 1. Retrieved from https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases.

Yang, C.-H., Maher, J. P., & Conroy, D. E. (2015). Implementation of behavior change techniques in mobile applications for physical activity. *American Journal of Preventive Medicine*, *48*(4), 452–455. https://doi.org/10.1016/j.amepre.2014.10.010

Yusuf, S., Joseph, P., Rangarajan, S., Islam, S., Mente, A., Hystad, P., Brauer, M., Kutty, V. R., Gupta, R., Wielgosz, A., AlHabib, K. F.,, Dans, A., Lopez-Jaramillo, P., Avezum, A., Lanas, F., Oguz, Kruger, I. M., Diaz, R., Yusoff, K., Mony, P., Chifamba, J., Yeates, K., Kelishadi, R., Yusufali, A.., Khatib, Rahman, O., Zatonska, Z., Iqbal, R., Wei, L., Bo, H., Rosengren, A., Kaur, M., Mohan, V., Lear, S. A., Teo, K. K., Leong, D., O'Donnell, M., McKee, M., Scai, D., & Dagenais, G. (2020). Modifiable risk factors, cardiovascular disease, and mortality in 155,722 individuals from 21 high-income, middle-income, and low-income countries (PURE): A prospective cohort study. *Lancet*, *395*(10226), 795–808. https://doi.org/10.1016/S0140-6736(19)32008-2

# 39

# Autonomy Support and Autonomous Motivation: Common Factors in Counseling and Psychotherapy

David C. Zuroff *and* Richard Koestner

### Abstract

In this chapter, autonomy support and autonomous motivation are conceptualized as common factors influencing process and outcome in diverse psychotherapies for a broad range of disorders. Points of convergence with the well-documented common factors of the therapeutic alliance and the Rogerian conditions are identified, as well as potential roles of the self-determination theory (SDT) variables in the three pathways of Wampold and Imel's contextual model of psychotherapy. Reviews of studies of heterogeneous outpatients, depressed outpatients, patients with substance abuse disorders, and patients with eating disorders provide consistent support for the core hypotheses that autonomy support enhances autonomous motivation for treatment, and that autonomous motivation for treatment leads to better outcomes. Methodological limitations of the existing literature are enumerated, and directions for future research are described. SDT provides a powerful framework for identifying common factors and enhancing knowledge of variability in psychotherapy process and outcome.

**Key Words:** autonomous motivation, controlled motivation, autonomy support, counseling, psychotherapy, common factors, contextual model

Psychotherapy and counseling are unquestionably effective on average (Wampold & Imel, 2015), but outcomes are highly variable in terms of both the immediate impact of therapy and the durability of gains achieved.[1] Two crucial issues for psychotherapy research are therefore to identify patient and therapist variables that predict outcome and to elucidate the underlying processes that give rise to durable, beneficial changes.[2] Several cogent SDT analyses of these issues have appeared (e.g., Lynch et al., 2011; Ryan & Deci, 2008; Ryan

---

[1] Many of the activities conducted under the rubric of *counseling* fit Wampold and Imel's (2015) definition of *psychotherapy*. To be concise we will use the term "psychotherapy" rather than "psychotherapy and counseling," but we do not intend a narrow sense of the word that excludes counseling or counselors.

[2] Scholars working in the humanistic tradition of which SDT is part generally prefer the term "client" to the term "patient," and we share that preference. However, the bulk of the research reviewed in this chapter refers to participants as patients, and we will adopt that usage to maintain consistency with the underlying literature as well as to maintain consistency in our summaries of the various studies.

et al., 2011; Sheldon et al., 2003), along with an expanding body of empirical research (reviewed in Ryan & Deci, 2017, Chapter 17). Despite these advances, the potential of SDT for illuminating psychotherapy process and outcome has only begun to be realized. In this chapter we review evidence on the roles of autonomy support and autonomous motivation in psychotherapies for several major psychiatric disorders and identify points for growth in the literature. Although there are important conceptual similarities between SDT and both motivational interviewing (Vansteenkiste & Sheldon, 2006) and the stages of change model (Prochaska & DiClemente, 1992), we review only studies with an explicit focus on SDT variables. We begin with an overview of key concepts and issues in the psychotherapy literature.

## Common Factors in Psychotherapy

There are hundreds of systems of psychotherapy, such as psychoanalysis, client-centered therapy, behavior therapy, and cognitive therapy. Wampold and Imel (2015) proposed that at a more abstract level of analysis, there are two competing metatheories, which they dubbed the *contextual model* and the *medical model*. The difference between the metamodels pivots on the contrast between the *common factors*, which are present in all or most forms of psychotherapy, and the *specific ingredients*, which are unique to particular forms of therapy. Examples of common factors are the therapeutic alliance and the provision of a plausible explanation of the patient's difficulties, while examples of specific ingredients include transference interpretations and disputing dysfunctional assumptions. The medical model of psychotherapy proposes that, analogously to how penicillin can specifically target and eliminate bacterial infections that give rise to symptoms like pain and fever, the specific ingredients in effective psychotherapies ameliorate the specific psychological deficits that cause the client's symptoms. The specific ingredients are therefore believed to account for the therapy's effectiveness. In contrast, the contextual model proposes that it is the common factors that are responsible for the effectiveness of each therapy, which in turn accounts for the surprising equivalence of the many different forms of psychotherapy (the "Dodo Bird" verdict). Although the debate between adherents of the two metamodels rages on, SDT variables such as autonomy support and autonomous motivation are fruitfully conceptualized as common factors that predict process and outcome in all forms of psychotherapy and with a broad range of disorders (Lynch et al., 2011; Zuroff et al., 2007).

### Therapeutic Alliance and Rogerian Conditions: Common Factors Linked to SDT

The pertinence of SDT for understanding common factors in psychotherapy has been noted by several commentators (Lynch et al., 2011; Lynch, 2014; Scheel, 2011). Among the many common factors that have been identified (Norcross & Lambert, 2019), two that are especially closely related to SDT concepts are the therapeutic alliance and the Rogerian conditions of accurate empathy, unconditional positive regard, and genuineness

(Rogers, 1957). The therapeutic alliance is the most extensively studied of the common factors and is generally understood to include three components: an emotional *bond* between patient and therapist, agreement on the broad *goals* of therapy, and agreement on the specific *tasks* to be undertaken to reach those goals. How might these common factors, both known to predict psychotherapy outcome (Norcross & Lambert, 2019), relate to SDT concepts?

An effective therapeutic alliance can potentially contribute to the satisfaction of all three basic psychological needs posited in SDT (Lynch, 2014). The bond component of the alliance would be expected to contribute to relatedness satisfaction. Agreement on task and goals can potentially contribute to satisfaction of both the competence and autonomy needs, although it should be noted that agreement can sometimes be achieved by directive, non-autonomy-supportive means (Ryan & Deci, 2017). Empirically, the alliance is moderately related ($r = .44$) with autonomy support and modestly related ($r = .28$) with autonomous motivation for treatment (Zuroff et al., 2007). Thus, the SDT autonomy concepts are indeed related to the therapeutic alliance, but the size of the correlations indicates that they are by no means redundant with it.

The impact of the Rogerian conditions (for reviews, see Norcross & Lambert, 2019) can also be conceptualized in the framework of SDT. The therapist's accurate empathy, unconditional positive regard, and genuineness should each contribute to satisfaction of the relatedness need, and unconditional regard should contribute to autonomy support and thereby autonomous motivation and autonomy need satisfaction. Given the numerous conceptual or empirical relations between the common factors of the alliance and the Rogerian conditions and SDT concepts, it seems likely that autonomy support and autonomous motivation are also common factors in psychotherapy. Before reviewing the evidence for this hypothesis, we will summarize the processes in the contextual model through which autonomy support and autonomous motivation might influence outcome.

### Common Factors Pathways in the Contextual Model

Wampold and Imel (2015) hypothesized three common factors pathways. The first is the real relationship between therapist and patient (the bond component of the alliance), which is hypothesized to satisfy universal needs for belonging and social connection and thereby to lead directly to improved quality of life. This pathway appears identical to the SDT concept of relatedness satisfaction (Lynch, 2014). The second pathway involves the provision of a rationale for the treatment that creates positive expectancies about therapy:

> The client comes to believe that participating in and successfully completing the tasks of therapy, whatever they may be, will be helpful in coping with his or her problems, which then furthers for the client the expectation that he or she has the ability to enact what is needed. (Wampold & Imel, 2015, p. 58)

From the SDT perspective, this means that the rationale offered to the client, especially if offered in an autonomy-supportive fashion, will contribute to competence need satisfaction (Lynch, 2014).

The third pathway requires agreement between therapist and client on the goals and tasks of the treatment; meaningful agreement presupposes a degree of autonomy supportiveness on the part of the therapist. When there is such agreement, the client will actively engage in the prescribed tasks of the therapy, which will have broad-ranging, rather than deficit-specific, positive impacts. This pathway critically implicates both autonomy support and autonomous motivation. Autonomy support is required for clients to experience autonomous motivation for engaging in the tasks of therapy. To the extent that clients are autonomously motivated, they are expected to be more persistent and more adherent in approaching the sometimes difficult tasks of therapy, to more fully internalize whatever is learned through those tasks, and to display greater generalization and maintenance of therapy gains.

## Core Hypotheses about Autonomy and Psychotherapy

This SDT interpretation of the three pathways in Wampold and Imel's (2015) contextual model leads directly to many testable hypotheses, including the two core hypotheses identified by Ryan and Deci (2017). The first hypothesis pertains to autonomous motivation: "The relative autonomy of client motivation is an important predictor of treatment engagement and intervention outcomes, especially with regard to maintained changes" (p. 438). The second hypothesis pertains to the dual role of autonomy support: "Autonomy support contributes to wellness by satisfying basic psychological needs, and also, more directly, by supporting clients' autonomous motivation for change" (p. 438).

*Methodological Issues in Studying Common Factors in Psychotherapy*

Providing rigorous tests of these hypotheses is more difficult and complex than is initially apparent. Decades of debate between proponents of the medical and contextual models have focused attention on methodological hurdles that claims for common factors must confront and have led to greatly increased methodological sophistication in psychotherapy research. We will note three such issues that arose in the context of the therapeutic alliance and the Rogerian conditions, but which are equally pertinent to SDT variables.

First, while it is broadly accepted that the alliance and the Rogerian conditions are correlated with outcome, it has been hotly debated whether such dimensions of the therapeutic relationship are causally related to outcome. It has been suggested that the correlation between alliance and outcome may result from early changes in symptoms influencing ratings of the alliance, or that there might be third variables accounting for their apparent relation (Feeley, DeRubeis, & Gelfand, 1999). Attempting to address this critique, researchers have developed strategies such as controlling for early change in symptoms and examining change in symptoms subsequent to the assessment of the putative common

factor (e.g., Klein et al., 2003; Zuroff & Blatt, 2006). Statistical mediation models (e.g., Zuroff et al., 2000) and, more recently, longitudinal mediation models (e.g., Zilcha-Mano et al., 2014) have also been deployed to try to sort out the flows of causality.

A second complexity arises from the recognition that psychotherapy data are hierarchically structured, with sessions nested within patients, who are generally nested within therapists. Thus, one can apply multilevel modeling to distinguish therapist-level differences in common factors from patient-level differences in common factors (e.g., Baldwin, Wampold, & Imel, 2007; Zuroff et al., 2016). Moreover, one can distinguish between-person (trait-like) differences in common factors from within-person (state-like) differences (Zilcha-Mano, 2017). Antecedents and consequences of differences at the two levels of analysis are not necessarily the same.

Finally, there has been increased recognition of the limitations inherent in both experimental studies (randomized controlled trials [RCTs]) and naturalistic studies. The enhanced control of an RCT conducted with manualized treatments and a narrowly defined class of patients brings with it a concomitant loss of generalizability. Both kinds of designs are needed to fully explore the roles of common factors, including variables derived from SDT.

In the following section, we review evidence for Ryan and Deci's (2017) two hypotheses in the treatment of four different kinds of psychiatric samples: (1) diagnostically heterogeneous outpatients, (2) depressed outpatients, (3) outpatients with substance abuse disorders, and (4) patients with eating disorders. In the concluding section, we identify methodological and substantive issues awaiting future research.

## Empirical Studies of Autonomy Support and Autonomous Motivation in Psychotherapy

### Heterogeneous Outpatients

Two of the earliest studies of SDT and psychotherapy were conducted with heterogeneous samples of outpatients. Pelletier, Tuson, and Haddad (1997) created the Client Motivation for Therapy Scale (CMOTS), which included subscales assessing amotivation, external, introjective, identified, integrated, and intrinsic motivation for therapy. The scale was administered after a psychotherapy session to 138 outpatients who were receiving a variety of therapies, along with measures of perceived autonomy support, control, care (relatedness support), and competence feedback (competence support) from the therapist. As predicted, the three more autonomous forms of motivation were positively predicted by autonomy, relatedness, and competence support from the therapist, and negatively predicted by therapist control. Moreover, the autonomous forms of motivation were positively related to positive mood during the session, satisfaction with therapy, and intention to persist in therapy. Pelletier et al. therefore provided important initial support for the SDT hypotheses, although the study suffered from the absence of validated measures of psychopathology administered pre- and post-therapy.

Michalak, Klappheck, and Kosfelder (2004) studied 72 clients receiving cognitive behavioral therapy (CBT) for anxiety or depression and obtained reports of their personal strivings related to symptom relief and also their more general strivings. Measures of the patient-perceived outcome of five sessions were positively predicted by the relative autonomy of the patients' general motivational orientation, but unexpectedly not by the autonomy of their desire for symptom relief. It is possible that autonomous motivation for obtaining relief is distinct from autonomous motivation for engaging in therapeutic work, and that it is the latter that predicts sessional engagement and outcome.

Dwyer et al. (2011) extended the prior results by studying group rather than individual CBT, but assessed autonomy satisfaction rather than autonomy support or autonomous motivation. In samples of depressed and mixed anxious and depressed outpatients, they found that patients who reported that their autonomy needs were satisfied while participating in group sessions showed greater decreases in self-reported symptoms.

*Depressed Outpatients*

Zuroff et al. (2007) studied 95 depressed outpatients who were randomly assigned to receive 16 weeks of manualized interpersonal therapy (IPT), CBT, or pharmacotherapy with supportive clinical management. Outcome measures included the patient-rated Beck Depression Inventory–II (BDI-II; Beck, Steer, & Brown, 1996) and the clinician-rated Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967). Autonomy support, autonomous motivation, and controlled motivation were assessed after the third session using revised and expanded versions of Williams et al.'s (1996) Treatment Self-Regulation Questionnaire and the Health Care Climate Questionnaire (HCCQ). The revised motivation questionnaire was named the Autonomous and Controlled Motivations for Treatment Questionnaire (ACMTQ). Although it is common to create an index of relative autonomy from measures of autonomous and controlled motivation, Zuroff et al. (2007) treated them as separate constructs because there is evidence that the two forms of motivation frequently have different rather than opposite correlations with other variables (Koestner et al., 2008). Across the three treatments, autonomous motivation for treatment predicted higher probability of achieving remission, defined in terms of post-treatment HRSD scores. It also predicted greater reductions in BDI-II scores from session 3 to post-treatment, while controlling for early change in symptoms. Controlled motivation did not predict outcome. Autonomous motivation was itself predicted by perceived autonomy support from the therapist.

This study provided methodologically rigorous support for autonomy support and autonomous motivation as common factors in the treatment of depression. Subsequent research has suggested that there may be moderators of the effects of autonomous motivation. McBride et al. (2010) studied 74 depressed outpatients receiving 16 weeks of manualized IPT; the HRSD and the BDI-II were administered pre- and post-treatment. Autonomous motivation at the third session was unrelated to outcome among those with

recurrent depression, but among those with less recurrent depression it predicted significantly greater probability of remission and significantly lower post-treatment BDI-II scores. Controlled motivation predicted lower probability of remission in both groups. Thus, autonomous motivation for treatment may be especially important for individuals with less intractable forms of depression.

Zuroff et al. (2012) took advantage of additional data collected at sessions 3, 8, and 13 in Zuroff et al.'s (2007) RCT to use multilevel modeling to examine separately the between-persons and within-person (i.e., over time) relations among autonomy support, autonomous motivation, and severity of depressive symptoms. More rapid decreases in BDI-II scores were predicted by higher average levels of autonomous motivation and lower average levels of controlled motivation across the treatment period. The analyses also yielded a more detailed picture of the relation between autonomy support and autonomous motivation. Higher average levels of autonomy support predicted higher average levels of autonomous motivation, but in addition sessional fluctuations in autonomy support predicted fluctuations in autonomous motivation. The within-person effects demonstrate the sensitivity of autonomous motivation to contextual influences, which is consistent with SDT. Controlled motivation was not predicted by autonomy support, but rather by the personality variable of self-criticism (Blatt, 2004). Studies of normal populations have consistently confirmed strong links between self-criticism and controlled motivation (Moore et al., 2021). Finally, it was found that autonomous motivation increased steadily over the course of treatment for patients who experienced high-average levels of autonomy support but did not improve among those with low-average autonomy support. Consistent with the proposed status of SDT variables as common factors, these findings were *not* moderated by treatment condition.

Considerable evidence has emerged that differences in therapists' average outcomes with their clients are larger than differences in outcome between schools of therapy (Baldwin & Imel, 2013), and that therapist effects are partly explained by between-therapists differences in their abilities to mobilize common factors (Baldwin et al., 2007; Zuroff et al., 2016). Zuroff et al. (2017) used multilevel modeling to examine between- and within-therapist differences in autonomy support and autonomous motivation in a sample of depressed patients receiving IPT (McBride et al., 2010). BDI-II scores were found to decrease more rapidly for patients whose therapists had high-average levels of autonomous motivation and for patients whose level of autonomous motivation was higher than their therapist's average. The reverse was true for between-therapists and within-therapist differences in controlled motivation.

Multilevel modeling was also used to examine predictors of autonomous motivation. The perceived friendliness of the therapist, an index of relational support, predicted both between-therapists and within-therapist autonomous motivation. An additional, unpublished finding was that the perceived controllingness of the therapist, indicating low autonomy support, was negatively related to both between- and within-therapist

autonomous motivation. In other words, therapists who, on average, displayed high levels of relational support and autonomy support had patients who were, on average, high in autonomous motivation. Moreover, patients who experienced higher levels of relational support and autonomy support than the average patient of their therapist also displayed higher levels of autonomous motivation.

**Summary**. The studies reviewed here provide consistent support, across several different kinds of therapy, for the core SDT hypotheses that autonomous motivation is associated with better outcome and that autonomy support is associated with greater autonomous motivation. Nonetheless, many questions remain, including generalizability to other therapies, predictors of patient-level and therapist-level autonomy support and autonomous motivation, and perhaps especially the causal relations among autonomy support, autonomous motivation, and symptom reduction. Inconsistent evidence was observed for a potential negative effect of controlled motivation.

### Substance Abuse Disorders

In a pioneering investigation of outpatient treatment of alcoholism, Ryan, Plant, and O'Malley (1995) developed the Treatment Motivation Questionnaire (TMQ), which assesses autonomous and controlled motivations for entering into and remaining in therapy. In a sample of 98 patients, autonomous motivation at pre-treatment predicted number of sessions attended over the following eight weeks, clinicians' ratings of involvement in therapy, and lower likelihood of dropping out. Controlled motivation also predicted fewer missed sessions. There were significant interactions between autonomous and controlled motivation, with patients high in both showing the best attendance and retention in therapy. Unfortunately, no data were available concerning reductions in alcohol abuse.

Wild, Cunningham, and Ryan (2006) conducted a study of outpatient treatment for addiction with a sample of 300 patients who were primarily in treatment for alcohol or cocaine addiction. Using a modified TMQ, they found that autonomous motivation predicted greater client engagement at the beginning of treatment, including greater perceived benefits of reducing substance use and greater client- and therapist-rated interest in the forthcoming treatment. Perhaps surprisingly, controlled motivation also predicted greater perceived benefits. Again, there was no assessment of reductions in substance abuse over the course of treatment.

Philips and Wennberg (2014) also studied outpatients at an addiction clinic; 42% of the 172 patients were addicted to alcohol. Prior to treatment, patients completed a measure of treatment expectations and the CMOTS. Some patients dropped out before therapy began, and others dropped out during therapy. Expectations for constructive engagement in therapy were generally positively correlated with autonomous motivation; controlled motivation was correlated with less constructive expectations. Amotivation predicted never beginning therapy. Surprisingly, autonomous motivation failed to predict

either beginning or remaining in therapy. Again, the outcome of the treatments was not reported.

Zeldman, Ryan, and Fiscella (2004) studied 74 opiate-addicted participants in a methadone maintenance clinic who also received group and individual therapy for a period of at least six months. Clients completed a modified version of the TMQ prior to treatment and the HCCQ after one month. Autonomous motivation at intake predicted perceived autonomy support a month later, suggesting that the causal relations between autonomy support and autonomous motivation might be bidirectional. Outcome was assessed in terms of attendance, number of days until clients were allowed to administer methadone at home, and relapse as determined by urine samples. Autonomous motivation and autonomy support were both generally related to better outcome. The combination of high controlled motivation and low autonomous motivation predicted especially poor outcome, including higher rate of relapse.

**Summary.** These studies provide preliminary support, across a range of substance abuse disorders, for the hypothesized linkage of autonomous motivation and more constructive involvement in treatment. However, the methodological limitations of the depression literature apply to this literature as well. These studies are also limited by the exclusive use of naturalistic designs and the general absence of objective measures of reduction of substance abuse.

### Eating Disorders

#### BULIMIA-SPECTRUM DISORDERS AND ANOREXIA NERVOSA

A substantial body of literature has emerged examining the roles of SDT variables in the treatment of eating disorders. Mansour et al. (2012) studied 155 women with bulimia-spectrum diagnoses who received an integrative treatment delivered primarily in 16-week groups at a specialized service for eating disorders. Self-report measures of eating preoccupations, binge eating, and mood at pre-treatment and post-treatment were available for 77 patients. Autonomous motivation assessed with the ACMTQ at pre-treatment predicted multiple measures of outcome; controlled motivation did not. A similar pattern was found in a sample of 49 patients at the same specialized service who completed at least five weeks of inpatient treatment for anorexia nervosa that included elements of CBT and psychoeducation (Thaler et al., 2016). Van der Kaap-Deeder et al. (2014, Sample 2) found that autonomous motivation for treatment predicted improved body mass index (BMI) in patients with anorexia nervosa receiving multimodal inpatient treatment.

Based on Thaler et al.'s (2016) findings, the service developed a modified inpatient treatment for anorexia nervosa termed the Autonomy Support Protocol, which progressively increased patients' choices regarding meals while reducing reliance on external incentives for weight restoration goals. Forty-one patients receiving the Autonomy Support Protocol were compared to a sample of 41 who had received a longer, more structured, and more controlling Contingency Management Protocol. Outcome measures included

self-report measures as well as BMI. No differences were found between the protocols at discharge or post-treatment follow-up. The equivalence of the two programs was viewed as suggesting that the autonomy-supportive approach was preferable, as its six-week duration was more efficient than the open-ended Contingency Management Protocol.

MIXED EATING DISORDERS

Using a heterogeneous sample of outpatients receiving a range of treatments, primarily group psychotherapy, Sansfaçon et al. (2017) replicated some of the findings reported above. They found that autonomous motivation measured with the ACMTQ at the beginning of treatment predicted improvement in eating disorder symptoms post-treatment, whereas controlled motivation did not. Autonomous motivation also predicted lower probability of dropping out of treatment. Contrary to expectation, autonomous motivation did not predict better outcome at a follow-up assessment. Carter and Kelly (2015) also studied a heterogeneous sample of patients with eating disorders who were treated either as inpatients or in a day hospital. Treatment was multimodal but relied primarily on group CBT. Autonomous motivation, but not controlled motivation, predicted more rapid decrease in eating disorder symptoms. Autonomous motivation was higher among patients reporting receiving more social support, but the support measure did not distinguish more or less autonomous forms of support.

Two studies examined sources of autonomy support beyond patients' individual psychotherapists. Using a heterogeneous sample of outpatients receiving both group and individual therapy, Steiger et al. (2017) found that increases in autonomous motivation from pre-treatment to post-treatment were predicted by mid-treatment ratings of autonomy support received from the patient's individual therapist, group therapist, other members of their psychotherapy groups, and family members. No effect was found for autonomy support from romantic partners, and the effect of autonomy support from friends was moderated by initial levels of autonomous motivation. Post-treatment autonomous motivation predicted change in eating symptoms. Similarly, van der Kaap-Dreeder et al. (2014, Sample 1) found that parental autonomy support predicted autonomous motivation at the beginning of inpatient treatment and that autonomy support from staff members and fellow patients after two weeks of treatment predicted increases in autonomous motivation from pre- to post-treatment.

**Summary.** As was the case for depression and substance abuse, the studies reviewed here provide consistent support for the core SDT hypotheses that autonomous motivation is associated with better outcome and that autonomy support is associated with greater autonomous motivation. On the other hand, controlled motivation was consistently unrelated to outcome. The findings appear to be generalizable over the eating disorders and over outpatient and inpatient settings, and the observation that many kinds of individuals can provide autonomy support for treatment is an important new discovery. However, the literature is overwhelmingly based on naturalistic studies of complex,

multimodal treatments, making it difficult to specify for which treatments the SDT variables are common factors. The methodological limitations of the depression and substance abuse literatures apply to the eating disorder literature as well. Finally, with the exception of a few studies that reported BMI, the literature relies on self-report measures and would benefit from obtaining more objective outcome measures.

*Additional Studies of Autonomy Support from Nontherapists*

Because of the potential importance of autonomy support received from individuals other than psychotherapists, we review several studies that involved significant others in weight-loss efforts or treatments, even though they are outside our stated focus on psychiatric disorders. The foundational study of weight loss is Williams et al. (1996), who studied participants in a six-month-long very-low-calorie weight loss program. Autonomous motivation predicted better attendance, more weight loss, and better maintenance of weight loss. Autonomy support from healthcare providers assessed 5–10 weeks into treatment using the HCCQ predicted concurrent autonomous motivation. Williams et al. (2006) later modified the HCCQ to assess autonomy support from "important others" rather than treatment agents. They found that autonomy support from important others predicted outcome in both a smoking reduction intervention and a healthy diet intervention, even while controlling for support from the professional care providers as measured by the HCCQ.

Similarly, Powers, Koestner, and Gorin (2008) modified the HCCQ to assess autonomy support from "friends and family" for college women's attempts at weight loss. The women did not receive psychotherapy but were directed to an internet site providing weight loss suggestions. Autonomy support, but not directive support, predicted weight loss over one month, even while controlling for autonomous motivation. These results suggest that autonomy support from family and friends might also contribute directly to outcome in psychotherapeutic interventions.

Gorin et al. (2014) examined the roles of autonomy support and autonomous motivation in an RCT comparing two behaviorally oriented weight loss programs, one standard and the other with a greater focus on the home environment and the involvement of a household member ("partner"). As predicted, and consistent with Powers et al. (2008), autonomous motivation and partner autonomy support at 6 months predicted weight loss at 18 months in both treatment conditions.

Gettens et al. (2018) focused more specifically on support from women's male romantic partners. In a general community sample, male partners' autonomy support predicted the women's autonomous regulation of eating. Moreover, in a reanalysis of Gorin et al.'s (2014) data, Gettens et al. found that increases in partner autonomy support over treatment predicted increases in autonomous motivation and greater weight loss.

Gorin et al. (2020) conducted an RCT to assess the impact of enhancing partner's autonomy support on weight-loss efforts. Sixty-four couples were assigned to either a

behaviorally oriented, group-based weight loss treatment or to an augmented treatment that also sought to increase partners' autonomy support for weight-loss efforts. The effects of the two treatments did not differ, but higher baseline partner autonomy support predicted greater weight loss at 6 and 12 months, and increases in partner autonomy support from baseline to 3 months predicted increases in autonomous motivation and greater weight loss.

**Summary.** Although one cannot assume that findings in the context of weight loss attempts will generalize to the treatment of psychiatric disorders, these studies suggest that autonomy support for treatment does not operate solely through psychotherapists, nor would it be expected to do so from an SDT perspective. Rather, autonomy support from significant others, including friends, family members, and romantic partners, may have beneficial effects on clients' motivation and their outcomes. The results also suggest that autonomy support for treatment may have both an indirect effect through increased autonomous motivation and a direct effect. The mechanism of that direct effect remains to be determined, but might involve increased need satisfaction.

### Overview of Findings and Directions for Future Research

We reviewed studies that examined the effects of multiple forms of psychotherapy, both group and individual, in both outpatients and inpatients, with several disorders. Autonomous motivation for seeking treatment and participating in the process of psychotherapy consistently predicted better outcome, and autonomy support from therapists, other treatment agents, and significant others predicted higher autonomous motivation. Controlled motivation was sometimes linked to worse outcome, but more often there was no significant relationship. The available evidence therefore supports the view that autonomous motivation and autonomy support are common factors in psychotherapy. However, it must be acknowledged that few of the studies can withstand the skeptical critique that has been directed at other common factors (Feeley et al., 1999), including the alternative interpretation that it is early change in symptoms that leads to autonomous motivation and perceived autonomy support. There are experimental studies in other domains that support the causal priority of SDT variables, but it remains to be shown conclusively that the SDT variables are *causally* related to greater engagement and better outcome in psychotherapy. In the next section we consider methodological improvements that could strengthen the evidential base for SDT variables as common factors. We then conclude by enumerating some important emerging questions about SDT and psychotherapy that to date have received little attention.

### Strengthening the Evidence for Common Factor Status

Methodological choices generally have both benefits and costs, so we are not advocating an idealized vision of a single perfect design. However, the body of literature would be stronger if more attention were paid to the following issues.

1. The large majority of the reviewed studies were naturalistic designs with one-occasion self-report measures of outcome. It would be desirable to have more RCTs that compared manualized treatments and that supplemented self-reports with objective measures or ecological momentary assessment procedures that reduce memory-related biases. Such designs increase confidence that there are objective gains that are attributable to the treatments, and they more precisely specify the treatments for which common factor status can be claimed.

2. Claims for a causal role of common factors can be strengthened by controlling for early symptom change, examining change after the assessment of the putative common factor, and testing potential third variable confounders (e.g., Zuroff et al., 2007).

3. Understanding of the therapeutic alliance has been greatly advanced by including more frequent assessments (Zilcha-Mano, 2017; Zilcha-Mano et al., 2014), but very few studies have assessed autonomous motivation or autonomy support more than once. Measuring SDT constructs on multiple occasions, even at each session, would permit researchers to separate between- and within-patient processes and increase the credibility of causal claims. Moreover, such data would elucidate the time course of changes in motivation and measures of outcome.

4. Few studies have collected follow-up data after treatment, thereby failing to examine the hypothesis that autonomous motivation leads to more durable change. Multiple follow-ups would permit testing the role of autonomous motivation on longer-term outcome, as well as examining the causes and consequences of fluctuations in autonomous motivation and autonomy support during the follow-up period.

5. The psychotherapy literature has moved away from analyzing samples of patients who completed treatment to analyzing intent-to-treat samples using techniques like maximum likelihood estimation and multiple imputation. Completer samples are potentially biased and unrepresentative of the population that seeks help. Researchers interested in SDT variables should consider the implications of how they choose to analyze their data for the conclusions that can be drawn from the results.

6. The range of disorders, types of psychotherapies, and patient sociodemographic characteristics over which SDT variables have been studied are far less than that for common factors such as the therapeutic alliance and the Rogerian conditions. For example, we found no studies of patients with primary diagnoses of an anxiety disorder or borderline personality disorder, nor were there studies of prominent therapies such as emotion focused therapy, dialectical behavior therapy, or the psychodynamic therapies, nor

were there studies of couple or family therapy modalities. There are strong theoretical arguments for the role of SDT variables with other disorders and other therapies (Ryan & Deci, 2017), but this remains to be demonstrated empirically.

The preceding list of recommendations for SDT-derived psychotherapy research may appear daunting, but the items are actually broadly applicable to the entire field of psychotherapy research. It seems likely that as the science of psychotherapy research evolves, SDT researchers will begin to take advantage of the latest improvements and innovations.

*Emerging Questions about SDT Variables and Psychotherapy*

1. Only one study separated between-therapists and within-therapist variability in SDT variables, and, to our knowledge, no study has separated between-therapy-groups and within-therapy-group variability. This is an important avenue to pursue, as doing so opens new kinds of questions, for example: What are the determinants of between-therapists or between-groups differences in autonomy support? Most of the questions enumerated below can be addressed at multiple levels of analysis.

2. SDT proposes that autonomy support is the antecedent of autonomous motivation, but recent research suggests there might be bidirectional relations between the two, such that autonomously motivated individuals are able to elicit increased levels of autonomy support, which then enhances autonomous motivation, and thereby creates a benign cycle leading to improved affect and goal progress (Levine et al., 2020). Zeldman et al.'s (2004) results hint at such processes in the context of psychotherapy and deserve further exploration with repeated measurements of autonomous motivation and autonomy support over the course of therapy.

3. More research is needed to identify predictors of autonomous and controlled motivation beyond autonomy support. Relational support and competence support are obvious candidates from the perspective of SDT, but other predictors, including personality variables such as self-criticism and perfectionism, should be examined.

4. More research is needed to identify the predictors of the extent to which therapists or significant others provide autonomy support for psychotherapy and behavior change. Are there types of therapy, or personality characteristics of therapists, or personality characteristics of supervisors, or organization-level characteristics that predict enhanced or diminished autonomy support?

5. More attention should be devoted to the mediational processes linking autonomous motivation to psychotherapy outcome. SDT suggests that

autonomous motivation leads to greater persistence in therapy, greater adherence to therapeutic tasks and assignments, greater internalization of learning, and consequently to greater generalization and durability of gains. However, except for some studies linking autonomous motivation to reduced dropout, there have been almost no studies of SDT and process variables. Relatedly, very little is known concerning the direct effects of autonomy support, that is, effects that are not mediated by autonomous motivation. One potentially important mediator is satisfaction of the basic psychological needs. Future SDT-informed psychotherapy research might include assessments of need satisfaction and frustration after therapy sessions and link these to therapist autonomy support and patient autonomous motivation.

6. There is scope for more research on moderators of the effects of autonomous motivation and autonomy support. Zuroff et al. (2016) found that between- and within-therapist differences in Rogerian conditions were moderated by patient levels of dependency and self-criticism. Analogously, it is possible that highly self-critical patients require higher levels of autonomy support or autonomous motivation in order to succeed in psychotherapy.

7. SDT-inspired researchers should seek to integrate their ideas with the extensive literature about common factors in psychotherapy. For example, the three pathways in Wampold and Imel's (2015) contextual model could be examined in relation to SDT variables, as could established common factors such as the alliance, Rogerian conditions, group cohesion, and provision of feedback. In the beginning of this chapter, we identified some possible linkages, but few have been examined empirically.

8. This chapter has by design focused somewhat narrowly on autonomy support and autonomous motivation, but SDT is a deep and extensive gold mine with a multiplicity of rich veins to explore. Much of value remains for researchers to extract and apply to the study of psychotherapy. Especially promising, in our view, are the concepts of basic psychological need satisfaction (Ryan & Deci, 2017, Chapter 10), dispositional autonomy (Chapter 9), and intrinsic versus extrinsic values (Chapter 11). As noted, satisfaction of the basic needs is likely to be an important mediator of beneficial outcomes and as such warrants more investigation. Although SDT emphasizes contextual determinants of motivation, it also recognizes dispositional differences in motivational variables (e.g., Sheldon, Ryan, & Deci, 1996). Such differences in initial levels of SDT variables might well impact patients' willingness to seek therapy and their responsiveness to common factors. Finally. many forms of therapy encourage patients to examine their values and goals and potentially to change them (Ryan et al., 2011; Ryan & Deci, 2017);

prominent contemporary examples include dialectical behavior therapy and acceptance and commitment therapy. Changes in values and goals may be a transdiagnostic and transtheoretical process which is readily conceptualized within SDT.

## Conclusion

SDT is a powerful framework for increasing understanding of psychotherapy process and outcome, as demonstrated by the substantial corpus of studies we have reviewed here. It has the potential to illuminate and perhaps mitigate the considerable variability in outcome which now plagues the field. However, much remains to be explored and many intriguing questions are beckoning to researchers. We anticipate that great strides will be made over the next 5 to 10 years in understanding SDT variables as common factors in psychotherapy.

## References

Baldwin, S. A., & Imel, Z. E. (2013). Therapist effects: Findings and methods. In M. J. Lambert (Ed.), *Bergin and Garfield's handbook of psychotherapy and behavior change* (pp. 258–297). Wiley.

Baldwin, S. A., Wampold, B. E., & Imel, Z. E. (2007). Untangling the alliance-outcome correlation: Exploring the relative importance of therapist and patient variability in the alliance. *Journal of Consulting and Clinical Psychology*, *75*(6), 842–852.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory–II*. Psychological Corp.

Blatt, S. J. (2004). *Experiences of depression: Theoretical, clinical, and research perspectives*. American Psychological Association.

Carter, J. C., & Kelly, A. C. (2015). Autonomous and controlled motivation for eating disorders treatment: Baseline predictors and relationship to treatment outcome. *British Journal of Clinical Psychology*, *54*(1), 76–90.

Dwyer, L. A., Hornsey, M. J., Smith, L. G., Oei, T. P., & Dingle, G. A. (2011). Participant autonomy in cognitive behavioral group therapy: An integration of self-determination and cognitive behavioral theories. *Journal of Social and Clinical Psychology*, *30*(1), 24–46.

Feeley, M., DeRubeis, R. J., & Gelfand, L. A. (1999). The temporal relation of adherence and alliance to symptom change in cognitive therapy for depression. *Journal of Consulting and Clinical Psychology*, *67*(4), 578–582.

Gettens, K. M., Carbonneau, N., Koestner, R., Powers, T. A., & Gorin, A. A. (2018). The role of partner autonomy support in motivation, well-being, and weight loss among women with higher baseline BMI. *Families, Systems, & Health*, *36*(3), 347–356.

Gorin, A. A., Powers, T. A., Gettens, K., Cornelius, T., Koestner, R., Mobley, A. R., Pescatello, L. S., & Huedo-Medina, T. B. (2020). A randomized controlled trial of a theory-based weight-loss program for couples. *Health Psychology*, *39*(2), 137–146.

Gorin, A. A., Powers, T. A., Koestner, R., Wing, R. R., & Raynor, H. A. (2014). Autonomy support, self-regulation, and weight loss. *Health Psychology*, *33*(4), 332–339.

Hamilton, M. A. X. (1967). Development of a rating scale for primary depressive illness. *British Journal of Social and Clinical Psychology*, *6*(4), 278–296.

Klein, D. N., Schwartz, J. E., Santiago, N. J., Vivian, D., Vocisano, C., Castonguay, L. G., Arnow, B., Blalock, J. A., Manber, R., Markowitz, J. C., Riso, L. P., Rothbaum, B., McCullough, J. P., Thase, M. E., Borian, F. E., Miller, I. W., & Keller, M. B. (2003). Therapeutic alliance in depression treatment: Controlling for prior change and patient characteristics. *Journal of Consulting and Clinical Psychology*, *71*(6), 997–1006.

Koestner, R., Otis, N., Powers, T. A., Pelletier, L., & Gagnon, H. (2008). Autonomous motivation, controlled motivation, and goal progress. *Journal of Personality*, *76*(5), 1201–1230.

Levine, S. L., Holding, A. C., Milyavskaya, M., Powers, T. A., & Koestner, R. (2020). Collaborative autonomy: The dynamic relations between personal goal autonomy and perceived autonomy support in emerging adulthood results in positive affect and goal progress. *Motivation Science*. Advance online publication.

Lynch, M. F. (2014). Motivation in the client-counselor relationship. In N. Weinstein (Ed.), *Integrating human motivation and interpersonal relationships: Theory, research, and applications* (pp. 317–333). Springer.

Lynch, M. F., Vansteenkiste, M., Deci, E. L., & Ryan, R. M. (2011). Autonomy as process and outcome: Revisiting cultural and practical issues in motivation for counseling. *Counseling Psychologist, 39*, 286–302.

Mansour, S., Bruce, K. R., Steiger, H., Zuroff, D. C., Horowitz, S., Anestin, A. S., & Sycz, L. (2012). Autonomous motivation: A predictor of treatment outcome in bulimia-spectrum eating disorders. *European Eating Disorders Review*, *20*(3), e116–e122.

McBride, C., Zuroff, D. C., Ravitz, P., Koestner, R., Moskowitz, D. S., Quilty, L., & Bagby, R. M. (2010). Autonomous and controlled motivation and interpersonal therapy for depression: Moderating role of recurrent depression. *British Journal of Clinical Psychology*, *49*(4), 529–545.

Michalak, J., Klappheck, M. A., & Kosfelder, J. (2004). Personal goals of psychotherapy patients: The intensity and the "why" of goal-motivated behavior and their implications for the therapeutic process. *Psychotherapy Research*, *14*(2), 193–209.

Moore, E., Holding, A. C., Moore, A., Powers, T. A., Zuroff, D. C., & Koestner, R. (2021). Perfectionism, goal-related autonomy, poor goal progress and depressive symptoms: A self-determination theory analysis. *Journal of Counseling Psychology*, *68*, 88–97.

Norcross, J. C., & Lambert, M. J. (Eds.). (2019). *Psychotherapy relationships that work. Vol. 1: Evidence-based therapist contributions*. Oxford University Press.

Pelletier, L. G., Tuson, K. M., & Haddad, N. K. (1997). Client Motivation for Therapy Scale: A measure of intrinsic motivation, extrinsic motivation, and amotivation for therapy. *Journal of Personality Assessment*, *68*(2), 414–435.

Philips, B., & Wennberg, P. (2014). The importance of therapy motivation for patients with substance use disorders. *Psychotherapy*, *51*(4), 555–562.

Powers, T. A., Koestner, R., & Gorin, A. A. (2008). Autonomy support from family and friends and weight loss in college women. *Families, Systems, & Health*, *26*(4), 404–416.

Prochaska, J. O., & DiClemente, C. C. (1992). Stages of change in the modification of problem behaviors. *Progress in Behavior Modification*, *28*, 183–218.

Rogers, C. R. (1957). The necessary and sufficient conditions of therapeutic personality change. *Journal of Consulting Psychology*, *21*(2), 95–103.

Ryan, R. M., & Deci, E. L. (2008). A self-determination theory approach to psychotherapy: The motivational basis for effective change. *Canadian Psychology/Psychologie Canadienne*, *49*(3), 186–193.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., Lynch, M. F., Vansteenkiste, M., & Deci, E. L. (2011). Motivation and autonomy in counseling, psychotherapy, and behavior change: A look at theory and practice. *Counseling Psychologist*, *39*(2), 193–260.

Ryan, R. M., Plant, R. W., & O'Malley, S. (1995). Initial motivations for alcohol treatment: Relations with patient characteristics, treatment involvement, and dropout. *Addictive Behaviors*, *20*(3), 279–297.

Sansfaçon, J., Steiger, H., Gauvin, L., Fletcher, É., & Israël, M. (2017). Does level of motivation for change impact post-treatment outcomes in the eating disorders? Protocol for a systematic review with quantitative analysis. *Journal of Eating Disorders*, *5*(1), 1–9.

Scheel, M. J. (2011). Client common factors represented by client motivation and autonomy. *Counseling Psychologist*, *39*, 276–285.

Sheldon, K. M., Joiner, Jr., T. E., Pettit, J. W., & Williams, G. (2003). Reconciling humanistic ideals and scientific clinical practice. *Clinical Psychology: Science and Practice*, *10*(3), 302–315.

Sheldon, K. M., Ryan, R., & Reis, H. T. (1996). What makes for a good day? Competence and autonomy in the day and in the person. *Personality and Social Psychology Bulletin*, *22*, 1270–1279.

Steiger, H., Sansfaçon, J., Thaler, L., Leonard, N., Cottier, D., Kahan, E., Fletcher, E., Rossi, E., Israel, M., & Gauvin, L. (2017). Autonomy support and autonomous motivation in the outpatient treatment of adults with an eating disorder. *International Journal of Eating Disorders*, *50*(9), 1058–1066.

Thaler, L., Israel, M., Antunes, J. M., Sarin, S., Zuroff, D. C., & Steiger, H. (2016). An examination of the role of autonomous versus controlled motivation in predicting inpatient treatment outcome for anorexia nervosa. *International Journal of Eating Disorders*, *49*(6), 626–629.

van der Kaap-Deeder, J., Vansteenkiste, M., Soenens, B., Verstuyf, J., Boone, L., & Smets, J. (2014). Fostering self-endorsed motivation to change in patients with an eating disorder: The role of perceived autonomy support and psychological need satisfaction. *International Journal of Eating Disorders*, *47*(6), 585–600.

Vansteenkiste, M., & Sheldon, K. M. (2006). There's nothing more practical than a good theory: Integrating motivational interviewing and self-determination theory. *British Journal of Clinical Psychology*, *45*(1), 63–82.

Wampold, B. E., & Imel, Z. E. (2015). *The great psychotherapy debate: The evidence for what makes psychotherapy work*. Routledge.

Wild, T. C., Cunningham, J. A., & Ryan, R. M. (2006). Social pressure, coercion, and client engagement at treatment entry: A self-determination theory perspective. *Addictive Behaviors*, *31*(10), 1858–1872.

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology*, *70*(1), 115–126.

Williams, G. C., Lynch, M. F., McGregor, H., Ryan, R. M., Sharp, D., & Deci, E. L. (2006). Validation of the Important Other Climate Questionnaire: Assessing autonomy support for health related change. *Families, Systems and Health, 24*, 179–194.

Zeldman, A., Ryan, R. M., & Fiscella, K. (2004). Motivation, autonomy support, and entity beliefs: Their role in methadone maintenance treatment. *Journal of Social and Clinical Psychology*, *23*(5), 675–696.

Zilcha-Mano, S. (2017). Is the alliance really therapeutic? Revisiting this question in light of recent methodological advances. *American Psychologist*, *72*(4), 311–325.

Zilcha-Mano, S., Dinger, U., McCarthy, K. S., & Barber, J. P. (2014). Does alliance predict symptoms throughout treatment, or is it the other way around? *Journal of Consulting and Clinical Psychology*, *82*(6), 931–935.

Zuroff, D. C., & Blatt, S. J. (2006). The therapeutic relationship in the brief treatment of depression: Contributions to clinical improvement and enhanced adaptive capacities. *Journal of Consulting and Clinical Psychology*, *74*(1), 130–140.

Zuroff, D. C., Blatt, S. J., Sotsky, S. M., Krupnick, J. L., Martin, D. J., Sanislow III, C. A., & Simmens, S. (2000). Relation of therapeutic alliance and perfectionism to outcome in brief outpatient treatment of depression. *Journal of Consulting and Clinical Psychology*, *68*(1), 114–124.

Zuroff, D. C., Koestner, R., Moskowitz, D. S., McBride, C., & Bagby, R. M. (2012). Therapist's autonomy support and patient's self-criticism predict motivation during brief treatments for depression. *Journal of Social and Clinical Psychology*, *31*(9), 903–932.

Zuroff, D. C., Koestner, R., Moskowitz, D. S., McBride, C., Marshall, M., & Bagby, M. R. (2007). Autonomous motivation for therapy: A new common factor in brief treatments for depression. *Psychotherapy Research*, *17*(2), 137–147.

Zuroff, D. C., McBride, C., Ravitz, P., Koestner, R., Moskowitz, D. S., & Bagby, R. M. (2017). Autonomous and controlled motivation for interpersonal therapy for depression: Between-therapists and within-therapist effects. *Journal of Counseling Psychology*, *64*(5), 525–537.

Zuroff, D. C., Shahar, G., Blatt, S. J., Kelly, A. C., & Leybman, M. J. (2016). Predictors and moderators of between-therapists and within-therapist differences in depressed outpatients' experiences of the Rogerian conditions. *Journal of Counseling Psychology*, *63*(2), 162–172.

# The Transdiagnostic Role of the Basic Psychological Needs in Psychopathology

Jolene van der Kaap-Deeder

**Abstract**

Self-determination theory (SDT) states that the satisfaction of individuals' basic psychological needs for autonomy, competence, and relatedness is crucial for well-being and thriving, whereas the frustration of these needs is assumed to engender ill-being and even psychopathology. This chapter presents an overview of the work done on the relation between the basic psychological needs for autonomy, competence, and relatedness and psychopathology. Current empirical evidence suggests that especially need frustration plays a crucial role in different types of psychopathology, thereby emphasizing the transdiagnostic role of the needs. This chapter also discusses different ways in which especially need frustration can relate to psychopathology and how this fits within the broader transdiagnostic literature. Finally, important avenues for future research are identified.

**Key Words:** basic psychological needs, need satisfaction, need frustration, self-determination theory, psychopathology, transdiagnostic

Psychopathology refers to the presence of a mental disorder causing an individual to experience a serious level of functional impairment and suffering, which is involuntary in nature (Widiger, 1997). A vast amount of studies and theories have indicated that the pathways to psychopathology "involve causal processes that act both at micro levels and macro levels, that act within and outside of the individual, and that involve processes best understood from biological, psychological, and sociocultural perspectives" (Kendler, 2008, p. 695). In this chapter, I will focus mainly on the basic psychological needs theory (BPNT), one of self-determination theory's (SDT) mini-theories, wherein both sources and consequences of need satisfaction and frustration can range from biological to sociocultural domains. When individuals' needs are satisfied, they experience a sense of volition and choice in their behaviors, feelings, and thoughts (i.e., autonomy satisfaction), feel a sense of mastery and efficacy in striving for personally important goals (i.e., competence satisfaction), and have the feeling that they are connected with and care for important others (i.e., relatedness satisfaction). Frustration of these needs is characterized by an

active undermining of these essential feelings, so that individuals experience a sense of pressure (i.e., autonomy frustration), failure (i.e., competence frustration), and isolation or exclusion (i.e., relatedness frustration). One of the core tenets of BPNT is that the satisfaction of these basic psychological needs is essential for individuals' growth, well-being, and adjustment, whereas the frustration of these needs predicts problem behavior, ill-being, and psychopathology (Ryan, Deci, & Vansteenkiste, 2016; Vansteenkiste, Ryan, & Soenens, 2020; Vansteenkiste & Ryan, 2013). In line with this formulation, research concerning the implications of both need frustration and need satisfaction in psychopathology has been increasing. Examining the role of the psychological needs in psychopathology seems especially imperative given the increase of psychological distress and major depression in the past decade, especially among adolescents and young adults (Twenge et al., 2019).

I begin by describing extant research that has shed light on the relation between the basic psychological needs and several forms of psychopathology, followed by an account of the etiological, symptomatic, and reciprocal role of the needs in psychopathology. After situating SDT and the needs within a broader hierarchical, dimensional, and transdiagnostic account of psychopathology, I discuss several pathways through which vulnerabilities can result in experiences of need frustration. Finally, several important directions for future research are highlighted.

## The Transdiagnostic Role of the Basic Psychological Needs

Within the past century, mental health problems have been categorized using formal taxonomic systems, with the current *Diagnostic and Statistical Manual of Mental Disorders-5* (*DSM-5*) covering some 541 diagnostic categories (American Psychiatric Association, 2013). Such an approach to psychopathology is, however, limited in explaining the frequently encountered comorbidity among psychiatric diagnoses, the heterogeneity in symptomatology within diagnoses, and the finding that most clinical treatments are effective across diverse forms of psychopathology (Dalgleish et al., 2020). These challenges to the current categorical approach to psychopathology have spurred interest in and resulted in growing empirical evidence for a common psychopathology factor (i.e., p-factor) in the development of psychiatric disorders (e.g., Caspi et al., 2014), with transdiagnostic factors being assumed to underlie diverse forms of psychopathology. Given that much of the work on transdiagnostic processes is atheoretical (Dalgleish et al., 2020), there is a need for a theory transcending the current diagnosis-specific frameworks. SDT has the potential to move this recent field forward by providing a theoretically parsimonious model in the explanation of psychopathology, with the psychological needs playing a key role in diverse manifestations of psychopathology. On a practical level, employing SDT as a guiding theoretical framework in transdiagnostic psychological treatments is promising, as it enables one to kill two birds with one stone by addressing the psychological needs. Indeed, a vast amount of meta-analyses and reviews have now provided evidence

for the equivalence or superiority of such transdiagnostic psychological treatments over diagnosis-specific intervention or treatment-as-usual (see also Dalgleish et al., 2020).

Studies shedding light on the transdiagnostic role of the psychological needs in psychopathology can be divided into two research lines; most studies show accumulated evidence (i.e., first research line), and a few studies indicate direct evidence (i.e., second research line) for the transdiagnostic role of the psychological needs. Within the first research line, an accumulation of studies has examined the relation between the psychological needs and various forms of psychopathology. Regarding the second research line, studies have directly aimed to examine the transdiagnostic role of the needs by examining whether the inclusion of the psychological needs in the prediction of several forms of psychopathology would reduce the strength of the relation between different symptoms of psychopathology (indicating that the needs account for the comorbidity between different symptomatologies).

### The Basic Psychological Needs as Transdiagnostic Factors: Accumulated Transdiagnostic Evidence

Most of the studies on the link between the needs and psychopathology have together provided evidence for the transdiagnostic role of the psychological needs by showing that the psychological needs are implicated in several forms of psychopathology (Vansteenkiste & Ryan, 2013). First, focusing on the satisfaction of the psychological needs, reduced need satisfaction was found to be related to, for instance, nonsuicidal self-injury (Emery, Heath, & Mills, 2016), schizophrenia (Cooper, Lavaysse, & Gard, 2015), and attention-deficit/hyperactivity disorder (ADHD) symptomatology (Rogers & Tannock, 2018), whereas increases in need satisfaction in clinical groups have been found to predict a decrease in depression and anxiety (through a reduction in negative automatic thoughts; Dwyer et al., 2011) and a rise in autonomous motivation throughout treatment, which, in turn, related to increases in body mass index in a subgroup of patients with anorexia nervosa (Van der Kaap-Deeder et al., 2014).

Although historically research within SDT has focused on the effects of need satisfaction, more recent findings indicate that frustration of these needs is critical in the prediction of ill-being or even psychopathology, such frustration implying the active obstruction and undermining of psychological needs. In line with this, SDT postulates that the needs account for both the "bright" and "dark" side of individuals' functioning (Ryan et al., 2016; Vansteenkiste & Ryan, 2013). Whereas need satisfaction mainly predicts individuals' growth and wellness, experienced need frustration is a crucial predictor of malfunctioning and ill-being.

Indeed, an increasing amount of studies has shown that need frustration is crucial in the prediction of symptoms of psychopathology, such as ADHD symptomatology (Oram, Rogers, & DuPaul, 2020), borderline personality features (Van der Kaap-Deeder, Brenning, & Neyrinck, 2021), suicidality (van Bergen & Saharso, 2016), and burnout

(Huyghebaert et al., 2018). Several studies have also directly compared the role of both need satisfaction and need frustration in the prediction of psychopathology versus adaptive outcomes. One of these earlier studies showed that athletes' need satisfaction related to positive outcomes associated with sport participation (i.e., vitality and positive affect), whereas need frustration was a more consistent predictor of maladaptive outcomes (i.e., disordered eating, burnout, depression, negative affect, and physical symptoms; Bartholomew et al., 2011). Similarly, Heissel et al. (2018) showed among a diverse sample of university students, working adults, and senior adults that life satisfaction was predicted by both need satisfaction and need frustration, whereas depressive symptoms were predicted only by need frustration. Another recent study showed that experienced need frustration related to a higher level of symptoms of internet gaming disorder partially via poorer self-control, with need satisfaction showing an opposite but less strong pattern of relations (Mills & Allen, 2020). Employing a longitudinal design, need frustration (but not need satisfaction) has been found to predict increased symptoms of somatization, depression, and anxiety among high school students across a nine-month period (Cordeiro et al., 2016). Daily fluctuations in the frustration (but not satisfaction) of each need have been found to relate to daily levels of binge eating symptoms (Verstuyf et al., 2013). So, with some notable exceptions (e.g., Boone et al., 2014), studies comparing the effects of need satisfaction and need frustration indeed seem to point to the unique role of need satisfaction and need frustration in, respectively, the "bright" and "dark" paths of human functioning.

### The Basic Psychological Needs as Transdiagnostic Factors: Direct Transdiagnostic Evidence

Besides studies focusing mostly on one form of psychopathology and together in an accumulated fashion showing the importance of the psychological needs across diverse forms of psychopathology, there has also been recent interest in directly testing the transdiagnostic role of need frustration. That is, Campbell, Boone et al. (2018) showed that not only did need frustration predict both depressive symptoms and eating pathology, but also that introducing need frustration as the underlying source of both symptoms resulted in the concurrent relation between depressive symptoms and eating pathology to become statistically nonsignificant. Similarly, Depestele et al. (2021) found that need frustration predicted drive for thinness as well as internalizing symptoms in patients with a restrictive or binge-eating/purging eating disorder subtype, while also diminishing the co-occurrence of both these types of symptoms. Employing a heterogeneous sample of nonclinical and clinically referred adolescents, Brenning et al. (2022) showed that need frustration partially mediated the relations from dysfunctional emotion regulation to internalizing as well as externalizing problems, with a drop in the strength of the relation between these two types of symptomatology after accounting for need frustration. Such findings show that need frustration is an underlying transdiagnostic mechanism, as

it is not only predictive of diverse forms of psychopathology but also explains why there is a high degree of comorbidity between certain disorders. This is highly informative for clinical practice and research, as it indicates that need frustration is a common cause of different types of pathology, which is in line with the concept of multifinality (i.e., the same starting point can result in different outcomes).

## The Etiological, Symptomatic, and Reciprocal Role of the Basic Psychological Needs in Psychopathology

Given the increasing evidence of the importance of the psychological needs (especially need frustration) in diverse forms of psychopathology, it is crucial to determine what the exact relation is between the needs and psychopathology. Specifically, need frustration is expected to be associated with symptoms of psychopathology in both more direct and indirect ways. First, need frustration has a direct role in the etiology of many forms of psychopathology (Ryan et al., 2016), with individuals experiencing the direct costs of need frustration. For instance, experiencing prolonged competence frustration (e.g., because of being unwillingly unemployed or because one has highly demanding parents) can directly lead to feelings of helplessness, amotivation, and depressed mood (i.e., symptoms of depression).

Need frustration can, however, also be indirectly linked to diverse forms of psychopathology through several maladaptive mechanisms that aim to cope with prolonged need frustration. One of those mechanisms involves *need substitutes*, whereby individuals try to compensate for experiences of need frustration with goals or behaviors that produce a short-lived feeling of need satisfaction but eventually are maladaptive (Deci & Ryan, 2000). In this case, individuals can strive for extrinsic goals such as pursuing attractiveness, materialistic goods, or social status, which contrast with such intrinsic goals as the pursuit of self-development and contributing to the society (Kasser & Ryan, 1996). Striving for extrinsic goals, such as pursuing materialistic goods, has been found to relate to a higher level of need frustration and a lower level of need satisfaction (Unanue et al., 2014). Such need substitutes can be key in the development or maintenance of psychopathology. To illustrate, individuals diagnosed with anorexia nervosa have been found to perceive their disorder as increasing their sense of mastery, mental strength, and self-confidence (i.e., competence), their identity (i.e., autonomy), and their experienced care and support from others (i.e., relatedness; Nordbø et al., 2006). Thus, through the pursuit of an extrinsic goal (i.e., attractiveness), these individuals are able to experience a sense of need satisfaction. Such experiences are, however, artificial as they do not contribute to individuals' wellness, but instead engender maladaptive functioning, including health problems, social isolation, and dependency on others. Indeed, looking at the overall functioning, individuals with anorexia nervosa report an increased amount of frustrating experiences in other (outside of their eating disorder) areas of their life, as indicated by strained relationships (Carter, Kelly, & Norwood, 2012). Thus, this experienced need satisfaction often

applies only to the domain of psychopathology, which forms a more easy and quick way of obtaining instant need satisfaction. For instance, whereas experiences of competence in the academic or work domain often require persistent effort across a long period, feelings of mastery concerning obtaining weight goals can relatively easily be obtained and experienced (e.g., through compliments or looser fitting clothes; Selby & Coniglio, 2020).

Besides need substitutes, individuals can react to need-frustrating experiences by *compensatory behaviors*, so that they fight against or numb negative feelings associated with need frustration. Three classes of compensatory behaviors can be distinguished: (1) releasing self-control, (2) rigid behavioral patterns, and (3) oppositional defiant behavior (Deci & Ryan, 2000; Vansteenkiste & Ryan, 2013). With respect to *releasing self-control*, individuals experiencing chronic need frustration engage in behaviors such as binge eating (Boone et al., 2014), alcohol abuse (Knee & Neighbors, 2002), and smoking (Niemiec et al., 2009) to temporarily relieve some of those negative feelings. Similarly, individuals can engage in excessive gaming; one of the criteria for internet gaming disorder proposed in the *DSM-5* (American Psychiatric Association, 2013) is involvement in playing games to escape negative feelings. This is also in line with the need-density hypothesis, which states that individuals' addiction to gaming is strongest when they experience low need satisfaction in the real world but high need satisfaction in video games (Rigby & Ryan, 2011), thus describing gaming addiction as a form of compensatory behavior.

Also, engaging in *rigid behavioral patterns* such as those associated with anorexia nervosa (e.g., setting high, unrealistic standards) can, temporarily, serve as a way of experiencing structure, stability, and predictability (Nordbø et al., 2006). Indeed, in one of the most prominent models of anorexia nervosa, Fairburn, Shafran, and Cooper (1999) argue that a persistent desire for self-control (likely to originate from feelings of pressure or incompetence) can foster the onset of anorexia nervosa. Such self-control is exercised through eating behaviors focusing on losing weight and reaching a thin ideal, and represents a way of controlling not only oneself but also one's environment and interpersonal relationships. In the long run, however, engaging in such rigid behavior inhibits individuals from seeing the actual cause of their need frustration and can increase their ill-being when they are unable to sustain these rigid behaviors (e.g., failing in meeting their high standards).

Individuals may respond to prolonged need frustration by bluntly rejecting rules and doing the opposite of what is expected from socializing or authority figures, as a way of breaking free from the feeling of being controlled (Vansteenkiste et al., 2014). Although such *oppositional defiance* can bring some brief relief, in the long run this engenders alienation from one's sense of self and personal preferences (Van Petegem, Vansteenkiste et al., 2015) and can result in externalizing problems such as aggressive behaviors.

Need substitutes often go hand in hand with compensatory behaviors. For instance, when individuals strive for attractiveness (i.e., need substitute), they can do so by engaging in rigid behavior (e.g., reducing their food intake to a minimal level). Indeed, in a

recent study focusing on muscle dysmorphia (i.e., a psychopathological preoccupation toward having a muscular body) among men, it was shown that need frustration related via a drive for muscularity (i.e., need substitute) to muscle dysmorphia symptoms (i.e., rigid compensatory behaviors), for instance excessive workouts and the use of anabolic steroids (Selvi & Bozo, 2020).

Besides the direct and indirect (through coping mechanisms) etiological role of need frustration in psychopathology, need frustration can be a symptomatic factor in varied forms of psychopathology (Ryan et al., 2016). That is, because all psychopathology is a breakdown in full functioning, need frustration will be evident across most, if not all, pathologies. To illustrate, frustration of the needs for autonomy (presented as identity problems) and relatedness (presented as affective instability and negative relationships) is an inherent part of the symptomatology of individuals with borderline personality disorder. In that case, need frustration is not necessarily a cause of the pathology (e.g., borderline personality disorder), but rather constitutes an essential part of the nature of this disorder.

Given the predominant use of cross-sectional designs and the scarcity of longitudinal and experimental studies in the examination of the link between the psychological needs and psychopathology, it is difficult to determine in which disorders need frustration plays a (direct or indirect) etiological or symptomatic role. Moreover, possible reciprocal relations between need frustration and psychopathology have yet to be fully examined. Presumably, the needs predict symptoms of psychopathology, but psychopathology in itself can frustrate the needs for autonomy, competence, and relatedness. It could be the case that a continuous low mood, low self-esteem, and not being able to enjoy things in life (all symptoms of depression) could prevent individuals from forming and maintaining close relationships, thereby engendering relatedness frustration. Indeed, research has shown that depressive symptoms predict an increase in thwarted belongingness across four weeks (O'Keefe et al., 2016), pointing to the possibility that depression could also increase the likelihood of relatedness frustration.

## SDT and the Hierarchical Taxonomy of Psychopathology

As discussed previously, increasing research and theorizing points to the importance of transdiagnostic factors underlying psychopathology (e.g., Caspi et al., 2014). One of the most prominent models in this regard is the Hierarchical Taxonomy of Psychopathology (HiTOP; Conway et al., 2019). The HiTOP is a data-driven hierarchical model including several levels differing in specificity, with a general psychopathology factor at the top and specific traits or symptoms (e.g., anxiety, aggression, or reality distortion) at the bottom. At the second broadest level, several factors or spectra are identified, of which the internalizing, externalizing (with a disinhibited and antagonistic subtype), and thought disorder factors are the most established. These three factors match very well with the three types of psychopathology that are identified from a SDT perspective (Ryan et al., 2016), where

especially the need for autonomy plays a transdiagnostic role. These three types refer to internally controlling disorders, disorders related to the impairment of internalization, and fragmented self-functioning disorders. Below I describe how these three types identified within SDT can help explain the development and maintenance of the three factors as explicated within the HiTOP.

Ryan et al. (2016) first refer to internally controlling disorders where individuals experience a high level of internal pressure, excessive self-control, and contingent self-worth. Contingent self-worth is characterized by the degree to which individuals base their self-esteem on meeting certain internal or external standards, with failure and success in meeting these standards causing significant fluctuations in one's self-esteem (Deci & Ryan, 1995). This first type of psychopathology matches well with the internalizing spectrum identified within HiTOP, referring to a large constellation of syndromes, such as fear, distress, eating pathology, and sexual problems (Kotov et al., 2017). Examples of such internalizing or internally controlling disorders are obsessive-compulsive personality, eating disorders, self-critical perfectionism, depression, and anxiety. These disorders are characterized by high levels of anxiety, self-criticism, and self-derogation, which is believed to originate from the frustration of the needs for autonomy and relatedness. Such frustration can occur when, for instance, parents use conditional regard, whereby their love for and attention to the child depend on whether the child acts in accordance with parental expectations. Such conditional regard frustrates the child's autonomy (feels pressured to behave a certain way) and relatedness (feels less attached to the parent) and can result in the child adopting the parental values in a controlled and rigid manner (resulting in, for instance, depressive symptoms; Otterpohl et al., 2020).

A second type of disorder identified by Ryan et al. (2016) is related to the impairment of internalization, typified by difficulties in self-regulation, a low level of valuation of social values, or impulsivity. These disorders are quite similar to the externalizing spectrum identified within HiTOP, referring to a large constellation of syndromes, such as poor impulse control, aggression, blame externalization, and boredom proneness (Conway et al., 2019). Examples of such externalizing or impairment of internalization disorders are conduct disorder, oppositional defiant disorder, antisocial personality, ADHD, and substance abuse. Within HiTOP, however, a further distinction within this cluster of externalizing disorders is made between disinhibited and antagonistic externalizing disorders. Whereas the disinhibited externalizing disorders are characterized by a high level of impulsivity without consideration for possible consequences, the antagonistic externalizing disorders are typified by conflict and antipathy in interpersonal relationships and little consideration for other people's emotions (Krueger et al., 2021). The impairment of internalization disorders as identified within SDT (Ryan et al., 2016) mostly refers to these antagonistic externalizing disorders, and it is hypothesized that such disorders can result from experienced thwarting of all three psychological needs. Specifically, children of parents who act in a controlling, cold, and chaotic manner are less likely to assimilate

the values the parents model. That is, in order for individuals to fully identify with and integrate values promoted by the social context, they need to see the personal value of those rules (cf. autonomy), experience a sense of connection and trust related to the person communicating the rules (cf. relatedness), and feel competent to abide by the rules (cf. competence). Among both community and clinical samples, Van Petegem, Soenens et al. (2015) showed that a controlling parenting style related to a higher degree of externalizing problems through increased autonomy need frustration and reactance. Thus, thwarting needs can be detrimental in socialization processes and increases the likelihood of the development of externalizing or impairment of internalization disorders. Note that disinhibited externalizing disorders (e.g., substance abuse) as identified within HiTOP can also have their origins in need frustration by engaging in the release of self-control (i.e., a subtype of compensatory behaviors) as a way of coping with experienced need frustration (Knee & Neighbors, 2002), as discussed earlier.

A final and third type of disorder identified within SDT is related to fragmented self-functioning (Ryan et al., 2016), which matches with the factor of thought disorders within HiTOP, referring to a constellation of syndromes such as eccentricity, cognitive/perceptual dysregulation, unusual beliefs and experiences, and fantasy proneness (Conway et al., 2019; Kotov et al., 2017). Examples of such thought disorders or fragmented self-functioning disorders are borderline personality, dissociative identity disorder, psychotic disorders, and bipolar I disorder. These disorders are likely to be associated with severe frustration of the psychological needs. Prolonged or severe thwarting of especially the needs for autonomy and relatedness through harsh and punitive parenting or sexual and physical abuse can result in decreased integrated functioning in the child (Ryan et al., 2016). Such traumatic experiences can therefore result in personality structures where the different elements are not well-connected, and individuals have difficulty connecting with their true self. Vonderlin et al. (2018) showed in a meta-analysis of 65 studies that victims of childhood abuse and neglect had higher levels of dissociation compared with nonabused or -neglected subsamples, with even more pronounced levels of dissociation with earlier, longer, and parental abuse.

Whereas the HiTOP represents an increasingly well-validated model incorporating a dimensional classification of psychopathology (Conway et al., 2019), SDT represents an empirically grounded macro-theory of normal and atypical development with the psychological needs as the unifying factor (Vansteenkiste & Ryan, 2013). As highlighted above, a cross-fertilization of both models is fruitful, given that the transdiagnostic role of the psychological needs fits well in the hierarchical approach of the HiTOP, where several groups of symptomatology are identified that are relevant across different diagnoses.

### The Basic Psychological Needs and Other Transdiagnostic Factors

Given the increased focus on hierarchical models of psychopathology where transdiagnostic symptomatology is a crucial element, research into factors that can explain

this transdiagnostic symptomatology has been increasing. An important next step in research is to determine the unique effects of and also the synergy between different transdiagnostic factors, such as the basic psychological needs, repetitive negative thinking, sleep, cortisol, and emotion regulation. For instance, in the light of studies showing that poor-quality sleep can result in depressed mood and poor concentration (e.g., Borsboom, 2017) and that need frustration and poor-quality sleep are reciprocally related (Campbell, Vansteenkiste et al., 2018), it would be interesting for future research to further examine the interplay between these two proximal transdiagnostic mechanisms in the prediction of different forms of psychopathology. Also, an increased cortisol response (to evaluative tasks) has been implicated in several pathologies, and has also been linked to a lower level of autonomous motivation (Steel, Bishop, & Taylor, 2021). Similarly, an increasing number of studies employing an SDT perspective have examined the interplay between the needs and emotion regulation. Pointing toward the transdiagnostic role of emotion regulation, deficits in this domain have been found to relate to a diversity of psychological disorders, including depression, anxiety, eating disorders, and conduct disorders (see Aldao et al., 2016). Although both the basic psychological needs and emotion regulation have been indicated as transdiagnostic factors, they likely affect symptoms of psychopathology in a reciprocal manner. First, emotion regulation is assumed to influence the needs; for instance, in emotion dysregulation individuals feel overtaken by their emotional response, resulting in increased feelings of failure (i.e., competence frustration), an external locus of control (i.e., autonomy frustration), and difficulties connecting with others (i.e., relatedness frustration). On the other hand, individuals' unique way of dealing with emotions is likely to be rooted in their history of need satisfaction and frustration. To illustrate, children who experience their parents as low in perspective-taking and in the acknowledgment of their emotions will experience need frustration and are likely to develop maladaptive emotion regulation strategies (such as suppression). Indeed, although some studies found need frustration mediating the effects of emotion regulation on symptoms of psychopathology (Brenning et al., 2022; Van der Kaap-Deeder et al., 2021), other studies have indicated that experiences of need satisfaction (for instance, stemming from parental autonomy support) predict emotion regulation. For example, Brenning et al. (2015) found that parental autonomy support predicted increases in emotional integration (relating, in turn, to increases in self-esteem) and decreases in suppressive regulation (relating, in turn, to decreases in depressive symptoms). Pointing toward the reciprocal relation between emotion regulation and the needs, this study also showed emotional dysregulation to predict decreases in autonomy-supportive parenting. More such studies on the interplay between transdiagnostic factors are needed to further understand their unique, interactive, or reciprocal role in psychopathology.

## The Interplay between Need Frustration and Vulnerabilities: Three Pathways

The development of psychopathology often involves multiple different domains, with genetic vulnerabilities forming an important source. For instance, about 56% of the variance in anorexia nervosa is due to additive genetic effects (Bulik et al., 2006). Additionally, the interplay between predispositional vulnerabilities, such as genes but also more stable personality characteristics (e.g., temperament), and contextual experiences (e.g., need-thwarting context) also plays an important role in the onset and maintenance of psychopathology. Indeed, evolutionary-biological reasoning indicates that some individuals are more vulnerable to the negative effects of adversity (i.e., the diathesis-stress view of psychopathology; Monroe & Simons, 1991) or that certain individuals are more malleable or susceptible to both adverse and supportive contexts (i.e., the differential susceptibility hypothesis; Belsky & Pluess, 2009). Within SDT, literature concerning this interplay is rather scarce and has mainly focused on possible vulnerability factors (i.e., in line with the diathesis-stress view). Based on Caspi and Roberts's (2001) theory on transactions between personality and context (see also Vandenkerckhove et al., 2020), at least three possible pathways from vulnerabilities to psychopathology can be identified: proactive, evocative, and reactive.

First, individuals with a specific vulnerability might directly generate need-frustrating experiences by selecting or creating certain types of activities and contexts (i.e., *proactive pathway*). For instance, individuals scoring high on self-critical perfectionism (i.e., a vulnerability factor situated at the personal level) tend to set very high standards for themselves, thereby increasing the chances for experiencing failure and inadequacy (i.e., competence frustration). A second possible road from vulnerability to psychopathology consists of evocative mechanisms in which experiences of need frustration are more indirectly evoked through reactions from others on individuals' unique characteristics (i.e., *evocative pathway*). For instance, individuals with a more difficult temperament display more negative affect and emotional lability, which may cause interpersonal difficulties resulting in feelings of social isolation or exclusion (i.e., relatedness frustration). Third, through affecting the perception of and reaction to events, contexts, or persons, vulnerabilities can cause need frustration (i.e., *reactive pathway*). That is, individuals interpret the world around them based on their existing understanding of themselves and others. A negative attitude toward the self can therefore lead to interpreting experiences in a more negative way, resulting in a possible discrepancy between the real and experienced events. For instance, although many individuals with anorexia nervosa actually display a high level of success in the athletic domain (Arcelus, Witcomb, & Mitchell, 2014), they report a high level of experienced incompetence with respect to non-weight-loss-based activities (e.g., Bers & Quinlan, 1992). Also, scoring high on self-critical perfectionism has been found to relate to a stronger negative reaction to failure, resulting in increased rumination and avoidance and less acceptance of the failure experience (Van der Kaap-Deeder et al., 2016).

The theorizing and research discussed above thus suggests that certain personal characteristics can make individuals more vulnerable to (the effects of) need-frustrating experiences. Besides this interplay between such personal vulnerabilities and need frustration, it is important to consider the interplay between negative life events as an indicator of vulnerability and experiences of need satisfaction and frustration. That is, overall experienced need satisfaction and frustration might be especially important when facing adversity, with need satisfaction potentially forming a buffer against such experiences and need frustration accelerating or reinforcing the negative effects of life stressors. For example, when individuals experience stressors such as the loss of a loved one, a divorce, or financial difficulties, they are more likely to overcome such difficulties when they feel supported and loved by others (i.e., relatedness satisfaction), have the capability to deal successfully with the current situation (i.e., competence satisfaction), and are aware of their life goals and feel they have a choice in determining their life course (i.e., autonomy satisfaction). In contrast, individuals who feel disconnected from others and insecure about their coping capabilities and who experience pressure disconnecting them from their personal life goals are less likely to deal effectively with negative life events. Some extant research indeed points out the buffering effect of need satisfaction and the deteriorating effect of need frustration in the face of adversity. Weinstein, Khabbaz, and Legate (2016), for instance, examined the effects of an intervention aimed at increasing need-satisfying experiences in refugees of Syrian civil unrest who are going through a major negative life event. It was found that such an intervention not only decreased need frustration but also alleviated symptoms of depression and generalized stress (but not PTSD). Relatedly, Bureau et al. (2012) showed that individuals who exhibited a high level of autonomy were less affected by negative life events in terms of suicide ideation. Such findings show that experiences of need satisfaction can play a buffering role in the development or maintenance of psychopathology, perhaps by shifting the attention away from need-frustrating experiences, by providing individuals with the necessary energy and tools to cope with need frustration, or by stimulating individuals to reappraise the stressors as controllable and fueled by feelings of autonomy (Bureau et al., 2012; Campbell, Vansteenkiste et al., 2018; Weinstein et al., 2016).

**Directions for Future Research**

Studies on the link between the psychological needs and psychopathology are rapidly increasing, producing exciting findings and important questions that need to be addressed in future research. First, although research thus far suggests that especially need frustration (and not or to a lesser extent need satisfaction) is related to symptoms of psychopathology (Vansteenkiste & Ryan, 2013), more research is needed on the role of need satisfaction within this domain. It is plausible to assume that prolonged (across time) or extended (across contexts) decreased need satisfaction forecasts

psychopathology, such as depressive symptoms. For instance, experiencing loneliness (but not social exclusion) across several years or within several important relationships can increase individuals' vulnerability for psychopathology. Pointing toward the importance of the inclusion of the absence of positive experiences in research on psychopathology, research within the domain of depression indicates that increased negative affect as well as decreased positive affect is typical for individuals with depression (Vanderlind et al., 2020).

The overall minimal role of need satisfaction in terms of individuals' psychopathology symptoms in the extant research could be due to the design of these studies. That is, current studies on the role of need satisfaction in psychopathology have mostly focused on need satisfaction as experienced in the here and now or within specific domains. Integrating retrospective assessments of the needs (Van der Kaap-Deeder et al., 2020), focusing on an account of need satisfaction or frustration across an extended period of time in research on psychopathology might be helpful in this regard, as will assessments of need satisfaction across different important life domains. For instance, experiencing a low level of choice within one domain or across a short period of time (e.g., during one class) might not engender psychopathology, but experiencing a low level of choice for several months or across diverse domains might result in increased feelings of helplessness.

Further, although there are some studies indicating that certain personality factors (e.g., self-critical perfectionism) represent vulnerability factors in the context of need frustration, this literature is scarce. Future research could look at other possible vulnerability factors (e.g., genes). Relatedly, more research is needed on the differential susceptibility hypothesis (Belsky & Pluess, 2009) within the context of the basic psychological needs, so as to answer the question of whether there are certain personal, physiological or endophenotypic, or genetic characteristics that might increase individuals' sensitivity to experiences of need satisfaction and frustration, with perhaps some individuals profiting more from need satisfaction and suffering more from need frustration. For instance, attachment security (which has been associated with a high level of need satisfaction; La Guardia et al., 2000) has been shown to relate to increases in adaptive emotion regulation, an effect that is strongest among individuals with the 5-HTTLPR (i.e., the serotonin-transporter gene) short-allele, in line with the differential-susceptibility hypothesis (Viddal et al., 2017).

Finally, there are several important methodological limitations in the research on the link between the basic psychological needs and psychopathology. First, as reviewed in this chapter, studies on the role of the needs in psychopathology have focused on quite diverse types of psychopathology (e.g., depressive symptoms, anxiety symptoms, borderline personality features, and binge eating symptoms), but the vast majority of these studies have not included clinical samples, limiting generalizability to those populations. Further, most studies within this domain employed a cross-sectional design, which does not shed light on the directionality of effects, making it difficult to determine whether the needs predict

psychopathology or vice versa (or both). Thus, more longitudinal studies and intervention research will add to our knowledge on how needs link to both pathology and its amelioration.[1]

## References

Aldao, A., Gee, D., De Los Reyes, A., & Seager, I. (2016). Emotion regulation as a transdiagnostic factor in the development of internalizing and externalizing psychopathology: Current and future directions. *Development and Psychopathology*, *28*(4pt1), 927–946. https://doi.org/10.1017/S0954579416000638

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Association.

Arcelus, J., Witcomb, G. L., & Mitchell, A. (2014). Prevalence of eating disorders amongst dancers: A systemic review and meta-analysis. *European Eating Disorders Review: The Journal of the Eating Disorders Association*, *22*(2), 92–101. https://doi.org/10.1002/erv.2271

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, *37*(11), 1459–1473. https://doi.org/10.1177/0146167211413125

Belsky, J., & Pluess, M. (2009). Beyond diathesis stress: Differential susceptibility to environmental influences. *Psychological Bulletin*, *135*(6), 885–908. https://doi.org/10.1037/a0017376

Bers, S. A., & Quinlan, D. M. (1992). Perceived-competence deficit in anorexia nervosa. *Journal of Abnormal Psychology*, *101*(3), 423–431. https://doi.org/10.1037//0021-843x.101.3.423

Boone, L., Vansteenkiste, M., Van der Kaap-Deeder, J., Soenens, B., & Verstuyf, J. (2014). Self-critical perfectionism and binge eating symptoms: A longitudinal test of the intervening role of psychological need frustration. *Journal of Counseling Psychology*, *61*(3), 363–73. https://doi.org/10.1037/a0036418

Borsboom, D. (2017). A network theory of mental disorders. *World Psychiatry, 16*, 5–13. http://dx.doi.org/10.1002/wps.20375

Brenning, K., Soenens, B., Van Petegem, S., & Vansteenkiste, M. (2015). Perceived maternal autonomy support and early adolescent emotion regulation: A longitudinal study. *Social Development*, *24*(3), 561–578. https://doi.org/10.1111/sode.12107

Brenning, K., Soenens, B., Vansteenkiste, M., De Clercq, B., &, Antrop, I. (2022). Emotion regulation as a transdiagnostic risk factor for (non)clinical adolescents' internalizing and externalizing psychopathology: Investigating the intervening role of psychological need experiences. *Child Psychiatry & Human Development*, *53*(1), 124–136. https://doi.org/10.1007/s10578-020-01107-0

Bulik, C. M., Sullivan, P. F., Tozzi, F., Furberg, H., Lichtenstein, P., & Pedersen, N. L. (2006). Prevalence, heritability, and prospective risk factors for anorexia nervosa. *Archives of General Psychiatry*, *63*(3), 305–312. https://doi.org/10.1001/archpsyc.63.3.305

Bureau, J. S., Mageau, G. A., Vallerand, R. J., Rousseau, F. L., & Otis, J. (2012). Self-determination: A buffer against suicide ideation. *Suicide & Life-Threatening Behavior*, *42*(4), 377–393. https://doi.org/10.1111/j.1943-278X.2012.00097.x

Campbell, R, Boone, L., Vansteenkiste, M., & Soenens, B. (2018). Psychological need frustration as a transdiagnostic process in associations of self-critical perfectionism with depressive symptoms and eating pathology. *Journal of Clinical Psychology*, *74*(10), 1775–1790. https://doi.org/10.1002/jclp.22628

Campbell, R., Vansteenkiste, M., Delesie, L., Tobback, E., Mariman, A., Vogelaers, D., & Mouratidis, A. (2018). Reciprocal associations between daily need-based experiences, energy, and sleep in chronic fatigue syndrome. *Health Psychology*, *37*(12), 1168–1178. https://doi.org/10.1037/hea0000621

Carter, J. C., Kelly, A. C., & Norwood, S. J. (2012). Interpersonal problems in anorexia nervosa: Social inhibition as defining and detrimental. *Personality and Individual Differences*, *53*(3), 169–174. https://doi.org/10.1016/j.paid.2012.02.020

---

[1] This chapter is dedicated to my husband, for his continuous support and faith in me; to my children, whose joy of life, curiosity, and living-in-the-moment attitude I highly enjoy; to my mother, who showed me the true meaning of unconditional love.

Caspi, A., Houts, R. M., Belsky, D. W., Goldman-Mellor, S. J., Harrington, H., Israel, S., Meier, M. H., Ramrakha, S., Shalev, I., Poulton, R., & Moffitt, T. E. (2014). The p factor: One general psychopathology factor in the structure of psychiatric disorders? *Clinical Psychological Science*, *2*(2), 119–137. https://doi.org/10.1177/2167702613497473

Caspi, A., & Roberts, B. W. (2001). Personality development across the life course: The argument for change and continuity. *Psychological Inquiry*, *12*(2), 49–66. https://doi.org/10.1207/S15327965PLI1202_01

Conway, C. C., Forbes, M. K., Forbush, K. T., Fried, E. I., Hallquist, M. N., Kotov, R., Mullins-Sweatt, S. N., Shackman, A. J., Skodol, A. E., South, S. C., Sunderland, M., Waszczuk, M. A., Zald, D. H., Afzali, M. H., Bornovalova, M. A., Carragher, N., Docherty, A. R., Jonas, K. G., Krueger, R. F., Patalay, P., Pincus, A. L., Tackett, J. L., Reininghaus, U., Waldman, I. D., Wright, A. G. C., Zimmermann, J., Bach, B., Bagby, R. M., Chmielewski, M., Cicero, D. C., Clark, L. A., Dalgleish, T., DeYoung, C. G., Hopwood, C. J., Ivanova, M. Y., Latzman, R. D., Patrick, C. J., Ruggero, C. J., Samuel, D. B., Watson, D., & Eaton, N. R. (2019). *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, *14*(3), 419–436. https://doi.org/10.1177/1745691618810696

Cooper, S., Lavaysse, L. M., & Gard, D. E. (2015). Assessing motivation orientations in schizophrenia: Scale development and validation. *Psychiatry Research*, *225*(1–2), 70–78. https://doi.org/10.1016/j.psychres.2014.10.013

Cordeiro, P., Paixão, P., Lens, W., Lacante, M., & Luyckx, K. (2016). The Portuguese validation of the Basic Psychological Need Satisfaction and Frustration Scale: Concurrent and longitudinal relations to well-being and ill-being. *Psychologica Belgica*, *56*(3), 193–209. https://doi.org/10.5334/pb.252

Dalgleish, T., Black, M., Johnston, D., & Bevan, A. (2020). Transdiagnostic approaches to mental health problems: Current status and future directions. *Journal of Consulting and Clinical Psychology*, *88*(3), 179–195. https://doi.org/10.1037/ccp0000482

Deci, E. L., & Ryan, R. M. (1995). Human autonomy: The basis for true self-esteem. In M. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 31–49). Plenum. https://dx.doi.org/10.1007/978-1-4899-1280-0_3

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Depestele, L., Van der Kaap-Deeder, J., Soenens, B., Gandhi, A., Claes, L., Dierckx, E., Schoevaerts, K., & Vansteenkiste, M. (2021). *Understanding the association between self-critical perfectionism and symptomatology in patients with an eating disorder: The transdiagnostic role of psychological need frustration*. Manuscript submitted for publication.

Dwyer, L. A., Hornsey, M. J., Smith, L. G. E., Oei, T. P. S., & Dingle, G. A. (2011). Participant autonomy in cognitive behavioral group therapy: An integration of self-determination and cognitive behavioral theories. *Journal of Social and Clinical Psychology*, *30*(1), 24–46. https://doi.org/10.1521/jscp.2011.30.1.24

Emery, A. A., Heath, N. L., & Mills, D. J. (2016). Basic psychological need satisfaction, emotion dysregulation, and non-suicidal self-injury engagement in young adults: An application of self-determination theory. *Journal of Youth and Adolescence*, *45*(3), 612–623. https://doi.org/10.1007/s10964-015-0405-y

Fairburn, C. G., Shafran, R., & Cooper, Z. (1999). A cognitive behavioural theory of anorexia nervosa. *Behaviour Research and Therapy*, *37*(1), 1–13. https://doi.org/10.1016/s0005-7967(98)00102-8

Heissel, A., Pietrek, A., Flunger, B., Fydrich, T., Rapp, M. A., Heinzel, S., & Vansteenkiste, M. (2018). The validation of the German Basic Psychological Need Satisfaction and Frustration Scale in the context of mental health. *European Journal of Health Psychology*, *25*(4), 119–132. https://doi.org/10.1027/2512-8442/a000017

Huyghebaert, T., Gillet, N., Fernet, C., Lahiani, F., & Fouquereau, E. (2018). Leveraging psychosocial safety climate to prevent ill-being: The mediating role of psychological need thwarting. *Journal of Vocational Behavior, 107*, 111–125. https://doi.org/10.1016/j.jvb.2018.03.010

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin, 22*(3), 280–287. https://doi.org/10.1177/0146167296223006

Kendler, K. S. (2008). Explanatory models for psychiatric illness. *American Journal of Psychiatry*, *165*(6), 695–702. https://doi.org/10.1176/appi.ajp.2008.07071061

Knee, C. R., & Neighbors, C. (2002). Self-determination, perception of peer pressure, and drinking among college students. *Journal of Applied Social Psychology*, *32*(3), 522–543. https://doi.org/10.1111/j.1559-1816.2002.tb00228.x

Kotov, R., Krueger, R. F., Watson, D., Achenbach, T. M., Althoff, R. R., Bagby, R. M., Brown, T. A., Carpenter, W. T., Caspi, A., Clark, L. A., Eaton, N. R., Forbes, M. K., Forbush, K. T., Goldberg, D., Hasin, D., Hyman, S. E., Ivanova, M. Y., Lynam, D. R., Markon, K., Miller, J. D., Moffitt, T. E., Morey, L. C., Mullins-Sweatt, S. N., Ormel, J., Patrick, C. J., Regier, D. A., Rescorla, L., Ruggero, C. J., Samuel, D. B., Sellbom, M., Simms, L. J., Skodol, A. E., Slade, T., South, S. C., Tackett, J. L., Waldman, I. D., Waszczuk, M. A., Widiger, T. A., Wright, A. G. C., & Zimmerman, M. (2017). The Hierarchical Taxonomy of Psychopathology (HiTOP): A dimensional alternative to traditional nosologies. *Journal of Abnormal Psychology*, *126*(4), 454–477. https://doi.org/10.1037/abn0000258

Krueger, R. F., Hobbs, K. A., Conway, C. C., Dick, D. M., Dretsch, M. N., Eaton, N. R., Forbes, M. K., Forbush, K. T., Keyes, K. M., Latzman, R. D., Michelini, G., Patrick, C. J., Sellbom, M., Slade, T., South, S. C., Sunderland, M., Tackett, J., Waldman, I., Waszczuk, M. A., Wright, A. G. C., Zald, D. H., Watson, D., Kotov, R., & HiTOP Utility Workgroup. (2021). Validity and utility of Hierarchical Taxonomy of Psychopathology (HiTOP): II. Externalizing superspectrum. *World Psychiatry: Official Journal of the World Psychiatric Association*, *20*(2), 171–193. https://doi.org/10.1002/wps.20844

La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology*, *79*(3), 367–384. https://doi.org/10.1037//0022-3514.79.3.367

Mills, D. J., & Allen, J. J. (2020). Self-determination theory, internet gaming disorder, and the mediating role of self-control. *Computers in Human Behavior, 105*, 106209. https://doi.org/10.1016/j.chb.2019.106209

Monroe, S. M., & Simons, A. D. (1991). Diathesis-stress theories in the context of life stress research: Implications for the depressive disorders. *Psychological Bulletin*, *110*(3), 406–425. https://doi.org/10.1037/0033-2909.110.3.406

Niemiec, C. P., Ryan, R. M., Deci, E. L., & Williams, G. C. (2009). Aspiring to physical health: The role of aspirations for physical health in facilitating long-term tobacco abstinence. *Patient Education and Counseling*, *74*(2), 250–257. https://doi.org/10.1016/j.pec.2008.08.015

Nordbø, R. H., Espeset, E. M., Gulliksen, K. S., Skårderud, F., & Holte, A. (2006). The meaning of self-starvation: Qualitative study of patients' perception of anorexia nervosa. *International Journal of Eating Disorders*, *39*(7), 556–564. https://doi.org/10.1002/eat.20276

O'Keefe, V. M., Grant, D. M., Tucker, R. P., Lechner, W. V., Mills, A. C., Judah, M. R., & Wingate, L. R. (2016). Autonomy as a prospective predictor of perceived burdensomeness and thwarted belongingness through symptoms of depression. *Omega: Journal of Death and Dying*, *73*(1), 70–86. https://doi.org/10.1177/0030222815575702

Oram, R., Rogers, M., & DuPaul, G. (2020). Explaining the relationship between ADHD symptomatology and amotivation in the undergraduate population: The role of basic psychological need frustration. *Canadian Journal of School Psychology*, *35*(2), 139–153. https://doi.org/10.1177/0829573519880063

Otterpohl, N., Steffgen, S. T., Stiensmeier-Pelster, J., Brenning, K., & Soenens, B. (2020). The intergenerational continuity of parental conditional regard and its role in mothers' and adolescents' contingent self-esteem and depressive symptoms. *Social Development, 29*, 143–158. https://doi.org/10.1111/sode.12391

Rigby, C. S., & Ryan, R. M. (2011). *Glued to games: How video games draw us in and hold us spellbound*. Praeger.

Rogers, M., & Tannock, R. (2018). Are classrooms meeting the basic psychological needs of children with ADHD symptoms? A self-determination theory perspective. *Journal of Attention Disorders*, *22*(14), 1354–1360. https://doi.org/10.1177/1087054713508926

Ryan, R. M., Deci, E. L., & Vansteenkiste, M. (2016). *Autonomy and autonomy disturbances in self-development and psychopathology: Research on motivation, attachment, and clinical process*. In D. Cicchetti (Ed.), *Developmental psychopathology: Theory and method* (pp. 385–438). John Wiley & Sons. https://doi.org/10.1002/9781119125556.devpsy109

Selby, E. A., & Coniglio, K. A. (2020). Positive emotion and motivational dynamics in anorexia nervosa: A positive emotion amplification model (PE-AMP). *Psychological Review*, *127*(5), 853–890. https://doi.org/10.1037/rev0000198

Selvi, K., & Bozo, Ö. (2020). The dark side of bodybuilding: The role of bodybuilding activities in compensation of frustrated basic psychological needs. *Motivation and Emotion, 44*, 190–208. https://doi.org/10.1007/s11031-019-09805-6

Steel, R. P., Bishop, N. C., & Taylor, I. M. (2021). The relationship between multidimensional motivation and endocrine-related responses: A systematic review. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, *16*(3), 614–638. https://doi.org/10.1177/1745691620958008

Twenge, J. M., Cooper, A. B., Joiner, T. E., Duffy, M. E., & Binau, S. G. (2019). Age, period, and cohort trends in mood disorder indicators and suicide-related outcomes in a nationally representative dataset, 2005–2017. *Journal of Abnormal Psychology*, *128*(3), 185–199. https://doi.org/10.1037/abn0000410

Unanue, W., Dittmar, H., Vignoles, V. L., & Vansteenkiste, M. (2014). Materialism and well-being in the UK and Chile: Basic need satisfaction and basic need frustration as underlying psychological processes. *European Journal of Personality*, *28*(6), 569–585. https://doi.org/10.1002/per.1954

van Bergen, D. D., & Saharso, S. (2016). Suicidality of young ethnic minority women with an immigrant background: The role of autonomy. *European Journal of Women's Studies*, *23*(3), 297–311. https://doi.org/10.1177/1350506815609740

Vandenkerckhove, B., Vansteenkiste, M., Brenning, K., Boncquet, M., Flamant, N., Luyten, P., & Soenens, B. (2020). A longitudinal examination of the interplay between personality vulnerability and need-based experiences in adolescents' depressive symptoms. *Journal of Personality*, *88*(6), 1145–1161. https://doi.org/10.1111/jopy.12562

Van der Kaap-Deeder, J., Brenning, K., & Neyrinck, B. (2021). Emotion regulation and borderline personality features: The mediating role of basic psychological need frustration. *Personality and Individual Differences*, *168*. https://doi.org/10.1016/j.paid.2020.110365.

Van der Kaap-Deeder, J., Soenens, B., Boone, L., Vandenkerckhove, B., Stemgée, E. & Vansteenkiste, M. (2016). Evaluative concerns perfectionism and coping with failure: Effects on rumination, avoidance, and acceptance. *Personality and Individual Differences, 101*, 114–119. http://dx.doi.org/10.1016/j.paid.2016.05.063

Van der Kaap-Deeder, J., Soenens, B., Van Petegem, S. Neyrinck, B., De Pauw, S., Raemdonck, E., & Vansteenkiste, M. (2020). Live well and die with inner peace: The importance of retrospective need-based experiences, ego integrity and despair for late adults' death attitudes. *Archives of Gerontology and Geriatrics, 91*, 104184. https://doi.org/10.1016/j.archger.2020.104184.

Van der Kaap-Deeder, J., Vansteenkiste, M., Soenens, B., Verstuyf, J., Boone, L., & Smets, J. (2014). Fostering self-endorsed motivation to change in patients with an eating disorder: The role of perceived autonomy support and psychological need satisfaction. *International Journal of Eating Disorders*, *47*(6), 585–600. https://doi.org/10.1002/eat.22266

Vanderlind, W. M., Millgram, Y., Baskin-Sommers, A. R., Clark, M. S., & Joormann, J. (2020). Understanding positive emotion deficits in depression: From emotion preferences to emotion regulation. *Clinical Psychology Review, 76*, 101826. https://doi.org/10.1016/j.cpr.2020.101826

Van Petegem, S., Soenens, B., Vansteenkiste, M., & Beyers, W. (2015). Rebels with a cause? Adolescent defiance from the perspective of reactance theory and self-determination theory. *Child Development*, *86*(3), 903–918. https://doi.org/10.1111/cdev.12355

Van Petegem, S., Vansteenkiste, M., Soenens, B., Beyers, W., & Aelterman, N. (2015). Examining the longitudinal association between oppositional defiance and autonomy in adolescence. *Developmental Psychology*, *51*(1), 67–74. https://doi.org/10.1037/a0038374

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*(3), 263–280. https://doi.org/10.1037/a0032359'

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion, 44*, 1–31. https://doi.org/10.1007/s11031-019-09818-1

Vansteenkiste, M., Soenens, B., Van Petegem, S., & Duriez, B. (2014). Longitudinal associations between adolescent perceived degree and style of parental prohibition and internalization and defiance. *Developmental psychology*, *50*(1), 229–236. https://doi.org/10.1037/a0032972

Verstuyf, J., Vansteenkiste, M., Soenens, B., Boone, L., & Mouratidis, A. (2013). Daily ups and downs in women's binge eating symptoms: The role of basic psychological needs, general self-control, and emotional eating. *Journal of Social and Clinical Psychology*, *32*(3), 335–361. https://doi.org/10.1521/jscp.2013.32.3.335

Viddal, K. R., Berg-Nielsen, T. S., Belsky, J., & Wichstrøm, L. (2017). Change in attachment predicts change in emotion regulation particularly among 5-HTTLPR short-allele homozygotes. *Developmental Psychology*, *53*(7), 1316–1329. http://dx.doi.org/10.1037/dev0000321

Vonderlin, R., Kleindienst, N., Alpers, G. W., Bohus, M., Lyssenko, L., & Schmahl, C. (2018). Dissociation in victims of childhood abuse or neglect: A meta-analytic review. *Psychological Medicine*, *48*(15), 2467–2476. http://dx.doi.org/10.1017/S0033291718000740

Weinstein, N., Khabbaz, F., & Legate, N. (2016). Enhancing need satisfaction to reduce psychological distress in Syrian refugees. *Journal of Consulting and Clinical Psychology*, *84*(7), 645–650. http://dx.doi.org/10.1037/ccp0000095

Widiger, T. A. (1997). The construct of mental disorder. *Clinical Psychology: Science and Practice*, *4*(3), 262–266. https://doi.org/10.1111/j.1468-2850.1997.tb00115.x

Jamie M. Besel *and* Geoffrey Williams

## Abstract

Changes in biomedical ethics have elevated the aim of enhancing patient autonomy to be equivalent to that of enhancing patient well-being. Self-determination theory (SDT) is at the forefront of theories addressing the delivery of effective, autonomy-supportive, healthcare. Meta-analyses of correlational and randomized controlled studies demonstrate that SDT-based health interventions increase basic need satisfaction, which enhances patient well-being and health behavior change. Basic need satisfaction has been found to have its effects on well-being through multiple pathways predicted by at least four different SDT mini-theories, each of which is described in this chapter. Research studies also have associated the basic need satisfaction of healthcare practitioners with greater well-being and less burnout. SDT research demonstrates the importance of these core principles of motivation and medical ethics, as operationalized through shared decision-making and autonomy-supportive professionalism in care delivery.

**Key Words:** Key Words: self-determination theory, autonomy, competence, relatedness, internalization, shared decision-making, biomedical ethics, well-being

> One of the essential qualities of the clinician is interest in humanity, for the secret of the care of the patient is in caring for the patient.
>
> —*Dr. Francis Peabody (1927)*

## Introduction

A deeper understanding of human motivation is useful for delivering high-quality healthcare that is ethical, professional, and satisfying for patients and practitioners alike. Changes in standards of biomedical ethics and medical professionalism adopted around the year 2000 align healthcare goals with the satisfaction of self-determination theory's (SDT) three psychological needs. Ethics and medical professionalism added two new primary goals of healthcare to the long-standing goals of enhancing patient welfare by (1) the principle of doing no harm (Hippocrates, around 400 BCE) and (2) the principle of

beneficence, defined as a moral obligation to act for the benefit of others (Percival, 1803). The new goals include (3) enhancing patient autonomy and competence (i.e., empowering patients in the medical professionalism charter) and (4) ensuring equal access to care (social justice). These changes in professionalism and ethics establish that patient autonomy, enhancing well-being, and equal access to care are the highest priorities of healthcare interventions. Advances in biomedical ethics (Beauchamp & Childress, 2019) with the goals of healthcare (ABIM Foundation, 2002) and the U.S. Preventive Medical Services (Whitlock et al., 2002) have led to the adoption and enrichment of enhancing patient autonomy and competence as health outcomes in and of themselves.

The "Physician's Pledge" of the World Medical Association was revised in 2017 to align with current ethical and professional standards. It now states, "[T]he health and well-being of my patient will be my first consideration; I will respect the autonomy and the dignity of my patient." SDT's three basic psychological needs and their satisfaction are uniquely aligned with that pledge, compared to other theories of human motivation and behavior. This is because SDT has strong theoretical and empirical support for enhancing patient autonomy, competence, and relatedness, which results in greater physical and psychological well-being. Further, since SDT intervention studies require that the change in autonomy be studied under the condition of free choice, the outcomes of these studies are highly relevant to the free-choice environment of real-world clinical care. This positions SDT's effective health interventions (Ntoumanis et al., 2020; Sheeran et al., 2021 much closer to being ready for implementation and dissemination into clinical care than interventions based on theories that do not explicitly measure autonomy and perceived competence to improve them.

In this chapter, we will first describe the ethics of promoting psychological need satisfaction (i.e., being need-supportive) in healthcare settings, then we will turn to studies that show how supporting autonomy, competence, and relatedness needs also enhances patients' physical and psychological well-being. Similarly, healthcare workplaces that support employees' psychological needs are associated with greater employee well-being. Finally, we suggest ways to use SDT's mini-theories to create ethical and effective healthcare interventions.

## Medical Ethics of Autonomy and Competence Support

### Ethical and Medical Professionalism Standards Incorporate SDT into Goals of Care

Research based on SDT allows the detailed assessment of autonomy and competence and their changes. Its mini-theories identify how the satisfaction of the three basic needs improves physical and psychological well-being, which has been confirmed empirically (Ntoumanis et al., 2020; Ryan & Deci, 2017; Sheeran et al., 2021). This body of empirical studies based on SDT establishes that the four goals of medical ethics are not independent (e.g., enhancing patient autonomy also enhances patient well-being) and that

achieving these ethics and professionalism goals is facilitated by providing health environments that support and satisfy patient psychological needs. Whether a healthcare intervention is experienced as controlling or satisfying of patient autonomy is based on the functional significance experienced by patients. Well-being can be fully undermined if patients experience control, partially undermined if the autonomy need is only partially satisfied, and enhanced if needs are fully satisfied. If patients experience high levels of control with low levels of autonomy, they are more likely to be reactive to the recommendations. If autonomy is only partially satisfied, patients may become ambivalent or amotivated. If patients experience high levels of autonomy, they are likely to experience greater well-being regardless of the treatment path they pursue, and even if they decline the recommended treatment options altogether.

Biomedical ethics defines autonomy in much the same way SDT does. This portends that SDT interventions are more ready for implementation and dissemination than are interventions that do not account for patient autonomy. Beauchamp and Childress (2019, p. 102), in the eighth edition of *The Principles of Biomedical Ethics*, define "autonomous action in terms of normal choosers who act (1) intentionally, (2) with understanding, and (3) without controlling influences that determine their action." They go on to say that "an action is not autonomous if the actor does not adequately understand it." Patients (and research subjects) need a substantial degree of understanding, but not full understanding, of their health issues and treatments to be autonomous.

Ethics and professional standards deem it necessary for clinicians to determine if patients are aware of their risks from diseases and the benefits and risks of effective treatments, and to provide such information for patient decisions to be considered autonomous. In biomedical ethics, the principle of respect for autonomy has both a negative and a positive obligation that is highly relevant to creating effective SDT-based interventions that will be widely accepted for use in healthcare:

> As a negative obligation, the principle requires that autonomous actions not be subjected to controlling constraints by others. As a positive obligation, the principle requires both respectful disclosures of information and other actions that foster autonomous decision making. Respect for autonomy obligates professionals . . . to disclose information, to probe for and ensure understanding and voluntariness, and foster adequate decision making. . . . [T]he moral demand that we treat others as ends requires that we assist them in achieving their ends and foster their capacities as agents, not merely that we avoid treating [them] solely as means to our ends. (Beauchamp & Childress, 2019, p. 105)

In medicine, fostering autonomy is typically accomplished by a *shared decision-making* interaction. Ethicists acknowledge, just as SDT does, that control can come from within the patient or outside coercion or manipulation.

These obligations of medical ethics to foster patient autonomy readily align with different pathways explicated by SDT's mini-theories and empirically supported by their respective meta-analyses. Cognitive evaluation theory (CET; Reeve, this volume) most closely relates to the obligation of avoiding controlling constraints that undermine intrinsic motivation, which, in turn, relates to inherently need-satisfying activities that are enjoyable, interesting, or challenging. Clinicians can foster autonomy by actively seeking to understand the functional significance of intrinsically motivated health behaviors for their patients (e.g., physical activity, mastering a healthy diet). The PESO (Silva et al., 2011) is an example of a randomized controlled study of an SDT-based physical activity and weight loss study based on enhancing intrinsic motivation.

Organismic integration theory (OIT; Pelletier & Rocchi, this volume) most closely relates to the positive obligation of fostering extrinsic autonomous motivation through internalization of a value for treatments that are not intrinsically motivating. The careful provision of new information about risks, presenting news of a diagnosis to patients, or outlining treatment options fosters independent autonomous motivation if patients want to decide for themselves, and fosters dependent autonomous motivation if patients want to rely on expert clinician recommendations. The Smokers' Health Study (Niemiec et al., 2009, 2010; Williams, McGregor, Sharp, Kouides et al., 2006; Williams, McGregor, Sharp, Levesque et al., 2006) is an example of an SDT intervention based on OIT that enhanced perceived competence, autonomous self-regulation, intrinsic aspirations for health, and abstinence from tobacco for smokers. The Ntoumanis et al. (2020) meta-analyses confirm the propositions in basic psychological needs theory (BPNT). When basic psychological needs were satisfied in health-related randomized controlled studies, the interventions resulted in greater psychological well-being.

Thus, SDT's mini-theories (CET, OIT, and BPNT) identify clear pathways for facilitating health behavior change and enhanced psychological well-being in a manner that is consistent with medical ethics, professionalism, and shared decision-making. These three pathways provide fertile ground for the necessary implementation, dissemination, cost-effectiveness (Pesis-Katz et al., 2011), and comparative effectiveness (Williams et al., 2016) studies of SDT-based interventions that can lead to SDT's widespread adoption in healthcare.

Future SDT researchers also face the challenge of determining the active elements of health interventions that are need-satisfying. Multiple large studies will be needed in the context of different diseases and their prevention to determine which single strategies (behaviors) are more likely to satisfy needs and improve psychological and physical well-being, safety, and cost. It is possible that individual clinician strategies are not enough to satisfy needs and that different aggregates of strategies are necessary for different circumstances. Internalization is a process of enhancing patient perceptions of autonomy, competence, and value for health over time. These perceptions change as new information is presented, recommendations are made, diseases evolve, and patients' experience of their

diseases change. Thus, individual clinician strategies may never be found to be superior to other individual strategies simply by comparing different aggregates in an intervention study. The timing of use of a specific need-supportive strategy may be most effective if it is based on the clinician repeatedly assessing their patients' perceptions of the intervention's functional significance as the intervention unfolds. Also, since diseases progress and remit over the days, months, and years of treatment, what is needed to best satisfy patients' psychological needs may be different at different times. For example, when patients already feel fully autonomous about (willing to accept) their treatment, they may need more competence support than autonomy support. If competence support is not provided when the patient feels autonomous regarding accepting treatment recommendations, but feels incompetent about managing their disease, this may lead to patients feeling more controlled, abandoned, and amotivated. That would be expected to increase patient ill-being. Conversely, when patients are not willing to pursue treatment, providing competence support is more likely to result in patients feeling pressure to adhere and likely increase their ill-being. Consider the following examples of how the functional significance of an intervention might change within different diseases as they change over time.

Some diseases. such as cancer and heart disease, require technical information and judgments that most patients will not understand fully. Many do not feel competent to make satisfying treatment decisions without direct clinician input. Patients may not yet have experience with self-regulation related to new diagnoses. Their perceived autonomy and perceived competence are likely low, and thus they are expected to be more anxious and depressed as they adjust to their new circumstances. This perceived incompetence is most likely to occur at the time of a new diagnosis or when new risk and treatment information (e.g., a new viral pandemic like COVID-19 occurs or a new medication to prevent heart disease is approved by the FDA) becomes available. Also, diseases evolve over time, and patient autonomous self-regulation and perceived competence evolve as well as they gain more experience with the disease and its treatments. For example, diabetes often requires more structure at the time of diagnosis because blood sugars are typically out of control. After patients experience behaviors and treatments that manage blood sugar control effectively at the onset of the disease, they have internalized extrinsic autonomous regulation and controlled regulations and a heightened perception of competence. Typically, patients then experience a sort of golden period of easier control of their diabetes in the first months after diagnosis. Other diseases like cancer and cardiovascular disease need aggressive treatment at the time of diagnosis. After time goes by, type 2 diabetes worsens as the insulin-producing cells fail to keep up with the need, setting into motion the need for changes in management, including more medications, and the patient can develop long-term symptoms of numbness and pain in hands and feet, kidney failure, and blindness if they don't keep their blood glucose in a healthy range. Well-being is affected by the level of need satisfaction throughout the illness and its treatment, as well as by complications of the disease.

Prevention of disease often occurs when patients have no symptoms (e.g., vaccinations to prevent infections, hypertension, and high LDL-cholesterol which causes heart attacks, strokes, and heart failure). Without symptoms, clinicians need to rely on internalization of a value for health through patient perceptions of risks of getting the disease and the perceptions of the risks and benefits of the treatment. These circumstances make it unlikely that individual strategies can be validated and others left out.

It is also possible that aggregates of specific strategies may be refined for different circumstances (e.g., prevention, initial diagnosis, one-time decisions like vaccine acceptance, chronic diseases, or end-of-life care) based on already accepted standards of care, professionalism, ethics, and the motivational pathway (e.g., support intrinsic motivation or promote internalization) most appropriate for the circumstance. Specifically, need-satisfying clinician behaviors are likely different for supporting an intrinsically motivated behavior that involves enjoyment, interest, curiosity, or optimal challenge, or if the clinician and patient are relying on internalization to support psychological and physical well-being. For now, the meta-analyses demonstrate that SDT interventions can effectively target and change basic need satisfaction, internalization of autonomous extrinsic regulation, perceived competence, and intrinsic aspirations, and that when those motivational mediators are enhanced, patient physical and psychological well-being is also enhanced. Until research clearly differentiates which specific strategies are more effective, SDT-based interventions may be based on aggregates of behaviors and with repeated assessments of patients' functional assessments of their treatments to determine which technique is most need-satisfying at any given time.

### Shared and Informed Decision-Making to Enhance Autonomy

In the latter half of the 1900s, research from the fields of health psychology and healthcare communication combined with improved medical treatments resulted in studies of physician-patient encounters to determine the extent to which physicians involved their patients in decision-making about their care. This involved a change from a paternalistic style of physicians simply telling patients what to do, to an egalitarian style of promoting a meaningful dialogue between patient and physician. That dialogue is called "informed or shared decision-making." Braddock and colleagues (1999) audiotaped and rated over 1,000 encounters with patients and rated the over 3,500 clinical decisions made within those encounters on seven criteria established to characterize the nature and completeness of routine office visits with primary care physicians and surgeons. The seven criteria are listed in Table 41.1, along with the percentage of decisions that met the standards of an informed decision. Overall, the authors concluded that only 9% of the decisions were fully informed. Thus, over 90% of decisions were made with incomplete autonomy, or were outright controlled. These results indicate that physicians described the problem most of the time but usually did not invite active patient involvement, remind them that the patient is the decision maker, describe treatment alternatives, check for understanding,

| Table 41.1 Frequency of Each Decision Element | |
| --- | --- |
| Decision Element | Frequency<br>(N = 3,552 decisions) |
| Discussion of patient active role | 6% (209) |
| Nature of decision | 71% (2523) |
| Alternative | 11% (400) |
| Pros and cons of treatments | 8% (277) |
| Uncertainties | 4% (144) |
| Checked for patient understanding | 2% (54) |
| Asked about patient preferences | 21% (746) |

nor explore patient preferences for treatment. These omissions were judged not to satisfy current standards of professionalism and ethics because the patients were not acting autonomously.

Carl Schneider (2006), a professor of law and ethics, argues against mandating patient autonomy because it is nearly impossible to ensure that patients are fully informed (i.e., fully autonomous), and many patients don't feel comfortable making final treatment choices. To be fully informed, patients must first receive the information from their doctors, then understand and assimilate it, analyze it acutely according to their own values, and select the treatment that is currently best for them (Schneider, 2006). In their book *The Practice of Autonomy,* Schneider and Schneider (1998) argue that most patients do not want to take responsibility for making their own treatment decisions because they find the process too complicated. The authors warn that bioethicists were moving toward mandatory autonomy, in which the patient not only may, but must, make their care decisions. In forcing patients to make independent decisions, patients may feel abandoned and anxious and regret their decisions.

Other prominent biomedical ethicists, such as Beauchamp and Childress (2019), have responded to the Schneiders by pointing out that it is not reasonable to pressure patients into being autonomous. By forcing patients to make choices they do not feel willing or able to make, patients are, by definition, being controlled: "A health care professional's duty of respect for autonomy correlates with the right of a patient or subject to choose, but the patient or subject does not have a correlative duty to choose" (p. 106). They go on to say, "Even if the patient delegates the right to someone else, his or her choice to delegate can be autonomous." Clearly, autonomy within medical treatment decisions is complicated.

SDT offers a clearer understanding of autonomy that can help sort out the seemingly conflicted views described by Schneider and Schneider (1998) and Beauchamp and Childress (2019). It is counter to SDT to force patients to make a choice of treatment. However, SDT does account for how patients can be autonomous while accepting

recommendations from health professionals and important others. By defining and measuring autonomy as patients' perception of volition (willingness for treatment) versus feeling controlled or coerced, rather than defining autonomy as independence versus dependence, SDT-based care avoids the mandated autonomy problem. Thus, patients can be autonomously dependent and autonomously independent with respect to treatment recommendations made by their clinicians. The perception of volitional autonomy versus control is patients' "functional significance." It is the functional significance experienced by patients that determines the quality of motivation they feel for their treatment. This distinction allows for patients to be autonomous when they willingly delegate treatment choices to others; they are being both dependent and autonomous. As they are acting autonomously, their well-being is expected to be enhanced and their behavior changes are likely to be more successfully initiated and maintained (Ntoumanis et al., 2020; Sheeran et al., in press). If patients prefer to make their own decisions based on their own values and information and information the practitioner provides them, they are exhibiting independent extrinsic autonomous motivation, and their well-being and health behavior change efforts are also expected to be enhanced. That is because the functional significance to the patients is still autonomous. It is when patients perceive that they are being controlled or manipulated that their autonomy is undermined; in that case, SDT predicts their well-being will be eroded and any health behavior change attempts will be less likely to be successful.

SDT measures of autonomy distinguish between different levels of extrinsic autonomous motivation and controlled motivations, which allows us to demonstrate the positive and negative well-being correlates of these very different experiences of their treatment. It is also worth noting that when patients are naïve with respect to the disease they face and their treatment options, they are said to be "amotivated." Internalization is the process by which humans naturally become more autonomously motivated (volitional) for a treatment or behavior over time. If patients' psychological needs are supported by the healthcare climate within a specific visit and over time, it facilitates the internalization process. Thus, it is natural, expected, and predictable for perceptions of autonomy to change over time and as a function of how autonomy-supportive or controlling patients experience the healthcare climate to be. We turn now to studies of how patients prefer to make decisions with respect to clinician recommendations.

In 2005, Levinson and colleagues surveyed a nationally representative sample of 2,765 patients about their medical decision-making preferences. Over 95% wanted to have a meaningful discussion of the problem, be offered choices, and be asked their opinion. Yet just over 50% wanted the physician to make the final treatment decision, and 44% preferred to rely on their physician rather than seek medical information themselves. In 2016, Martinez and colleagues surveyed 1,690 women nine months after the initial treatment decisions for stage 1 breast cancer to determine their satisfaction with their treatment. The autonomy-supportiveness of their medical and surgical oncologists

correlated positively with patients' decisional satisfaction about their treatment. Yet, more than 50% of the women indicated they strongly preferred (5 out of 5) that the physician make the final decision about their treatment. When the group of patients who felt the strongest that their doctor should make the final decision experienced high autonomy-supportiveness, they felt less satisfied with the treatment decisions made when compared to the group of patients who indicated they wanted some part of the decision-making.

These two studies suggest that nearly all patients want to understand the nature of their health issues and discuss their treatment options. Still, half of them strongly wanted their doctors to make the final assessment of health information and decisions about their treatment; thus, these patients exhibited a preference for autonomous dependence in this sphere. These patients want to understand their health issues, and this is accomplished in a manner that satisfies patient needs by eliciting the functional significance of the direct recommendations to them. When presented with the functional significance to them in a need-supportive manner, patients are more likely to internalize a value for pursuing the treatment, experience their treatment decision as autonomous, and feel a greater sense of psychological well-being as they go through the treatment. If direct recommendations are not provided to patients who want them, their autonomy may be undermined and they may experience more amotivation, ambivalence, or even abandonment.

Based on these studies, clinicians are likely to find that 30% to 40% of patients prefer doing their own background assessment of information and making their final treatment decisions. If these patients participate in need-satisfying discussion and treatment decision-making, they exhibit autonomous independence. They are expected to experience greater psychological well-being and internalization when supported in making their own decisions, and greater ill-being when they perceive clinician control. Another 50% of patients want, or prefer, to rely on their clinicians to provide their assessment of the information and make specific treatment recommendations. If these direct recommendations are provided in a discussion in which the clinician tracks the functional significance of the information and recommendations, patients are expected to better internalize treatment motivation and experience enhanced perceived competence and well-being.

### The Special Case of Volitional Nonadherence

If patients understand their risks from the disease (the natural history of their disease) and the benefits and risks of the known effective treatment options, and are supported in deciding what treatment, if any to pursue, their autonomy and competence have been supported. Some patients willingly (autonomously) decline effective treatments; they are still autonomous and thus are more likely to experience greater well-being without treatment. This is referred to as "volitional nonadherence." If clinicians provide information, check for understanding, suggest a temporary trial of treatment to allow the patients to experience what the treatment is like before making a final choice, and respect their patients' decision to forgo treatment, then clinicians have satisfied their ethical and professional

obligations to recommend effective treatments and to foster patient autonomy. Because well-being is partly dependent on the satisfaction of patient needs, clinicians need to determine which way their patients prefer learning about their illnesses and making treatment decisions to avoid being controlling, and to avoid abandoning the patients who want their clinician to make final recommendations for them. Clinicians must continue to elicit the functional significance of ongoing treatment for their patients to provide ongoing need-satisfying care, because patient perception of autonomy versus control and their perceived competence continue to change over time. Patients regularly decide to discontinue dialysis or cancer treatments when their quality of life declines substantially on treatment. Some patients decide to initiate treatment after a period of volitional non-adherence. For example, many vaccine-hesitant people decided to get a COVID vaccine after waiting for further data and full approval of the vaccine by the FDA.

The human condition is complex, and SDT offers an explanatory model that is empirically validated and that accounts for the complex mixed motivations patients experience about their treatments that change over time. Patients may prefer independent autonomous decision-making for one health issue, and a dependent autonomous approach for others. In addition, empirical studies demonstrate that patients can perceive high levels of autonomy and control at the same time. The measures of the two demonstrate low correlational levels, which means they vary independently. To date, SDT-based health interventions have not successfully reduced the level of controlled motivation patients report (Gillison et al., 2019; Ntoumanis et al., 2020), and the change in controlled motivation has not significantly predicted change in health behaviors or psychological well-being (Ntoumanis et al., 2020). SDT health interventions have significantly enhanced perceived autonomy and competence, and those changes account for change in health behaviors, suggesting they are important targets of health interventions (Sheeran et al., in press). Thus, the empirical evidence from SDT is consistent with the new standards of biomedical ethics, medical professionalism, and shared decision-making that emphasize enhancing patient autonomy and perceived competence to manage health-related behaviors.

### SDT Uniquely Predicts and Measures Changes in Autonomy

Another level of complexity of health-related motivation that SDT accounts for is that of change in motivation over time. Medical ethics, professionalism, and shared decision-making all value enhancing patient autonomy and competence, but don't measure or predict how these change over time. Most patients are expected to start treatment for a disease in a dependent autonomous relationship with their clinicians. If the care is provided in a manner that fosters internalization of autonomy and enhanced perceived competence, patients are more likely to want to make more of their care decisions as they gain more experience with the disease over time (i.e., to switch to an independent autonomous relationship).

Now consider some real-world treatment decisions about the world's leading cause of premature death, namely cardiovascular disease (e.g., heart attacks and strokes). About one-third of people who would benefit from statins and antihypertensive medications by preventing future heart attacks and strokes won't start taking them. One reason may be because they fear side effects (e.g., muscle or joint pain from statins), which could lower their sense of well-being. They may feel ill from taking a medication even though they do not have side effects of the medication or symptoms of a disease. Lowering LDL by taking statins unequivocally and dramatically lowers the risk of future heart attacks and strokes and increases length of and quality of life (Ference et al., 2017). Of those who have had heart attacks and have started taking a statin, only about 50% to 60% will continue taking them beyond 6 to 12 months. Fewer than 40% of those who start a statin or antihypertension medication who have not had a heart attack or stroke but have a high risk of heart attack or stroke continue taking them beyond 12 months (Colantonio et al., 2019; Ueda et al., 2018). If these patients are informed that almost all side effects are expected to go away within a few days of stopping the medications, and they are aware the medications provide important benefits, their needs for autonomy and competence are more likely to be satisfied, for any treatment course they choose, including taking the medications or not, is expected to result in greater psychological well-being.

Similar percentages of Americans are willing to initiate and maintain a healthy lifestyle behavior that are willing to start and continue a statin or antihypertensive medication. Only 20% of Americans maintain a basic level of physical activity and eat a heart-healthy diet that would substantially reduce their risk of heart attack, stroke, cancer, or diabetes (Li et al., 2020). Autonomy-supportive counseling that includes eliciting and acknowledging patient perspective, leaving the choice to the patient, making noncontrolling recommendations, encouraging brief experiments with change to inform the patient's long-term decision with the experience of the treatment, providing relevant information and sources, and maintaining a positive relationship will facilitate internalization of autonomous motivation to either try behavior change and use medications or to decline them. If patient motivational needs are supported and satisfied in the midst of treatment, patients are more likely to experience greater well-being, whether or not they decide to start a recommended medication or a heart-healthy lifestyle, because they have experienced support for their psychological needs.

Patients' motivation for starting a treatment medication to prevent heart attacks and strokes is affected by the relevance of information that is presented. In one informative study, 2,400 nationally representative patients were randomized to receive one of these three estimates: (1) a 4% chance of dying in the next 10 years from cardiovascular disease; (2) a 15% chance of having a heart attack or stroke or dying from one of them in the next 10 years; or (3) a 50% chance of having a heart attack or stroke or dying from one of them in their lifetime. These patients were then asked their perception of the level of risk and their willingness to start treatment to lower risk (Navar et al., 2018). The risk information

given was assigned randomly and was not the patients' actual risk. The group that was told their lifetime risk perceived much higher risk and reported significantly greater willingness to start treatment than those receiving the 10-year risks. The researchers did not measure basic need satisfaction, perceived competence, or well-being. Providing lifetime risk was associated with a greater willingness for treatment, which is likely related to SDT's autonomy-satisfaction concept. If patient autonomy is enhanced with lifetime and 10-year risk information, patient well-being is likely to be enhanced during treatment.

An interesting study of statin-eligible patients illustrates some of the complexity of clinicians' prescribing and patients' willingness to take a statin medication (Cegla et al., 2020). All 60 patients in this study had high enough risk to be recommended to take a statin and had started at least one statin previously and developed intolerable side effects (e.g., muscle pain or fatigue) within two weeks. They were given 12 pill bottles: 4 with statin pills, 4 with placebo pills, and 4 empty bottles. They were randomly assigned to use the different bottles over 12 months, and they recorded daily side effect symptoms on a 100-point scale. When "using" an empty bottle, they reported an average of 8 on the symptom scale; when on active statin pills, they reported an average of 16.3, and on placebo pills, 15.4. Placebo-related symptoms were not significantly lower than active pills, and placebo pills accounted for 90% of the nocebo symptoms found from active statins. Thirty of these patients (50%) were presented with the results after the study ended, decided to take the statin, and did so without side effects. Patients taking a statin or placebo had lower well-being than when they were not taking pills. It is plausible that a portion of their side effect symptoms (i.e., ill-being) resulted from undermining of their need for autonomy regarding their use of the pills and causing somatic symptoms.

### Summary of Medical Ethics of Autonomy and Competence Support

The changes in biomedical ethics and medical professionalism that elevate patient autonomy and perceived competence as goals of healthcare equivalent to enhancing patient well-being open the door to research on healthcare interventions based on SDT. Interventions that enhance patient autonomy, perceived competence, and relatedness to others are now welcomed and prioritized by medicine. Understanding the functional significance of their diseases and the effective treatments available to patients is critical for enhancing patient well-being and sustained health-related motivation. Respecting patient decisions to rely on their clinicians' assessments and recommendations, or to make their own choices if and when they feel ready, is expected to be more satisfying of patients' psychological needs. Providing need-satisfying care requires understanding how human psychological needs are satisfied and being responsive to changes in autonomy, competence, and well-being over time. Three SDT mini-theories (CET, OIT, and BPNT) offer specific theoretical propositions supported with strong meta-analytic pathways that demonstrate how physical and psychological well-being can be enhanced with interventions that are need-satisfying and also satisfy the principles of biomedical ethics and medical professionalism.

## Research Evidence: SDT Related to Health and Well-Being

There have been hundreds of studies that apply the tenets of SDT in the healthcare setting (Ryan & Deci, 2017; selfdeterminationtheory.org). While each study provides its own evidence, healthcare policy, education, and delivery depend on meta-analyses to determine which interventions consistently improve health (result in a physical and/or psychological well-being benefit), are safe to use (i.e., do not harm), promote autonomy (i.e., empower patients) and social justice, and are cost-effective. There are three pathways with strong empirical evidence (i.e., with meta-analyses-level support) indicating that when autonomy, competence, and relatedness are enhanced, both physical and psychological well-being improve. These interventions have been guided by three of SDT's mini-theories: BPNT, CET, and OIT.

### BPNT and Well-Being in Healthcare

A basic tenet of SDT is that satisfaction of patients' basic psychological needs is critical for personal growth and well-being. Psychological needs are universally applicable and operative and are relevant for individuals regardless of demographic characteristics, personality, or background (Huyghebaert-Zouaghi et al., 2020; Vansteenkiste, Ryan, & Soenens, 2020). SDT healthcare interventions are primarily focused on enhancing the satisfaction of basic psychological needs while providing the most effective care.

A meta-analysis of SDT constructs used in healthcare studies tested the SDT model for health (see Figure 41.1) across 184 independent data sets (Ng et al., 2012). This
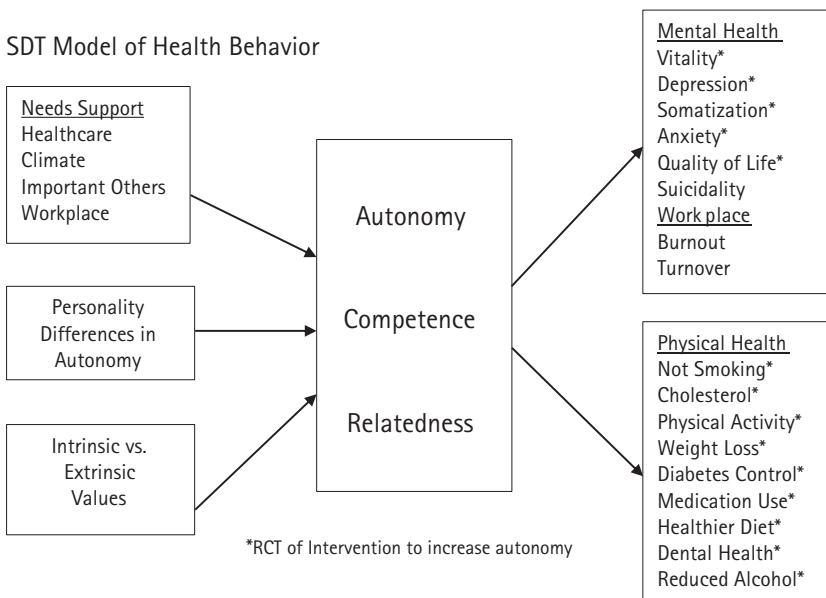


**Figure 41.1** SDT model of health behavior and well-being

*Source*: Adapted from Ng et al., 2012

meta-analysis of cross-sectional health studies revealed that perceptions of autonomy support were positively correlated with well-being (range $\rho$ = 0.22 to 0.37) and negatively related to ill-being (range $\rho$ = –0.17 to –0.23). These findings are consistent with SDT's proposition that satisfaction of human basic psychological needs improves psychological well-being. Because many of the data sets involved extrinsically motivated behaviors and health goals, these associations may be based in part on the process of internalization. However, these relationships need to be confirmed in multiple randomized controlled trials of SDT-based health interventions before they will be implemented.

Two meta-analyses of SDT-based health interventions' effects on patient perceptions of need-supportiveness and basic need satisfaction (Gillison et al., 2019) (Ntoumanis et al., 2020) identified 74 and 73 trials. Both found that the SDT interventions had a strong effect on enhancing perceptions of need-supportiveness, and moderate effects on increasing basic need satisfaction and autonomous motivation. Gillison et al. did not analyze the studies for intervention effects on controlled motivation as it is not considered a target of intervention. They also did not relate changes in controlled motivation to changes in well-being. Ntoumanis et al. did analyze for intervention effects on controlled motivation and found no significant effect. Thus, these meta-analyses confirm that SDT interventions are perceived as more need-supportive and enhance patient basic need satisfaction.

The Ntoumanis et al. (2020) meta-analysis reported the effects of the interventions on basic need support, basic need satisfaction, health behavior change (g = 0.45, $p$ < 0.01), and psychological well-being (g = 0.29, $p$ < 0.01) at the end of the intervention period. An increase in basic need satisfaction was found to predict psychological well-being (g = 0.41, $p$ < 0.05), as was an increase in autonomous motivation (g = 0.58, $p$ < 0.01) and increased need-supportiveness (g = 0.31, $p$ < 0.05). Increased need support predicted change in autonomous motivation (g = 0.27, $p$ < 0.05), autonomy (g = 0.46, $p$ < 0.01), and competence (g = 0.33, $p$ < 0.05) need satisfactions. Thus, the change in need support accounted for increased autonomy, competence, and well-being, and change in basic need satisfaction predicted greater well-being and health behavior change. The interventions were not found to lessen controlled motivation, however.

A meta-analysis of studies of older adults (Tang, Wang, & Guerrien, 2020) found that global need satisfaction was positively related to well-being (life satisfaction; r = 0.37) and negatively to depression (r = –0.48). The positive relation between basic need satisfaction and psychological well-being in healthcare settings is consistent and of a small to moderate effect size. As more studies are published with these constructs, additional meta-analyses will be better able to quantify their effects.

While the meta-analyses provide an overview of the average effect of the interventions on basic need satisfaction and well-being, a closer examination of a few recent studies further illustrates the wide range of outcomes across which the significant relation of basic need satisfaction and well-being has been found. Chen et al. (2018) reported that basic need satisfaction mediated the relationship of 250 hemodialysis patients' perceptions of

need-supportiveness and their health-related quality of life (HRQoL). Remarkably, basic need satisfaction accounted for 86% of the variance in patient HRQoL (Chen et al., 2018). Fu and colleagues (2020) found that an intervention to improve stroke patients' recovery designed to be need-satisfying resulted in patients having a higher HRQoL and better physical functioning. Halvari and colleagues (2019; Halvari & Halvari, this volume) extended their previous research in dental health to demonstrate that SDT-based dental interventions enhance eudaimonic well-being and dental attendance, while reducing dental anxiety, gingivitis, and plaque when basic psychological needs are satisfied. Basic need satisfaction has also been associated with less suicidal ideation and reported suicidal behavior in young adults (Britton et al., 2014; Tucker & Wingate, 2014). Poor sleep quality and higher-risk cholesterol levels are predicted by basic need frustration measured over two years in midlife (Uysal, Aykutoglu, & Ascigil, 2019). Two intervention studies intending to reduce COVID-19 distress have shown that SDT-based interventions were more need-satisfying and enhanced well-being (vitality) and reduced stress (Behzadnia & FatahModares, 2020; Cantarero, van Tilburg, & Smoktunowicz, 2020). These studies demonstrate the broad range of circumstances in which need satisfaction enhances well-being.

### Applications of OIT to Facilitate Internalization in Healthcare

Internalization is the innate process by which humans take in values, beliefs, and behavioral regulations from external sources and transform them into their own (Ryan & Deci 2017). New information about risks of conditions and options of effective treatment strategies needs to be presented to patients in order to initiate internalization of a value for a health outcome and autonomous regulation of the behaviors needed to achieve it. Recall that biomedical ethics indicates that patients cannot be autonomous if they are not aware of the diagnosis and prognosis of their untreated conditions and the benefits and risks of possible treatments. While the goal of all SDT health interventions is to increase the satisfaction of SDT's three psychological needs, studies based on OIT measure change in perceived autonomous self-regulation and intrinsic motivation (when combined, these are frequently termed "autonomous motivation"), intrinsic aspirations for health, and perceived competence as a function of the perceived need-supportiveness of the healthcare professionals and important others.

Three meta-analyses and a few individual studies have confirmed the facilitation of internalization and have quantified these effects. In a meta-analysis of cross-sectional studies, Ng et al., (2012) found that autonomous motivation and perceived competence mediated the effect of perceived autonomy support on health behaviors across 184 data sets. Ntoumanis et al. (2020) meta-analyzed 73 SDT interventions intending to facilitate internalization and demonstrated that change in autonomous motivation had a moderate effect on health behavior change at the end of the intervention period (g = 0.66). Internalization of autonomous motivation during the intervention had a similar effect on

health behavior change after a free-choice follow-up period after the intervention ended (g = 0.67). Sheeran and colleagues (in press) have completed a meta-analysis of 63 SDT interventions on health behavior change. Applying a change meta-analysis method (CMAM) that is intended to determine causality, they found that only about one-third of SDT interventions changed perceived autonomous motivation and competence. Their method contrasts studies that change the mediators with those that don't in their effect on the health behaviors. Change in perceived autonomy led to a medium change (d = 0.47) and change in perceived competence led to a small to medium change (d = 0.34) in the targeted health behaviors. These effects are as robust as mediators of health behavior change from other theories. The authors conclude that perceived autonomous motivation and perceived competence are valid targets of interventions promoting health behavior change.

In one large randomized controlled tobacco-dependence treatment study, smokers were recruited to enroll in a study in which they would meet with a clinical professional at least four times in six months to nonjudgmentally discuss their health regardless of whether or not they wanted to stop smoking (Williams, McGregor, Sharp, Kouides et al., 2006; Williams, McGregor, Sharp, Levesque et al., 2006; Williams et al., 2016). Clinicians elicited and acknowledged participants' life aspirations and calculated and presented their risk of having a cardiovascular event (heart attack, stroke, or death) in the next 10 and 30 years. The patients' reactions were elicited and acknowledged. Then clinicians explained that those risks fall by 50% within one year of stopping smoking completely. Direct advice to stop smoking was provided with a rationale that smokers' physical health and quality of life improve after stopping, but without disrespecting the patients' potentially different viewpoint (Williams, McGregor, Sharp, Levesque et al., 2006; Williams et al., 2016). Indeed, the aim of the meetings was to clarify with the smoker whether they wanted to smoke or stop smoking (Williams et al., 2011). If they did not want to stop smoking, their aspirations were elicited again at future meetings and they were asked if they wanted to stop smoking. If the patient indicated they wanted to stop smoking, the counselors provided skills training, offered medications, and created a plan for stopping smoking, including follow-up to support progress.

The smokers in the intervention group were more likely to stop smoking and maintain abstinence for two years after the intervention. Those outcomes were mediated by increased perceptions of autonomous self-regulation and perceived competence for stopping smoking (Williams, McGregor, Sharp, Levesque et al., 2006). The smokers receiving the intervention reported greater well-being (subjective vitality) and less depression (Niemiec et al., 2010) and had internalized a greater value (aspiration) for their health 12 months after the intervention was over (Niemiec et al., 2009). Another study followed hospitalized smokers for six months after hospitalization for angina or heart attack. This longitudinal analysis found that autonomous motivation and perceived competence for stopping smoking predicted lower levels of depression and anxiety and enhanced meaning in life (Rocha et al., 2017).

In another study, patients with diabetes (n = 860) were randomized to receive relevant information about preventing complications of diabetes versus general health information on a waiting room computer (Williams, Lynch, & Glasgow, 2007). The intervention subjects perceived their physicians as more autonomy-supportive. Further, their increase in perceived competence accounted for greater lowering of diabetes distress, depression, and low-density lipoprotein cholesterol (the unhealthy cholesterol). Internalization of autonomous motivation and increased perceived competence was also confirmed in the Halvari et al. (2016) intervention trial in patients with diabetes and cardiovascular disease. Change in autonomous motivation and perceived competence accounted for patients' reduction in body weight and improvement in their glucose control, vitality, and perceived health. In a longitudinal study of thousands of patients with type 2 diabetes mellitus, a more autonomy-supportive healthcare climate was associated with higher levels of autonomous motivation, perceived competence, and well-being and greater adherence to diabetes and cholesterol medications (Williams et al., 2009, 2011). Farholm and colleagues (2017) demonstrated that basic need satisfaction predicted greater well-being (a composite of vitality, positive affect, less negative affect and somatization) and shorter sick leave for injured workers. Physiotherapists trained to provide need-supportive care resulted in greater patient adherence to the treatment, and women (but not men) experienced less pain and improved pain-related function (Lonsdale et al., 2017). These studies demonstrate that internalization of autonomy is associated with psychological well-being and improved physical health in the context of treating a variety of chronic diseases.

*CET and the Intrinsic Motivation Meta-analysis*

CET, the first SDT mini-theory, concerns how the social context, the interpersonal climate, and the intrapersonal climate support or undermine intrinsic motivation. Intrinsic motivation involves behaviors that we engage in out of enjoyment, curiosity, interest, and optimal challenge. Intrinsic motivation is proposed to be the most important innate inner resource that evolution has provided us. Our natural inclinations to play, explore, and manipulate, which enhance our competencies and capacities, are important pathways we adapt to challenges in our lives (Ryan & Deci, 2017). If we can harness intrinsic motivation in our patients for engaging the challenges of their health behaviors, then preventing and managing diseases will be need-satisfying and provide a greater sense of well-being.

A meta-analysis of experiments examining reward effects on intrinsic motivation revealed that tangible rewards or punishments had a moderately strong undermining effect (d = –0.34, over 92 studies). In contrast, verbal rewards enhanced intrinsic motivation (d = 0.33, 21 studies; Deci, Koestner, & Ryan, 1999). The tangible rewards had their effect by shifting subjective perceptions from feeling an internal locus of causality to doing the behavior because of the reward (external locus of causality). This shift represents an undermining of autonomy need satisfaction and results in less persistence in doing the behavior. Other external events that have been studied include threats of punishment,

surveillance and evaluations, deadlines, imposed goals, and creating competitions. All tended to undermine intrinsic motivation by undermining basic needs of autonomy and competence. Studies also showed that when events trigger intrapersonal control and perceptions of failure, intrinsic motivation is undermined. In contrast, verbal praise that was informational (rather than controlling) enhanced perceived competence and intrinsic motivation. External events that provide choice, allowing subjects to select their challenges, and provide informative feedback that improved their chances of achieving their desired goals (rather than feedback intended to control them) tended to increase intrinsic motivation by enhancing their perceptions of autonomy and competence.

A growing number of neuroimaging studies have identified the specific brain area of functional activations associated with the moment-to-moment experience of psychological need satisfaction. Primarily, the functional activations of the striatum, orbitofrontal cortex, insula, and anterior cingulate cortex have consistently been observed, which suggests that reward processing and self-related processing appear to be central in the neural processes of basic psychological needs (Lee, this volume; Lee & Reeve, 2020; Reeve & Lee, 2019). These studies provide biological plausibility for undermining intrinsic motivation and the experience of well-being that accompanies brain activation in the affective reward network.

Health environments (interventions) that identify health-promoting behaviors that are naturally enjoyable, interesting, and optimally challenging are likely to enhance intrinsic motivation and well-being. These can include nutrition changes (learning about food and how to prepare them), increasing physical activity, gaming, and identifying appropriate challenges. Practitioners can provide verbal praise for attempts at change (even for failures, reframing them as short successes), provide choice where possible, and provide informational (as opposed to judgmental) feedback about achieving desired goals. All these approaches are expected to enhance intrinsic motivation and well-being.

## Practitioner Wellness

Relationships motivation theory (RMT) posits that satisfaction versus frustration of the basic needs mediates the relationships between social supports and psychological wellness outcomes. RMT is highly relevant to healthcare encounters for practitioner and patient well-being, positing that humans' relatedness need is bidirectional; that is, it can be satisfied by others caring for us, and by us caring for others. Given this bidirectionality, when patients experience greater well-being in the care of clinicians, clinicians are more likely to experience greater need satisfaction at work and less burnout and amotivation. This may explain the high level of satisfaction that healthcare practitioners get from caring for others, as described by past leaders in medicine. Similar to our opening quote from Dr. Francis Peabody (1927), Dr. William Osler described this experience in 1914:

Nothing will sustain you more potently than the power to recognize in your humdrum routine, as perhaps it may be thought, the true poetry of life—the poetry of the commonplace, of the plain, toil-worn woman, with their loves and their joys, their sorrows and their griefs.

### Need-Satisfying Healthcare Work Environments and Workplace Wellness

SDT proposes that when our psychological needs are satisfied, we are more likely to behave in a manner that satisfies others' psychological needs as well. Need-satisfying work environments have been shown to enhance employee health and well-being in several studies. One cross-sectional study of over 2,000 U.S. physicians found that when physicians experience greater satisfaction of their basic psychological needs, they are more autonomously motivated, tend to experience less burnout, depression, ill-being, and intention to leave their work, and report greater work satisfaction (Moller et al., 2022).

Pedersen, Halvari, and Olafsen (2019) demonstrated an SDT-based workplace intervention increased autonomous motivation for physical activity in a randomized controlled trial. Both autonomy-supportiveness and change in autonomous motivation improved well-being by reducing somatic symptom burden and improved cardiorespiratory fitness. A longitudinal study of healthcare employees in Norway demonstrated that when basic needs were frustrated in the workplace, the healthcare workers experienced greater ill-being. The outcomes of ongoing need frustration included increased workplace stress, burnout, emotional exhaustion, turnover, and somatic symptom burden over four assessment periods (Olafsen et al., 2017). A study conducted in a large U.S. healthcare institution demonstrated basic need satisfaction mediated the relation between the workplace hierarchy (socioeconomic status) and worker well-being (Gonzalez et al., 2016).

Healthcare systems can provide work climates that are need-satisfying for their employees and therefore are expected to be more likely to improve practitioner well-being and reduce burnout. Greater psychological need satisfaction and well-being of healthcare employees is expected to improve patient physical health need satisfaction and well-being, as depicted in Figure 41.2. When policy and healthcare workplaces are more need-satisfying for clinicians, they are expected to experience greater workplace well-being, which is predicted to result in more need-satisfying experiences and greater well-being for patients.

## Conclusion

Biomedical ethics, medical professionalism, and informed and shared decision-making have integrated enhancing patient autonomy, competence, well-being, and social justice into their highest-level goals of healthcare. Because of its focus on basic psychological needs and internalization, SDT is ideal for providing measures and interventions that enhance patient autonomy and perceived competence and for demonstrating how these need satisfactions enhance well-being. Current studies based on informed and shared decision-making indicate large gaps exist between what healthcare recommends, what
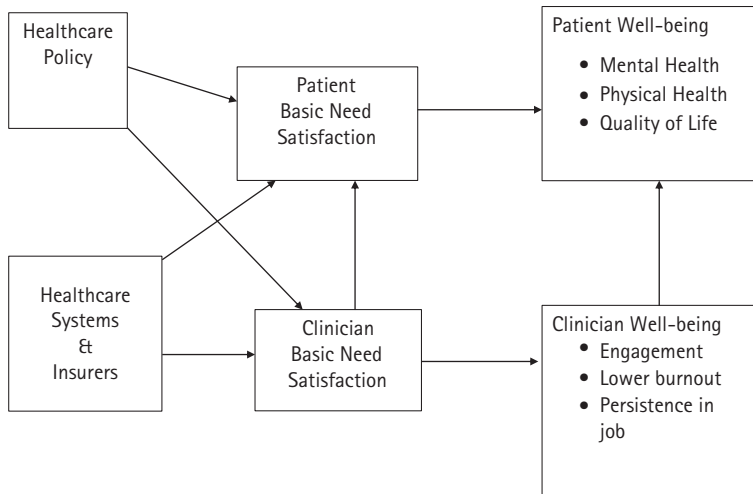
**Figure 41.2** SDT model for clinician and patient well-being

practitioners provide, and what patients internalize and experience as physical and psychological well-being. SDT provides mechanisms for supporting intrinsic motivation and facilitation of internalization by satisfaction of basic psychological needs, which may narrow these gaps in a manner consistent with biomedical ethics and standards of medical professionalism.

The healthcare domain is particularly well-suited for developing new interventions that also satisfy human needs for autonomy, competence, and relatedness while enhancing patient physical wellness (Ntoumanis & Moller, this volume). Yet more studies are needed that include basic psychological need satisfaction and psychological well-being outcomes as primary outcomes assessed during and well after the intervention has ended. Comparative effectiveness studies that assess psychological and physical well-being, as well as costs to determine cost per Quality Adjusted Life Years, are needed so that SDT interventions can be compared to other interventions.

The current body of work based on randomized controlled trials confirms that SDT's proposed mediators and moderators can be relied on as therapeutic targets of health interventions that will enhance well-being. These include need-supportiveness, basic need satisfaction, intrinsic motivation, extrinsic autonomous motivation, perceived competence, and relative intrinsic aspirations. These targets have been enhanced in interventions of various intensities in terms of the contact time, contact sessions, types of practitioners, and electronic, telephone, and in-person settings. These same mediators also stand by themselves as medical outcomes. Neuropsychological studies provide neurological plausibility confirming the self-reported changes in motivation using an objective methodology.

Enhancement of physical and psychological well-being through the satisfaction of SDT's psychological needs occurs through multiple pathways explicated in SDT's

mini-theories. These include the support of intrinsic motivation (when patients find enjoyment, interest, and an appropriate level of challenge in their treatment plan) and support of internalization of independent and dependent extrinsic autonomous motivation. Volitional nonadherence is a state of autonomy, and thus is expected to result in greater well-being than if patients are controlled or coerced into accepting treatment.

Aggregates of need-supportive techniques may work globally to change the interventions' functional significance to patients. To date, superior individual need-supportive techniques have not emerged from the meta-analyses. Research to identify individual techniques will require many large studies on disease prevention and optimal disease management over the evolving changes in patients' diseases before individual techniques can be excluded without lowering need satisfaction and well-being. An alternative approach may be to create aggregates of required need-supportive techniques based on the specific pathway of motivation change (intrinsic motivation, dependent or independent extrinsic autonomous motivation), and the tenets of biomedical ethics and shared decision-making.

Interventions that satisfy psychological needs for both patients and clinicians can be tested for optimal ways for clinicians, healthcare systems, and policymakers to implement and disseminate them. Need-supportive healthcare workplaces are predicted to enhance the successful adoption, implementation, and dissemination of SDT-based interventions. When healthcare providers' needs are satisfied, their well-being will be improved. Optimally performing practitioners are in turn likely to be better able to provide need-satisfying care for their patients.

## References

ABIM Foundation. (2002). Medical professionalism in the new millennium: A physician charter. *Annals of Internal Medicine*, *136*(3), 243–246.

Beauchamp, T. L., & Childress, J. F. (2019). *Principles of biomedical ethics* (8th ed.). Oxford University Press.

Behzadnia, B., & FatahModares, S. (2020). Basic psychological need-satisfying activities during the COVID-19 outbreak. *Applied Psychological Health Well Being*, *12*(4), 1115–1139. https://doi.org/10.1111/aphw.12228

Braddock, C. H., 3rd, Edwards, K. A., Hasenberg, N. M., Laidley, T. L., & Levinson, W. (1999). Informed decision making in outpatient practice: Time to get back to basics. *Journal of the American Medical Association*, *282*(24), 2313–2320. https://doi.org/10.1001/jama.282.24.2313

Britton, P. C., Van Orden, K. A., Hirsch, J. K., & Williams, G. C. (2014). Basic psychological needs, suicidal ideation, and risk for suicidal behavior in young adults. *Suicide and Life Threatening Behavior*, *44*(4), 362–371. https://doi.org/10.1111/sltb.12074

Cantarero, K., van Tilburg, W. A. P., & Smoktunowicz, E. (2020). Affirming basic psychological needs promotes mental well-being during the COVID-19 outbreak. *Social Psychological & Personality Science*, 12(6): 194855062094270. https://doi.org/10.1177/1948550620942708

Cegla, J., Sever, P., Thom, S. A. M., Stride, C., Norton, C., Wood, F. A., Shun-Shin, M. J., Howard, J. P., Francis, D. P., Finegold, J. A., Nowbar, A. N., Thompson, D. M., Arnold, A. D., Rajkumar, C. A., & Connolly, S. (2020). N-of-1 trial of a statin, placebo, or no treatment to assess side effects. *New England Journal of Medicine*, *383*(22), 2182–2184. https://doi.org/10.1056/NEJMc2031173

Chen, M.-F., Chang, R.-E., Tsai, H.-B., & Hou, Y.-H. (2018). Effects of perceived autonomy support and basic need satisfaction on quality of life in hemodialysis patients. *Quality of Life Research*, *27*(3), 765–773. https://doi.org/10.1007/s11136–01714-2

Colantonio, L. D., Rosenson, R. S., Deng, L., Monda, K. L., Dai, Y., Farkouh, M. E., Safford, M. M., Philip, K., Mues, K. E., & Muntner, P. (2019). Adherence to statin therapy among US adults between 2007 and 2014. *Journal of the American Heart Association*, *8*(1), e010376–e010376. https://doi.org/10.1161/JAHA.118.010376

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668; discussion 692–700. https://doi.org/10.1037/0033-2909.125.6.627

Farholm, A., Halvari, H., Niemiec, C. P., Williams, G. C., & Deci, E. L. (2017). Changes in return to work among patients in vocational rehabilitation: A self-determination theory perspective. *Disability and Rehabilitation*, *39*(20), 2039–2046. https://doi.org/10.1080/09638288.2016.1215559

Ference, B. A., Ginsberg, H. N., Graham, I., Ray, K. K., Packard, C. J., Bruckert, E., Hegele, R. A., Krauss, R. M., Raal, F. J., Schunkert, H., Watts, G. F., Boren, J., Fazio, S., Horton, J. D., Masana, L., Nicholls, S. J., Nordestgaard, B. G., van de Sluis, B., Taskinen, M.-R., Tokgozoglu, L., Landmesser, U., Laufs, U., Wiklund, O., Stock, J. K., Chapman, M. J., & Catapano, A. L. (2017). Low-density lipoproteins cause atherosclerotic cardiovascular disease. 1. Evidence from genetic, epidemiologic, and clinical studies. A consensus statement from the European Atherosclerosis Society Consensus Panel. *European Heart Journal*, *38*(32), 2459–2472. https://doi.org/10.1093/eurheartj/ehx144

Fu, V., Weatherall, M., McPherson, K., Taylor, W., McRae, A., Thomson, T., Gommans, J., Green, G., Harwood, M., Ranta, A., Hanger, C., Riley, J., & McNaughton, H. (2020). Taking charge after stroke: A randomized controlled trial of a person-centered, self-directed rehabilitation intervention. *International Journal of Stroke*, *15*(9), 954–964. https://doi.org/10.1177/1747493020915144

Gillison, F. B., Rouse, P., Standage, M., Sebire, S. J., & Ryan, R. M. (2019). A meta-analysis of techniques to promote motivation for health behaviour change from a self-determination theory perspective. *Health Psychology Review*, *13*(1), 110–130. https://doi.org/10.1080/17437199.2018.1534071

Gonzalez, M. G., Swanson, D. P., Lynch, M., & Williams, G. C. (2016). Testing satisfaction of basic psychological needs as a mediator of the relationship between socioeconomic status and physical and mental health. *Journal of Health Psychology*, *21*(6), 972–982. https://doi.org/10.1177/1359105314543962

Halvari, H., Healey, J., Olafsen, A. H., Byrkjeland, R., Deci, E. L., & Williams, G. C. (2016). Physical activity and motivational predictors of changes in health behavior and health among DM2 and CAD patients. *Scandinavian Journal of Medicine & Science in Sports,* 27(11), 1454–1469. doi:10.1111/sms.12757

Huyghebaert-Zouaghi, T., Ntoumanis, N., Berjot, S., & Gillet, N. (2020). Advancing the conceptualization and measurement of psychological need states: A 3 x 3 model based on self-determination theory. *Journal of Career Assessment*, 29(3), 396–421. doi.org/10.1177/1069072720978792

Lee, W., & Reeve, J. (2020). Brain gray matter correlates of general psychological need satisfaction: A voxel-based morphometry study. *Motivation and Emotion*, *44*(1), 151–158. https://doi.org/10.1007/s11031-019-09799-1

Levinson, W., Kao, A., Kuby, A., & Thisted, R. A. (2005). Not all patients want to participate in decision making: A national study of public preferences. *Journal of General Internal Medicine*, *20*(6), 531–535.

Li, Y., Schoufour, J., Wang, D. D., Dhana, K., Pan, A., Liu, X., Song, M., Liu, G., Shin, H. J., Sun, Q., Al-Shaar, L., Wang, M., Rimm, E. B., Hertzmark, E., Stampfer, M. J., Willett, W. C., Franco, O. H., & Hu, F. B. (2020). Healthy lifestyle and life expectancy free of cancer, cardiovascular disease, and type 2 diabetes: Prospective cohort study. *British Medical Journal*, *368*, l6669–l6669. https://doi.org/10.1136/bmj.l6669

Lonsdale, C. P., Hall, A. M. P., Murray, A. M., Williams, G. C. P., McDonough, S. M. P., Ntoumanis, N. P., University, C., Owen, K. H., Schwarzer, R. P., Parker, P. P., Kolt, G. S. P., & Hurley, D. A. P. (2017). Communication skills training for practitioners to increase patient adherence to home-based rehabilitation for chronic low back pain: Results of a cluster randomized controlled trial. *Archives of Physical Medicine and Rehabilitation*, *98*(9), 1732–1743. https://doi.org/10.1016/j.apmr.2017.02.025

Martinez, K. A., Resnicow, K., Williams, G. C., Silva, M., Abrahamse, P., Shumway, D. A., Wallner, L. P., Katz, S. J., & Hawley, S. T. (2016). Does physician communication style impact patient report of decision quality for breast cancer treatment? *Patient Education and Counseling*, *99*(12), 1947–1954. https://doi.org/10.1016/j.pec.2016.06.025

Moller, A. C., Olafsen, A. H., Jager, A., Kao, A. C., & Williams, G. C. (2022). Motivational mechanisms underlying physicians' occupational health: A self-determination theory perspective. *Medical Care Research and Review*, 79(2), 255–266. https://doi.org/10.1177/10775587211007748

Navar, A. M., Wang, T. Y., Mi, X., Robinson, J. G., Virani, S. S., Roger, V. L., Wilson, P. W. F., Goldberg, A. C., & Peterson, E. D. (2018). Influence of cardiovascular risk communication tools and presentation formats on patient perceptions and preferences. *Journal of the American Medical Association Cardiology*, *3*(12), 1192–1199. https://doi.org/10.1001/jamacardio.2018.3680

Ng, J. Y. Y., Ntoumanis, N., Thorgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-determination theory applied to health contexts: A meta-analysis. *Perspectives on Psychological Science*, *7*(4), 325–340. https://doi.org/1 0.1177/17456916124

Niemiec, C. P., Ryan, R. M., Deci, E. L., & Williams, G. C. (2009). Aspiring to physical health: The role of aspirations for physical health in facilitating long-term tobacco abstinence. *Patient Education and Counseling*, *74*(2), 250–257. https://doi.org/10.1016/j.pec.2008.08.015

Niemiec, C. P., Ryan, R. M., Patrick, H., Deci, E. L., & Williams, G. C. (2010). The energization of health-behavior change: Examining the associations among autonomous self-regulation, subjective vitality, depressive symptoms, and tobacco abstinence. *Journal of Positive Psychology*, *5*(2), 122–138. https://doi.org/10.1080/17439760903569162

Ntoumanis, N., Ng, J. Y. Y., Prestwich, A., Quested, E., Hancox, J. E., Thogersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Lonsdale, C., & Williams, G. C. (2020). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health Psychology Review*, 15(2), 214–244.. https://doi.org/10.1080/17437199.2020.1718529

Olafsen, A. H., Niemiec, C. P., Halvari, H., Deci, E. L., & Williams, G. C. (2017). On the dark side of work: A longitudinal analysis using self-determination theory. *European Journal of Work and Organizational Psychology*, *26*(2), 275–285. https://doi.org/10.1080/1359432X.2016.1257611

Osler, W. (1914). The student life. In *Aequanimitas: With other addresses to medical students, nurses and practitioners of medicine* (p. 413). H. K. Lewis.

Peabody, F. W. (1927). The care of the patient. *Journal of the American Medical Association*, *88*(12), 877–882. https://doi.org/10.1001/jama.1927.02680380001001

Pedersen, C., Halvari, H., & Olafsen, A. H. (2019). Worksite physical activity intervention and somatic symptoms burden: The role of coworker support for basic psychological needs and autonomous motivation. *Journal of Occupational Health Psychology*, *24*(1), 55–65. https://doi.org/10.1037/ocp0000131

Percival, T. (1803). *Medical ethics; or, a code of institutes and precepts, adapted to the professional conduct of physicians and surgeons*. Cambridge University Press.

Pesis-Katz, I., Williams, G. C., Niemiec, C. P., & Fiscella, K. (2011). Cost-effectiveness of an intensive tobacco dependence intervention based on self-determination theory. *American Journal of Managed Care*, *17*(10), e3930–e3398.

Reeve, J., & Lee, W. (2019). A neuroscientific perspective on basic psychological needs. *J Pers*, *87*(1), 102–114. https://doi.org/10.1111/jopy.12390

Rocha, V., Guerra, M., Lemos, M., Maciel, J., & Williams, G. (2017). Motivation to quit smoking after acute coronary syndrome. *Acta médica portuguesa*, *30*(1), 34–40. https://doi.org/10.20344/amp.7926

Ryan, R. M., & Deci, E. L. (2017). Self-determination theory: Basic psychological needs in motivation, development, and wellness. The Guilford Press. https://doi.org/10.1521/978.14625/28806

Schneider, C. E. (2006). After autonomy. *Wake Forest Law Review*, *41*(2), 34.

Schneider, C., & Schneider, D. (1998). *The practice of autonomy: Patients, doctors, and medical decisions*. Oxford University Press.

Sheeran, P., Wright, C. E., Avishai, A., Villegas, M. E., Rothman, A. J., & Klein, W. M. P. (2021). Does increasing autonomous motivation or perceived competence lead to health behavior change? A meta-analysis. Health Psychology, 40(10), 706–716. https://doi.org/10.1037/hea0001111

Silva, M. N., Markland, D. A., Carraca, E. V., Vieira, P. N., Coutinho, S. R., Minderico, C. S., Matos, M. G., Sardinha, L. B., & Teixeira, P. J. (2011). Exercise autonomous motivation predicts 3-yr weight loss in women. *Medicine and Science in Sports and Exercise*, 43, 728–737.

Tang, M., Wang, D., & Guerrien, A. (2020). A systematic review and meta-analysis on basic psychological need satisfaction, motivation, and well-being in later life: Contributions of self-determination theory. *PsyCh journal (Victoria, Australia)*, *9*(1), 5–33. https://doi.org/10.1002/pchj.293

Tucker, R. P., & Wingate, L. R. (2014). Basic need satisfaction and suicidal ideation: A self-determination perspective on interpersonal suicide risk and suicidal thinking. *Archives of Suicide Research*, *18*(3), 282–294. https://doi.org/10.1080/13811118.2013.824839

Ueda, P., Lung, T. W.-C., Lu, Y., Salomon, J. A., Rahimi, K., Clarke, P., & Danaei, G. (2018). Treatment gaps and potential cardiovascular risk reduction from expanded statin use in the US and England. *PLoS One*, *13*(3), e0190688–e0190688. https://doi.org/10.1371/journal.pone.0190688

Uysal, A., Aykutoglu, B., & Ascigil, E. (2019). Basic psychological need frustration and health: Prospective associations with sleep quality and cholesterol. *Motivation and Emotion*, *44*(2), 209–225. https://doi.org/10.1007/s11031-019-09806-5

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, *44*(1). https://doi.org/10.1007/s11031-019-09818-1

Whitlock, E. P., Orleans, C. T., Pender, N., & Allan, J. (2002). Evaluating primary care behavioral counseling interventions: An evidence-based approach. *American Journal of Preventive Medicine*, *22*(4), 267–284.

Williams, G. C., Lynch, M., & Glasgow, R. E. (2007). Computer-assisted intervention improves patient-centered diabetes care by increasing autonomy support. *Health Psychology*, *26*(6), 728–734. https://doi.org/10.1037/0278-6133.26.6.728

Williams, G. C., McGregor, H. A., Sharp, D., Kouides, R. W., Lévesque, C. S., Ryan, R. M., & Deci, E. L. (2006). A self-determination multiple risk intervention trial to improve smokers' health. *Journal of General Internal Medicine*, *21*(12), 1288–1294. https://doi.org/10.1111/j.1525-1497.2006.00621.x

Williams, G. C., McGregor, H. A., Sharp, D., Levesque, C., Kouides, R. W., Ryan, R. M., & Deci, E. L. (2006). Testing a self-determination theory intervention for motivating tobacco cessation: Supporting autonomy and competence in a clinical trial. *Health Psychology*, *25*(1), 91–101. https://doi.org/10.1037/0278-6133.25.1.91

Williams, G. C., Niemiec, C. P., Patrick, H., Ryan, R. M., & Deci, E. L. (2016). Outcomes of the Smoker's Health Project: A pragmatic comparative effectiveness trial of tobacco-dependence interventions based on self-determination theory. *Health Education Research*, *31*(6), 749–759. https://doi.org/10.1093/her/cyw046

Williams, G. C., Patrick, H., Niemiec, C. P., Ryan, R. M., Deci, E. L., & Lavigne, H. M. (2011). The Smoker's Health Project: A self-determination theory intervention to facilitate maintenance of tobacco abstinence. *Contemporary Clinical Trials*, *32*(4), 535–543. https://doi.org/10.1016/j.cct.2011.03.002

Williams, G. C., Patrick, H., Niemiec, C. P., Williams, L. K., Divine, G., Lafata, J. E., Heisler, M., Tunceli, K., & Pladevall, M. (2009). Reducing the health risks of diabetes: How self-determination theory may help improve medication adherence and quality of life. *Diabetes Education*, *35*(3), 484–492. https://doi.org/10.1177/0145721709333856

World Medical Association. (2017). *Declaration of Geneva physician's oath*. https://www.wma.net/policies-post/wma-declaration-of-geneva/

# Self-Determined Motivation, Oral Hygiene Behavior, Oral Health, and Oral Health–Related Quality of Life

Anne Elisabeth Münster Halvari *and* Hallgeir Halvari

## Abstract

Self-determination theory (SDT) studies in the field of oral health behavior, oral health, and oral health–related quality of life have been summarized in this chapter. The results demonstrate that interventions (randomized clinical trials) designed to promote autonomy-supportive dental competence, relative to standard care, yield increases of autonomous motivation, perceived dental competence, and oral hygiene behaviors (e.g., brushing, flossing, more regular meals), decreases in dental plaque, and improved oral health. Moreover, these interventions are associated with more frequent dental attendance and oral health–related quality of life. The active elements of the interventions performed are related to (1) dental hygienist support of patients' psychological needs for autonomy, competence, and relatedness; (2) increases in autonomous motivation; and (3) increases in perceived dental competence. In the tested SDT process models, these elements mediated the effects from the intervention to increases in dental behavior, which mediated the effects from autonomous motivation and perceived dental competence to decreases in dental plaque, which, in turn, mediated the effect from dental behavior to improvements in oral health. Hence, the described autonomy-supportive dental competence intervention is recommended as an evidence-based alternative that belongs in the education syllabus for dental hygienist students.

**Key Words:** oral healthcare, causality orientations, autonomous and controlled motivation, need satisfaction and frustration, oral hygiene behavior, oral health–related quality of life

A healthy mouth is important for human functioning and wellness and is a component of general health and quality of life. The new definition of oral health developed by the FDI World Dental Federation Vision 2020 conveys that oral health is a fundamental human right: "Oral health is multifaceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex" (Glick et al., 2016). Good oral health is related to lower frequency of oral diseases such as gingivitis (inflamed gums), periodontitis (attachment loss around the teeth), dental caries or tooth decay, pain, sores, and other illnesses like cancers and/or defects in the mouth (Petersen, 2008; Watt, 2005; World Health Organization, 2004). Furthermore,

oral diseases are related to general health (e.g., cardiovascular disease, Alzheimer's disease, respiratory infection, diabetes, obesity; Petersen, 2008; Vamos et al., 2015). The most prevalent of all oral diseases is gingivitis, which is a risk factor for periodontitis, which a majority of adults have at mild to moderate levels. In addition, almost all adults have dental caries (decay) to some extent (Albandar & Rams, 2002; American Academy of Periodontology, 2005; Armitage, 2004; Kassebaum et al., 2014; Petersen, 2003). The cost of oral health treatment is estimated to be 4% to 10% of total world health expenditure. (Listl et al., 2015). Moreover, people affected often suffer physically, psychologically, and/ or socially (e.g., sick leave from school and work; Watt, 2005). Consequently, the need for adequate oral hygiene and treatment is clear.

Effective removal of dental plaque (a biofilm on tooth surface containing bacteria; Marsh, 2006) is essential to oral health throughout life (Löe, 2000). To prevent oral diseases, people should remove dental plaque by brushing with fluoride toothpaste twice a day, followed by interdental cleaning (e.g., flossing), improved nutrition with less sugar and regular meals, and dental-professional plaque control (Kay & Locker, 1998; Kay et al., 2016; Löe, 2000; Maltz, Jardim, & Alves, 2010). Unfortunately, these behaviors are not performed at the recommended rate (Ramsay, 2000; Schüz et al., 2006).

Evidence from recent systematic reviews and meta-analysis concerning the effects of education programs has shown positive short-term impacts on brushing and flossing behaviors, as well as on attitudes and dental visits and on prevention of plaque accumulation (Ghaffari et al., 2018; Stein et al., 2018). In the study by Stein and colleagues, no long-term evidence was present of the evidence of interventions in preventing plaque accumulation, gingivitis, and dental caries. In other systematic reviews, little evidence was available that education or psychological interventions benefit reductions in plaque, gingivitis, and caries (Kay et al., 2016; Soldani et al., 2018). In a systematic review and meta-analysis by Nasab and colleagues (2019), the use of psychological theories in health interventions indicates that the health belief model (Janz & Becker, 1984; Taylor, 1990) and the theory of planned behavior (Ajzen, 1991) were effective in enhancing oral behaviors and oral health, whereas social cognitive theory (Bandura, 1977) was not. In sum, the interventions have shown little evidence and mixed and short-term effects on oral healthcare behaviors and oral health, and there is no clear evidence that the models used reliably predict sustained change in behavior and oral health over a reasonable period of time.

According to self-determination theory (SDT; Ryan & Deci, 2017), the crucial predictor of maintained long-term behavior change is autonomously motivated behavior, defined as actions that are willingly done and self-endorsed. Autonomously motivated oral hygiene behavior is pursued because people personally value the behavior and its health benefits. In contrast, controlled motivated oral hygiene behaviors are performed because people feel pressured or coerced by some interpersonal or intrapsychic force. The literature indicates that autonomously motivated behaviors are reliably associated with

positive long-term health change related to weight loss (West et al., 2011), cardiorespiratory fitness, lowered cholesterol and blood pressure (Pedersen, Halvari, & Williams, 2018), and tobacco cessation (Williams et al., 2016). In contrast, the oral health literature, which relies on the *health belief model,* which focuses on locus of control (Rotter, 1966), and the *social cognitive model,* which focuses on self-efficacy (Bandura, 1977), has been less consistently predictive. According to SDT, this is likely due to the fact that one can have an internal locus of control (expectation of behavior reliably linked to outcomes) or self-efficacy but still not be autonomously motivated. Efficacy without autonomy is not expected to yield positive long-term health change (Pelletier et al., 2004).

Given its relevance to health outcomes, the aim of the present chapter is to review the SDT literature on oral hygiene behaviors, oral health, oral health–related quality of life, and well-being. First, we briefly describe an autonomy-supportive oral health competence intervention used in varied studies, then we review the larger literature in this area.

## Autonomy-Supportive Oral Health Competence Interventions

The interventions referred to in the research were built to include need-supportive elements drawn from SDT: providing meaningful information concerning oral health and disease; offering rationales for home care behaviors that are known to promote healthy teeth and gingiva and to prevent plaque-related diseases; and fostering oral care skills with education, demonstrations, and practice. This competence-promoting 45-minute intervention was presented in an autonomy-supportive manner (Halvari et al., 2012b). A full description of the intervention approach can be obtained from the authors.

## Fostering Motivation and Oral Hygiene Behaviors

Two randomized controlled trials designed to promote autonomy-supportive dental competence, relative to standard care, yielded increases of autonomous motivation, perceived dental competence, and oral hygiene behaviors (e.g., brushing, flossing, more regular meals) over periods of 5.5 and 7 months. Effect sizes were as follows: for autonomous motivation, 0.92 and 0.57; for perceived dental competence, 0.79 and 0.88; and for dental behaviors, 0.49 and 1.16, respectively. These effects of the autonomy-supportive dental competence intervention on oral hygiene behaviors were mediated by changes in autonomous motivation and perceived dental competence (see Figure 42.1; Halvari & Halvari, 2006; Halvari et al., 2012b). These results confirmed other cross-sectional studies, which, in addition to autonomy support, autonomous motivation, and perceived dental competence, included controlling oral health professional styles and need satisfaction as predictors of effort and quality of oral home care, such as brushing, flossing, use of fluoride, and frequency of sugar intake (see Figure 42.2; Halvari et al., 2010, 2012a).
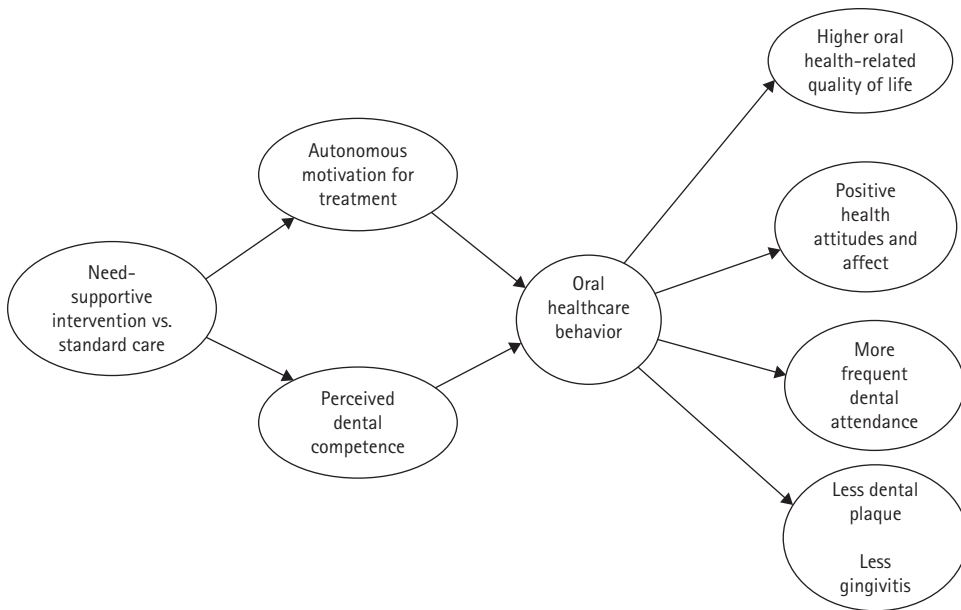
**Figure 42.1** The SDT model of change in oral healthcare behavior, change in oral health, and change in oral health–related quality of life applied in intervention studies
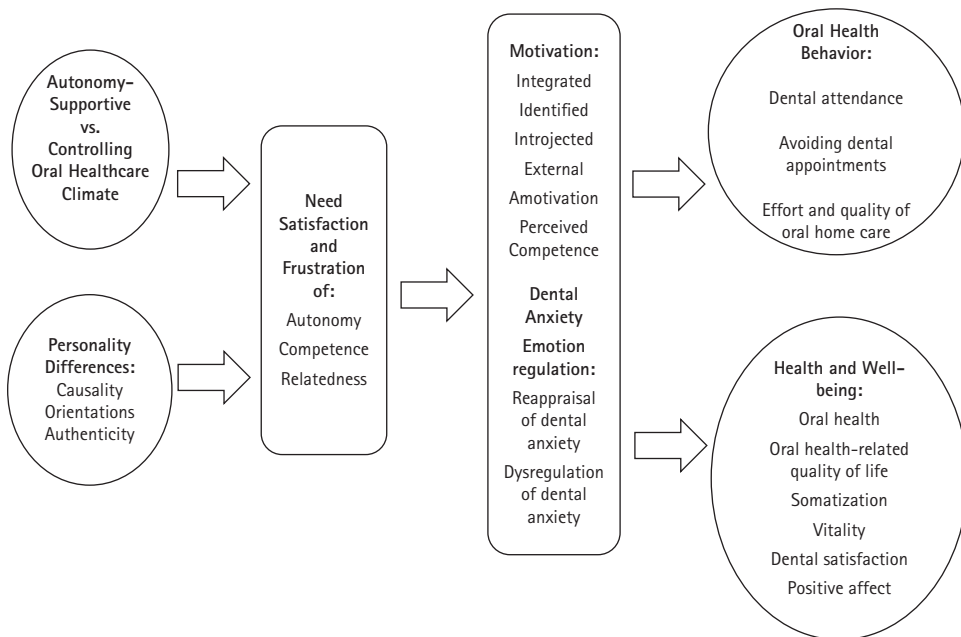


**Figure 42.2** The SDT model of oral health behavior, oral health, and well-being applied in cross-sectional studies

## Fostering Motivation and Dental Attendance

Regular dental clinic attendance is important due to its clear association with good oral health (Donaldson et al., 2008). For healthy adults, the recommendation is a maximum period of one year between oral examinations (Health Education Authority, 1996). In Norway and in the United Kingdom, dental visits are far less frequent than recommended (Halvari et al., 2012a; Nuttall et al., 2001). Why is it that patients do not attend the dental clinic more regularly?

Halvari and colleagues (2017) reported that their autonomy-supportive dental competence intervention, relative to standard care, increased dental attendance in favor of the intervention group. These effects were most apparent among patients who were autonomy-oriented (characterized by self-determination, choice, and interest). In addition, a high autonomy orientation among patients at baseline was associated with low dental anxiety and increases in dental competence over five months. In turn, both low dental anxiety and high dental competence predicted increases in dental attendance after five months (see Figure 42.1). Cross-sectional studies are in line with these autonomous influences on dental attendance. The strongest indirect positive association between autonomy orientation and dental attendance has been through autonomous motivation, and the strongest indirect positive link between control orientation (characterized by external contingencies and pressure to satisfy important others) and avoiding appointments has been through dental anxiety (Halvari, Halvari, Deci, & Williams, 2020). Furthermore, autonomy-supportive oral healthcare professionals were positively associated with dental attendance through its negative relation to dental anxiety, whereas controlling oral healthcare professionals were positively associated with putting off making dental clinic appointments through a positive relation to dental anxiety (Halvari, Halvari, Deci, & Williams, 2020).

A study by Halvari and colleagues (2010) indicates that support of the needs for autonomy, competence, and relatedness in the patient–oral healthcare professional relationship is positively linked to dental attendance both directly and indirectly through its negative relation with dental anxiety. Conversely, need satisfaction was negatively related to dental anxiety, which was positively linked with avoiding appointments. In the same study, autonomous treatment motivation mediated the positive relation between need satisfaction and dental attendance, and the negative association between need satisfaction and putting off scheduling dental clinic appointments.

In a more recent study, these results were replicated and, in addition, extended the research to show the distinct roles of need satisfaction and need frustration in dental care. Autonomous treatment motivation was shown to mediate the negative association between need satisfaction and avoiding appointments, whereas need frustration predicted avoiding appointments through dental anxiety, a path much stronger than that for need satisfaction (Halvari, Halvari, & Deci, 2018).

Autonomy support has been shown to moderate the indirect negative association between authenticity and avoiding dental appointments through dental anxiety, which means that the combination of high autonomy support and high authenticity was associated with the lowest anxiety and, in turn, predicted the lowest avoidance of dental appointments (see Figure 42.2; Halvari, Halvari, & Deci, 2020). Hence, the combination of contextual autonomy support and authenticity, defined as being true to oneself and living in accordance with one's emotions, values, goals, and beliefs (Wood et al., 2008), is recommended to be included in future interventions with the aim of reducing dental anxiety and avoiding dental appointments. Thus, autonomy support given in interventions may moderate the association between authenticity and dental anxiety. In addition, emotional regulation of dental anxiety in particular might be a candidate in future studies of avoidance of dental appointments, because positive reappraisal of dental anxiety has been associated with low avoidance of dental appointments (Halvari et al., 2018).

## Education Programs and Oral Health

As described above, the effectiveness of education and preventive programs on oral health has been mixed (Maltz et al., 2010). Among the successful ones is the Karlstad program (Axelsson & Lindhe, 1974), in which regular oral healthcare professional plaque removal with the use of fluoridated dentifrice was applied to schoolchildren with high caries prevalence every second month during the first two years. In addition, parent engagement, diet counseling, and oral hygiene instructions were included as elements in treatment. From the third year of treatment, which was followed up over the next 27 years, participants received yearly, on an individual-need basis, education in oral hygiene focusing on proper plaque control, including the use of toothbrushes and interdental cleaning devices (brush, dental tape, toothpick). After two years, the program, relative to a control group, resulted in a high standard of dental hygiene and oral cleanliness and significant reductions in dental plaque, gingivitis, and caries. Most important, the results were maintained over 30 years, showing lower incidence of caries, periodontal disease, and tooth loss (Axelsson, Nyström, & Lindhe, 2004).

Hugoson and colleagues (2007) replicated the Karlstad program over three years among adults, with the addition of two test groups, which received individual and group education, respectively, with information about oral diseases and oral hygiene self-care instruction, but they did not receive oral healthcare professional plaque removal. All three programs resulted in decreases in dental plaque and gingivitis. However, the greatest decrease was found for the Karlstad program. An important additional finding was that oral health professional plaque removal was nonsignificant for the clinical result. Hence, education and instruction in dental self-care hygiene adequately removing dental plaque, education in oral diseases, and frequent follow-ups may be the active elements in these studies.

Still, we do not know exactly why these programs produced favorable oral health outcomes. What psychological mechanisms are involved? The 30-year final program

report by Axelsson et al. (2004) indicates that the oral healthcare professionals were highly engaged with their patients and regularly encouraged and supported them, structured their oral healthcare, educated them, and gave instructions on an individual-need basis, such that patients enjoyed and recognized the benefits of maintaining a high standard of oral hygiene. According to SDT (Ryan & Deci, 2017), one may speculate that the involved oral healthcare professionals promoted a highly need-supportive clinic environment which facilitated patients' autonomous treatment motivation and dental competence. Hence, we will now review some studies which have included these variables.

## Motivation and Oral Health

Previously we described the effects of two randomized controlled trials on oral health behaviors and attendance. Looking more directly at oral health outcomes, these controlled trials also showed effectiveness (Halvari & Halvari, 2006; Halvari et al., 2012b). Intervention group patients evidenced decreases in dental plaque and gingivitis over periods of 5.5 and 7 months. Effect sizes were for dental plaque −1.44 and −2.38, respectively, and for gingivitis −2.26 and −1.06, respectively. In the structural equation model (SEM) tested, in both studies, change in both autonomous treatment motivation and change in perceived dental competence mediated the positive link from the intervention to oral health behaviors. Further, oral health behaviors mediated the negative links between change in both autonomous treatment motivation and perceived dental competence to change in dental plaque. Finally, change in dental plaque mediated the negative link between change in oral health behaviors and change in gingivitis. Thus, the results indicate that changes in both autonomous treatment motivation and perceived dental competence are psychological mechanisms explaining why the need-supportive intervention increased oral hygiene behaviors and improved oral health.

Results from cross-sectional studies measuring self-rated oral health are in line with these experimental studies. Self-rated oral health has been consistently positively associated with clinician autonomy support; satisfaction of the patients' psychological needs for autonomy, competence, and relatedness in treatment; perceived dental competence; and autonomous treatment motivation. Conversely, clinician controlling styles and patients' need frustration in treatment, controlled treatment motivation, and amotivation (viz., people do not behave because they believe they cannot effectuate the behavior successfully) have been negatively related to self-rated oral health (Halvari et al., 2012a, 2013, 2018). In the SEM models tested in these cross-sectional studies, perceived dental competence mediated the links between both need satisfaction and autonomous motivation to self-rated oral health (Halvari et al., 2012a, 2013).

## SDT and Oral Well-Being and Oral Health–Related Quality of Life

In the field of oral health, psychological well-being has been measured with the eudaimonic well-being scale developed by Ryff (1989), the PANAS measuring positive and

negative affect (Watson, Clark, & Tellegen, 1988), the Students Life Satisfaction Scale (Huebner, 1991), and the oral health impact profile measuring oral health–related quality of life (OHRQL; John et al., 2004). In addition, the Somatic Symptom Burden Scale (Gierk et al., 2014) and the Subjective Vitality Scale (Ryan & Frederick, 1997) have measured general well-being.

In another randomized controlled trial (Halvari, Halvari, Deci, & Williams, 2019) promoting autonomy-supportive dental competence (relative to standard care), patients showed increases in eudaimonic well-being measures of both oral health–related personal growth and oral health–related purposeful behavior over 5.5 months. Effect sizes were 1.15 and 0.42, respectively. In the SEM tested, perceived autonomy support in treatment mediated the positive links from the intervention to both change in personal growth and change in purposeful behavior. Further, change in personal growth mediated the links between both autonomy support and purposeful behavior to change in dental plaque and subsequent health (viz., change in gingivitis).

Cross-sectional studies further indicate that OHRQL has been positively associated with patients' need satisfaction in treatment and perceived dental competence. Conversely, OHRQL has been negatively correlated with clinicians' controlling styles and patients' need frustration in treatment and controlled treatment motivation (Halvari et al., 2013; Halvari, Halvari, & Deci, 2019). A SEM model tested indicates that patients' need frustration in treatment mediated the positive link between oral healthcare professionals' controlling styles and patients' dental anxiety, whereas dental anxiety mediated the positive link between need frustration and poor OHRQL (Halvari, Halvari, & Deci, 2019). In the same study, high dysregulation of dental anxiety contributed through a feedback loop to perception of high oral healthcare professionals' controlling styles, which, in turn, was associated with higher need frustration in treatment and even higher subsequent dental anxiety. Hence, emotional regulation of dental anxiety should be included in future studies to shed light on the relationship between the patient and the oral healthcare professional. Regarding other measures of well-being, subjective dental well-being has been positively associated with clinicians' autonomy support and patients' need satisfaction in treatment, perceived dental competence, and autonomous treatment motivation. Conversely, subjective dental well-being has been negatively correlated with clinicians' controlling styles and patients' controlled treatment motivation (Halvari et al., 2013). Overall, the same SDT variables have been related to patients' oral health as well as well-being.

## Discussion

The SDT studies summarized demonstrate that interventions designed to promote autonomy-supportive dental competence, relative to standard care, yielded increases in autonomous motivation, perceived dental competence, and oral hygiene behaviors (e.g., brushing, flossing, more regular meals), decreases in dental plaque, and improved oral

health. Moreover, the interventions affected more frequent dental attendance and OHRQL. The results of these interventional studies were in line with cross-sectional studies.

The intervention effects on motivation variables, dental behaviors, dental plaque, oral health, and OHRQL were considered causal because the studies were designed as randomized controlled trials. The intervention effect sizes on dental plaque reductions and oral health improvements were large. This is very important because in clinical experimental studies effective plaque removal has been causally linked to lifelong dental and periodontal health (Löe, 2000). Hence, the described autonomy-supportive dental competence intervention is recommended to be incorporated as an evidence-based alternative in the education syllabus for dental hygienist students.

In the interventions performed, perceived autonomy support was used as a manipulation check. The intervention produced a strong correlation with autonomy support measured right after the intervention (.70; Halvari et al., 2017). This is important because all three basic psychological needs for autonomy, competence, and relatedness are included in the measure of autonomy support. Hence, dental hygienist support of patients' basic psychological needs are in principle active elements of the interventions performed. Another active element of the intervention producing the favorable results on oral health behavior, oral health, and OHRQL are related to increases in autonomous motivation over time (large effect size; e.g., patients are offered treatment choices and trained and encouraged to be self-initiated in their self-care and treatment). In addition, the intervention produced increases in perceived dental competence (large effect size; e.g., patients were educated in oral diseases and how to detect them, trained in oral self-care hygiene behaviors through supervised demonstrations and own exercise, and educated in appropriate nutrition related to sugar intake and regular meals). Hence, these elements should be singled out in future interventions to be used as psychological mechanisms explaining their isolated effects on dental behaviors and oral health.

The autonomy-supportive competence intervention is an alternative and can be given in addition to standard treatment. It could be given to new patients, and some of its contents can be adapted to patients' needs and wants related to their specific oral health challenges. Dental hygienists normally take 30 to 45 minutes at each patient visit to target oral disease prevention and oral health promotion, and this SDT alternative approach can easily be integrated in their work.

## References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179–211.

Albandar, J. M., & Rams, T. E. (2002). Global epidemiology of periodontal disease: An overview. *Periodontology, 29*, 7–10.

American Academy of Periodontology. (2005). Position paper: Epidemiology of periodontal diseases. *Journal of Periodontology, 76*, 1406–1419.

Armitage, G. C. (2004). Periodontal diagnoses and classification of periodontal diseases. *Periodontology, 34*, 9–21.

Axelsson, P., & Lindhe, J. (1974). The effect of a preventive programme on dental plaque, gingivitis and caries in schoolchildren: Results after one and two years. *Journal of Clinical Periodontology, 1*, 126–138.

Axelsson, P., Nyström, B., & Lindhe, J. (2004). The long-term effect of a plaque control program on tooth mortality, caries and periodontal disease in adults. *Journal of Clinical Periodontology, 31*, 749–757.

Bandura, A. (1977). *Social learning theory*. Prentice Hall.

Donaldson, A. N., Everitt, B., Newton, T., Steele, J., Sheriff, M., & Bower, E. (2008). The effects of social class and dental attendance on oral health. *Journal of Dental Research, 87*, 60–64.

Ghaffari, M., Rakhshanderou, S., Ramezankhani, A., Buunk-Werkhoven, Y. A. B., Noroozi, M., & Armoon, B. (2018). Are educating and promoting interventions effective in oral health? A systematic review. *International Journal of Dental Hygiene, 16*, 48–58.

Gierk, B., Kohlmann, S., Kroenke, K., Spangenberg, L., Zenger, M., Brähler, E., & Löwe, B. (2014). The Somatic Symptom Scale–8 (SSS-8): A brief measure of somatic symptom burden. *JAMA Internal Medicine, 174*, 399–407.

Glick, M., Williams, D. M., Kleinman, D. V., Vujicic, M., Watt, R. G., & Weyant, R. J. (2016). A new definition for oral health developed by the FDI World Dental Federation opens the door to a universal definition of oral health. *British Dental Journal, 221*, 792–793.

Halvari, A. E. M., & Halvari, H. (2006). Motivational predictors of change in oral health: An experimental test of self-determination theory. *Motivation and Emotion, 30*, 295–306.

Halvari, A. E. M., Halvari, H., Bjørnebekk, G., & Deci, E. L. (2010). Motivation and anxiety for dental treatment: Testing a self-determination theory model of oral self-care behaviour and dental clinic attendance. *Motivation and Emotion, 34*, 15–33.

Halvari, A. E. M., Halvari, H., Bjørnebekk, G., & Deci, E. L. (2012a). Motivation for dental home care: Testing a self-determination theory model. *Journal of Applied Social Psychology, 42*, 1–39.

Halvari, A. E. M., Halvari, H., Bjørnebekk, G., & Deci, E. L. (2012b). Self-determined motivational predictors of increases in dental behaviors, decreases in dental plaque, and improvement in oral health: A randomized clinical trial. *Health Psychology, 31*, 777–788.

Halvari, A. E. M., Halvari, H., Bjørnebekk, G., & Deci, E. L. (2013). Oral health and dental well-being: Testing a self-determination theory model. *Journal of Applied Social Psychology, 43*, 275–292.

Halvari, A. E. M., Halvari, H., & Deci, E. L. (2018). Attending and avoiding dental appointments: Do "bright" and "dark" motivational paths have a role? *International Journal of Dental Hygiene, 16*, 286–297.

Halvari, A. E. M., Halvari, H., & Deci, E. L. (2019). Dental anxiety, oral health–related quality of life, and general well-being: A self-determination theory perspective. *Journal of Applied Social Psychology, 49*, 295–306.

Halvari, A. E. M., Halvari, H., & Deci, E. L. (2020). The roles of patients' authenticity and accepting external influence, and clinicians' treatment styles in predicting patients' dental anxiety and avoidance of dental appointments. *Europe's Journal of Psychology, 16*, 45–61.

Halvari, A. E. M., Halvari, H., & Deci, E. L., Williams, G. C. (2019). Autonomy-supportive dental treatment, oral health-related eudaimonic well-being and oral health: A randomized clinical trial. *Psychology & Health, 34*, 1421–1436.

Halvari, A. E. M., Halvari, H., & Deci, E. L., Williams, G. C. (2020). Motivation and anxiety for dental treatment and dental attendance: The roles of the locus of causality personality and treatment styles. *Journal of Applied Social Psychology, 50*, 133–144.

Halvari, A. E. M., Halvari, H., Williams, G. C., & Deci, E. L. (2017). Predicting dental attendance from dental hygienists' autonomy support and patients' autonomous motivation: A randomised clinical trial. *Psychology & Health, 32*, 127–144.

Health Education Authority. (1996). *The scientific basis of dental health education*. HEA.

Huebner, E. S. (1991). The student's life satisfaction: An assessment of psychometric properties with Black and white elementary school students. *Social Indicators Research, 34*, 315–323.

Hugoson, A., Lundgren, D., Asklöw, B., & Borgklint, G. (2007). Effect of three different dental health preventive programmes on young adult individuals: A randomized, blinded, parallel group, controlled evaluation of oral hygiene behaviour on plaque and gingivitis. *Journal of Clincal Periodontology, 34*, 407–415.

Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly, 11*, 1–47.

John, M. T., Hujoel, P., Miglioretti, D. L., LeResche, L., Koepsell, T. D., & Micheelis, W. (2004). Dimensions of oral-health-related quality of life. *Journal of Dental Research, 83*, 956–960.

Kassebaum, N. J., Bernabé, E., Dahiya, M., Bhandari, B., Murray, C. J. L., Marcenes, W. (2014). Global burden of severe periodontitis in 1990–2010: A systematic review and meta-regression. *Journal of Dental Research, 93*, 1045–1053.

Kay, E., & Locker, D. (1998). A systematic review of the effectiveness of health promotion aimed at improving oral health. *Community Dental Health, 15*, 132–144.

Kay, E., Vascott, D., Hocking, A., Nield, H., Dorr, C., & Barrett, H. (2016). A review of approaches for dental practice teams for promoting oral health. *Community Dentistry and Oral Epidemiology, 44*, 313–330.

Listl, S., Galloway, J., Mossey, P. A., & Marcenes, W. (2015). Global economic impact of dental diseases. *Journal of Dental Research, 94*, 1355–1361.

Löe, H. (2000). Oral hygiene in the prevention of caries and periodontal disease. *International Dental Journal, 50*, 129–139.

Maltz, M., Jardim, J. J., & Alves, L. S. (2010). Health promotion and dental caries. *Brazilian Oral Research, 24*, 18–25.

Marsh, P. D. (2006). Dental plaque as a biofilm and a micribial community: Implications for health and disease. *BMC Oral Health, 6*(Suppl I), S14.

Nasab, H. S., Yasdanian, M., Mokhayeri, Y., Latifi, M., Niksadat, N., Harooni, J., & Armoon, B. (2019). The role of psychological theories in oral health interventions: A systematic review and meta-analysis. *International Journal of Dental Hygiene, 17*, 142–152.

Nuttall, N. M., Bradnock, G., White, D., Morris, J., & Nunn, J. (2001). Dental attendance in 1988 and implications for the future. *British Dental Journal, 190*, 177–182.

Pedersen, C., Halvari, H., & Williams, G. C. (2018). Worksite intervention effects on motivation, physical activity, and health: A cluster randomized controlled trial. *Psychology of Sport & Exercise, 35*, 171–180.

Pelletier, L. G., Dion, S. C., Slovinec-D'Angelo, & Reid, R. (2004). Why do you regulate what you eat? Relationships between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment. *Motivation and Emotion, 28*, 245–277.

Petersen, P. E. (2003). The world oral health report 2003: Continuous improvement of oral health in the 21st century—the approach of the WHO Global Oral Health Programme. *Community Dentistry and Oral Epidemiology, 31*, 3–23.

Petersen, P. E. (2008). Oral health. In Heggenhougen, K., & Quah, S. (Eds.), *International encyclopedia of public health* (Vol. 4., pp. 677–685). Academic Press.

Ramsay, D. S. (2000). Patient compliance with oral hygiene regimes: A behavioral self-regulation analysis with implications for technology. *International Dental Journal, 50*, 304–311.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80*, 1–28.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness.* Guilford Press.

Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality, 65*, 529–565.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*, 1069–1081.

Schüz, B., Sniehotta, F. F., Wiedemann, A., & Seemann, R. (2006). Adherence to a daily flossing regimen in university students: Effects on planning when, where, how, and what to do in face of barriers. *Journal of Clinical Periodontology, 33*, 612–619.

Soldani, F. A., Lamont, T., Jones, K., Young, L., Walsh, T., Lala, R., & Clarkson, J. E. (2018). One-to-one oral hygiene advice provided in a dental setting for oral health. *Cochrane Database of Systematic Reviews*, *10*, 1–105. Article CD007447.

Stein, C., Santos, N. M. L., Hilgert, J. B., & Hugo, F. N. (2018). Effectiveness of oral health education on oral hygiene and dental caries in schoolchildren: Systematic review and meta-analysis. *Community Dentistry and Oral Epidemiology, 46*, 30–37.

Taylor, S. E. (1990). Health psychology. *American Psychologist, 45*, 40–50.

Vamos, C. A., Thompson, E. L., Avendano, M., Daley, E. M., Quinonez, R. B., & Boggess, K. (2015). Oral health promotion interventions during pregnancy: A systematic review. *Community Dentistry and Oral Epidemiology, 43*, 385–396.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 54*, 1063–1070.

Watt, R. G. (2005). Strategies and approaches in oral disease prevention and health promotion. *Bulletin of the World Health Organization, 83*, 711–718.

West, d. S., Gorin, A. A., Subak, L. L., Foster, G., Bragg, C., Hecht, J., Schembri, M., & Wing, R. R. (2011). A motivation-focused weight loss maintenance program is an effective alternative to a skill-based approach. *International Journal of Obesity, 35*, 259–269.

Williams, G. C., Niemiec, C. P., Patrick, H., Ryan, R. M., & Deci, E. L. (2016). Outcomes of the smoker's health project: A pragmatic comparative effectiveness trial of tobacco-dependence interventions based on self-determination theory. *Health Education Research, 31*, 749–759.

Wood, A. M., Linley, A. P., Maltby, J., Baliousis, M., & Joseph, S. (2008). The authentic personality: A theoretical and empirical conceptualization and the development of the authenticity scale. *Journal of Counseling Psychology, 55*, 385–399.

World Health Organization. (2004). *Global oral health data bank*. WHO.

# Work and Organizations

# 43

# Shaping Tomorrow's Workplace by Integrating Self-Determination Theory: A Literature Review and Recommendations

Jacques Forest, Marc-Antoine Gradito Dubord, Anja H. Olafsen, *and* Joëlle Carpentier

## Abstract

Self-determination theory (SDT) has proven to be a versatile and useful theory when applied to the work setting. This chapter addresses the various consequences of the different types of work motivation and psychological need satisfaction and frustration by reviewing recent meta-analyses and research on these subjects. It then presents the research efforts that have been done on three different streams of basic psychological needs' antecedents: compensation, interpersonal relationship/leadership, and job design. Discussing total pay, inequities, and transparency as well as wealth and taxes as a duty for redistribution, the chapter opens up the debate about how SDT can be used not only for organizational research but also for studying macro topics related to the job market and the economy in general. It concludes by arguing that SDT has established itself as one of the leading theories of work motivation.

**Key Words:** work motivation, basic psychological needs, compensation, leadership, job design, talent development, strengths use, justice, pay transparency, taxation

We spend two-thirds of our entire waking life at work for what is typically a 35- to 45-year-long career (World Health Organization, 2018); hence, this time and energy expenditure should not only be a means of survival but, at the very least, be meaningful and, if possible, enjoyable. These positive experiences and opportunities also should be made available to everyone and not just some special few. As several authors argue, applying self-determination theory (SDT) to various work contexts can help provide an answer to what makes work meaningful for everyone (see Forner et al., 2020; Gagné, 2018; Manganelli et al., 2018).

In this chapter, we delve into what SDT has brought to the work domain and how it could be used to shape the work experience through its insights into employees' quality of motivation, psychological need satisfaction and frustration, and how these are affected by factors such as compensation, interpersonal relationships and leadership, and job design. We also argue that, on a broader scale, human resources (HR)

management should foster inclusive practices to ensure psychological need satisfaction and optimal functioning for every employee; as an example of such practice, we discuss the strengths-based approach (compared to a deficit-reduction approach). Finally, because SDT's main contribution to the business area so far has been linked to individual or organizational experiences and consequences, we argue that it is time to broaden that focus to include macro contributions, especially regarding the job market and economy in general.

## What SDT Has Brought to the Work Domain

### Work Motivation Quality: An Overview

SDT at work has an advantage over other models of employee engagement as it can identify and measure the antecedents, processes, and outcomes of human motivation—not just the destination or result, but also the journey—and has been empirically tested in dozens of countries over the past 50 years.

It is generally agreed that there are three main categories of need-satisfying and need-frustrating features in the workplace: job design, interpersonal relationships/leadership, and compensation (Manganelli et al., 2018). As seen in Figure 43.1, these can be used to promote need-satisfying experiences when well used, but can also create need-frustrating experiences when ill used. Taken together, these three work elements (job design, relationships, and compensation) are aimed at the same objective: to increase the quality of work motivation and, therefore, optimal functioning at work.

As a measure of work motivation, the Multidimensional Work Motivation Scale (Gagné et al., 2015) is now available in 25 languages: English, French, Spanish, Portuguese, Dutch, Italian, Greek, Norwegian, Swedish, Finnish, Polish, German, Estonian, Croatian, Czech, Romanian, Turkish, Russian, Arabic, Persian/Farsi, Hebrew, Indonesian, Vietnamese, Japanese, and Chinese. In accord with SDT's motivational taxonomy (see Pelletier & Rocchi, this volume), the scale assesses intrinsic, identified, introjected, and extrinsic types of motivation, as well as amotivation. Substantial research has demonstrated that autonomous motivations (identified and intrinsic) are more beneficial for employees' optimal functioning (well-being, performance, prosocial behaviors, etc.) than are controlled motivations (introjected and extrinsic) or amotivation (Gagné & Deci, 2005; Ryan & Deci, 2017).

A recent meta-analysis (Van den Broeck et al., 2021) using 124 samples more precisely points out what are the specific consequences predicted by each type of motivation. Results of this meta-analysis suggest that there usually is an overemphasis on the importance of intrinsic motivation in the workplace from other theorists (e.g., Kim, Gerhart, & Fang, 2021). Indeed, although the benefits of intrinsic motivation at work are undeniable, it seems that identified motivation is even more important, at least for performance, than its intrinsic counterpart. Intrinsic motivation is clearly the best predictor of general well-being (less distress, less burnout, more engagement, and more job
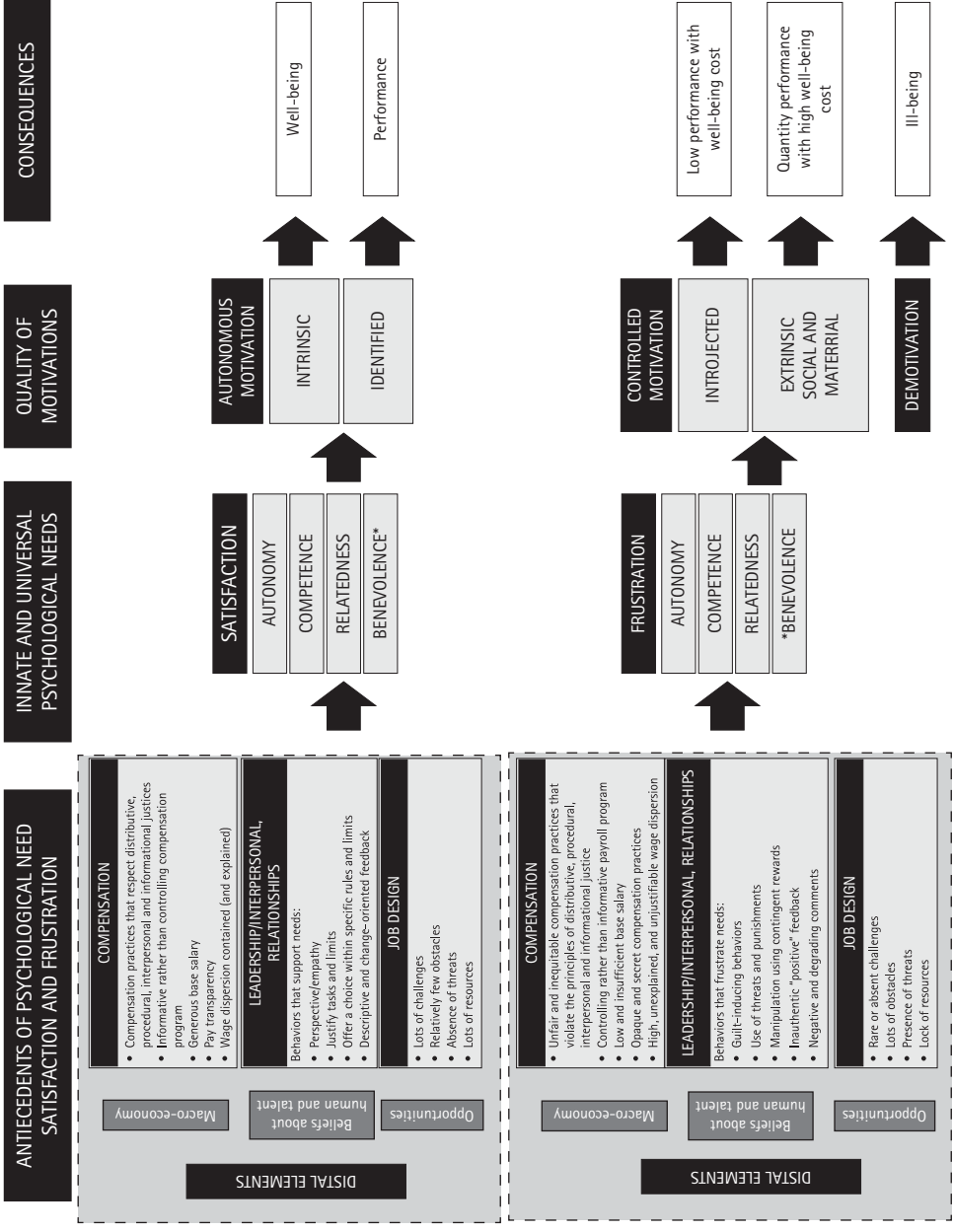
**Figure 43.1** An overview of SDT applied to the work setting, from antecedents to need satisfaction/frustration, quality of motivations and psychological, physical, behavioral, and economic consequences

satisfaction), while identified motivation is a better predictor of performance, proactivity, and organizational citizenship behavior. Both types of motivation are thus necessary and complementary in order to have "happy-productive" workers. Introjected motivation includes both approach (e.g., "I want to prove to myself that I can") and avoidance (e.g., "Otherwise I will feel ashamed of myself") elements. Hence, it is not surprising that it is simultaneously positively related to desired (e.g., performance, proactivity, organizational citizenship behavior) and undesired (e.g., distress and burnout) consequences, showing that it might slightly activate performance, albeit at a high intrapersonal cost. Extrinsic motivation, in both its social and material forms (both including approach and avoidance components), can also slightly elicit quantity-related (e.g., piece-rate) and quality-related performance, with an even higher well-being cost than introjected motivation. Last but not least, amotivation unmistakably has a negative tone in that it increases ill-being and counterproductive work behavior while concomitantly decreasing well-being and performance, all consequences which organizations are trying to prevent and avoid. In sum, this meta-analytical portrait shows that identified motivation is of importance regarding performance, while intrinsic motivation is paramount to well-being; this *power duo* is thus what workers and companies need to be productive and feel well in the long run. Regarding introjected and extrinsic motivation, the portrait is either mixed or negative, with a dark picture clearly emerging with amotivation.

It is important to note that similar results were found irrespective of the specific populations studied, whether it is nurses (Trépanier et al., 2015), entrepreneurs (Olafsen & Frølund, 2018), police officers (Gillet et al., 2018), professors (Stupnisky, BrckaLorenz, & Laird, 2019), service employees (Olafsen & Halvari, 2017), physicians (Moller et al., 2021), or military personnel (Filosa et al., 2020) or work conditions, such as the gig economy (Zaman et al., 2020).

Moreover, what was found at the day-to-day level (or regarding a specific job) is also found when studied at a higher level of abstraction or longer timeframe, namely at the career level. For example, Dahling and Lauricella (2017) demonstrated that self-determined motivation was related to career commitment, career satisfaction, and perceived person-vocation fit. Girouard and Forest (2019) showed that intrinsic aspirations, autonomous motives to pursue these aspirations, as well as objective career success (annual salary, number of promotions, permission to delegate, project management responsibilities, and official management positions) are positively related to need satisfaction and negatively related to need frustration, which in turn are, respectively, positively and negatively correlated to subjective career success and subjective well-being. The same applies regarding career transitions. Results show that psychological need satisfaction during retirement (Houlfort et al., 2015) or autonomous motivation to actively disengage from a former role to take another (Holding & Koestner, this volume) helps individuals attain greater levels of well-being during and after these changes.

Recently, arguments for the importance to organizations of having employees who are autonomously motivated have been formulated in a language managers and organizational decision-makers clearly understand: money and profits. Some researchers have started to translate into monetary terms (or "monetized") the motivational consequences measured within SDT research (e.g., performance, well-being, turnover intentions, creativity) through either economic-utility analyses (Forest et al., 2014) or cost-benefit analyses (Mueller, 2019). These analyses highlight that aiming for employees' autonomous motivation is not only beneficial for employees; it also benefits the organization in terms of its bottom line.

In the next section, we will delve into work motivation's principal antecedent, basic psychological needs satisfaction and frustration, by presenting recent empirical findings and discussing a future avenue of research. In looking at the research results (portrayed in Figure 43.1), autonomy, competence, and relatedness indeed appear to be universal predictors of optimal functioning, as they both increase autonomous and decrease controlled types of motivation. They can thus also serve as North Star concepts to guide organizations in understanding what makes initiatives positive (when they are need-satisfying) or negative (when they are need-frustrating).

### Psychological Need Satisfaction and Benevolence: Implications for the Workplace

Basic psychological needs theory is one of the mini-theories of SDT (Vansteenkiste, Ryan, & Soenens, 2020). Building and extending previous models of what are the "real" innate and universal psychological needs for human (e.g., Sheldon et al., 2001), there is now empirical evidence in 164 countries (Tay & Diener, 2011) showing that the satisfaction of the psychological needs for autonomy, competence, and relatedness is important for subjective well-being, over and above general life satisfaction. All three are as important as each other (e.g., Dysvik, Kuvaas, & Gagné, 2013), and there is now clear evidence that psychological needs satisfaction precedes work motivation (e.g., Olafsen, Deci, & Halvari, 2018; Trépanier et al., 2015) and that need satisfaction yields positive consequences for employees and organizations (e.g., Olafsen, 2017). In the workplace, a meta-analysis (Van den Broeck et al., 2016) shows that psychological need satisfaction is positively related to general well-being, life satisfaction, engagement, and work effort, as well as task, creative, and proactive performance, while being negatively related to negative affect, strain, burnout, deviance, and absenteeism.

As was found in studies in the sport domain (e.g., Bartholomew et al., 2011) and in psychotherapy (e.g., Vansteenkiste & Ryan, 2013), research in the work domain (e.g., Gillet et al., 2019) has shown that psychological need satisfaction predicts more positive outcomes, while psychological need frustration predicts more negative outcomes, hence making it important to study them simultaneously and separately. Recently, it has been suggested that we could have even finer-grain analyses in that need unfulfillment (the

phenomenological state of lack of need fulfillment, also sometimes called need dissatisfaction) could be the concept (or state) located in between need satisfaction and need frustration (Huyghebaert-Zouaghi, Ntoumanis, Berjot, & Gillet, 2020). Results have indeed shown that need unfulfillment is more strongly related to boredom than is need frustration, for example.

Martela and Ryan (2016) have suggested that benevolence—contributing to other people's and society's betterment—could be a potential fourth basic psychological need. By controlling for the three initial needs (competence, relatedness, and autonomy), they have shown across three independent studies that benevolence satisfaction mediates the relations between prosocial actions and well-being, with all four needs emerging as independent factors (Martela & Ryan, 2015). Some studies have subsequently shown that benevolence satisfaction significantly helps people finding meaning at work (Martela & Riekki, 2018) and in life (Martela & Steger, 2016).

Although benevolence satisfaction may be a significant predictor of well-being, Martela and Ryan (2019) argued that, in order to be considered a fourth fundamental psychological need, benevolence frustration—the feeling that one's behaviors and actions have caused harm to others—must (among other criteria) also lead to psychological ill-being when statistically controlling for the impact of the frustration of the first three basic psychological needs, which has to date not been reliably observed (Martela & Ryan, 2021).

Regardless of the status of benevolence as a basic psychological need or simply as a significant wellness enhancer (see Martela & Ryan, 2019), we suggest that there is substantial added value in putting forward benevolence within the workplace. Indeed, the discovery of the central part that benevolence plays in one's life highlights the hypothesis that human nature is fundamentally prosocial, notwithstanding the context of life (Aknin & Whillans, 2021; Donald et al., in press). At work, the capacity of meaningfulness and generativity (e.g., Martela & Sheldon, 2019), along with the knowledge that our work is making a difference in someone else's life (e.g., Fowler, 2014), are powerful drivers. Considering the impacts of prosocial intentions on autonomous motivation (Weinstein & Ryan, 2010) and how prosocial behaviors are linked to work performance (Kong & Ho, 2016), benevolence could play a major role in the future of work by prosocially transforming employees' experiences. Indeed, if humans have an internal system that motivates them to act benevolently (see Hepach, Vaish, & Tomasello, 2012), organizations should aim at providing employees equal opportunities to act on their prosocial intentions. In sum, bringing more benevolence into the workplace culture positively impacts individual, organizational, and societal outcomes.

## Antecedents of Psychological Need Satisfaction and Work Motivation

In the next three subsections, we examine three different categories of antecedents of need satisfaction and frustration that are all salient within the workplace: (1) compensation, (2) interpersonal relationships and leadership, and (3) job design.

*The Meaning of Compensation and Its Different Forms*

Compensation is often the elephant in the room in organization life, as it is simultaneously the biggest budget expense and one of the motivational levers whose estimated impacts are least unanimous among researchers and practitioners (e.g., Gagné & Forest, 2020). For decades, the debate seemed to have crystallized into two different camps, where, on the one side, money seems to always work, so we should know how to use it efficiently (e.g., Kim et al., 2021) and, on the other side, money seems to have a detrimental impact (mainly) on autonomy and, thus, intrinsic motivation (Deci, Koestner, & Ryan, 1999). More recent models (Gagné & Forest, 2020) and meta-analyses (Cerasoli, Nicklin, & Ford, 2014; Cerasoli, Nicklin, & Nassrelgrgawi, 2016) seem to have provided some structure and elements in favor of the undermining effect of rewards (also called the crowding-out effect). Since the beginning of SDT (Deci, 1971), it has been put forward that tangible rewards can either have an *informational* effect (i.e., being need-satisfying by informing about the quality of performance) or a *controlling* effect (i.e., when given contingently and used to control subordinates). In other words, rewards can have different functional significance (see Reeve, this volume).

Thibault Landry and colleagues (2017, 2020) tested these ideas in the work domain using various samples and different methodologies. To sum up their results, when an informational meaning is attributed to rewards, they have a positive impact on autonomous motivation and employee outcomes (well-being, in-role and extra-role effort, commitment, and intent to stay), mainly through autonomy and competence need satisfaction. Yet when rewards are used as a mean of control, they increase controlled motivation, mainly through competence frustration (see also Kuvaas et al., 2020). This highlights that it is not primarily the reward or the money per se that has an effect, but its interpretation and meaning.

Research on perceived fairness, justice, and meaning has recently been shedding light on the importance of functional significance in compensation practices. Justice (e.g., Colquitt et al., 2013) is a concept that can be understood through its four different dimensions: distributive justice (how many resources someone gets), procedural justice (what procedures are followed and criteria used to decide who gets what), interpersonal justice (perceived respect), and informational justice (availability and quality of information on procedures). For example, research within SDT (Olafsen et al., 2015) has shown that distributive justice pertaining to pay does not have an impact on psychological need satisfaction, but that procedural justice does. This can be interpreted as the fact that, when it comes to psychological need satisfaction, it is not the amount of pay that is determinant but the process through which pay is determined.

Authors have recently taken further the analysis of the relations between organizational justice, employee basic psychological needs satisfaction, and the consequences observed in organizations by also examining the role of the active perception of injustice (and not only the greater or lesser perception of justice). For example, Galipeau and

colleagues (2021) showed that procedural injustice plays a crucial role in employee behaviors by simultaneously decreasing psychological need satisfaction and increasing psychological need frustration, which then has an impact on in-role and extra-role organizational citizenship behaviors (negatively) and interpersonal and organizational deviance behaviors (positively).

Other elements of perceptions related to justice and rewards that have been studied include the salience of verbal rewards (Hewett & Conway, 2016), the perception of managers' discretion in attributing rewards (Hewett & Leroy, 2019), the social aspect compared to the economic aspect of exchange relationships (Kuvaas et al., 2020), the relative power of base pay versus pay-for-performance bonuses (Kuvaas et al., 2016), and the application of rewards in the public domain (which is sometimes seen differently than in the private sector; Corduneanu, Dudau, & Kominis, 2020). These studies all point toward the fact that a message of psychological need support is more easily conveyed through positive social elements than material, economic, and tangible aspects. For instance, Nordgren Selar and colleagues (2020) compared the motivational power of performance-based pay to that of psychological need support and showed that performance-based pay has some explanatory power in task and contextual performance, but that the explanatory power of psychological need support (derived mostly through job design and feedback) is twice as large.

This goes to show that money is indeed part of the portrait in an employment relationship but that it is not the most powerful element and, if not used well, can have negative effects. In that vein, a large-scale study involving 1,309 firms and a total of 318,717 employees showed that implementing a pay-for-performance program increased employees' consumption of antidepressant and antianxiety medication by 4% (Dahl & Pierce, 2020). Results of these empirical studies seem in line with Kohn's (1993, p. 44) simple and straightforward advice: "Pay people well, pay them fairly . . . and then do everything you can to get money off their mind." In sum, the focus needs to move away from the amount of money that is being paid to its meaning and significance (for security, self-determined, or non-self-determined motives; e.g., Manganelli & Forest, 2020).

### Relationships and Leadership: Need-Supportive Behaviors from Different Sources

SDT states that need-supportive (Dagenais-Desmarais et al., 2014) or autonomy-supportive (Slemp et al., 2018) contexts foster optimal functioning by satisfying psychological needs. A recent meta-analysis (Slemp et al., 2018) has shown that the benefits of need-supportive leadership are employees with higher levels of well-being, work engagement, job satisfaction, and positive work behavior, and a reduction in general distress. Several leadership models have been put in relation with psychological needs, including, to name just a few, leader-member-exchange (Graves & Luciano, 2013), transformational leadership (Kovjanic et al., 2012), authentic leadership (Leroy et al., 2015), spiritual

leadership (Yang, Yang, & Gao, 2020), servant leadership (Chiniara & Bentein, 2016), and engaging leadership (Van Tuin, Schaufeli, & Van den Broeck, 2021), and, on the negative side, abusive supervision (Eissa & Lester, 2017).

Regarding specific need-supportive behaviors, the ones which seem to have gained consensus (e.g., Reeve, 2009) are those related to the broader dimensions of autonomy support (e.g., take perspective, offer meaningful choice, encourage initiative and choice, minimize controlling language, and provide meaningful rationale for tasks, rules, and limits), structure (support competence, provide change-oriented and descriptive feedback, focus on mastery rather than performance goal), and involvement (devote time, invest attention and resources, be caring and supportive, show warmth and concern).

Focusing on specific need-supportive behaviors instead of on more general leadership styles has allowed the research and practice communities to identify behaviors that are teachable and for which the positive effects have been empirically demonstrated. Training interventions have been implemented with success, as shown by the changes in leaders' behaviors that have been reported by the managers themselves and, more important, by their subordinates (e.g., Deci, Connell, & Ryan, 1989). Although these interventions differ slightly from each other in terms of the content conveyed and the format used for the training, certain common elements can be identified and used in order to make recommendations for training offered to managers and aimed at teaching them to support their employees' psychological needs. Within the specific domain of work and organizations, the guidelines aimed at increasing the adoption of need-supportive behaviors are the following: (1) proactively consider work pressures and the broader context, (2) give preference to pedagogy and implementation that support basic needs, (3) align interventions with stakeholders' needs, and (4) resist focusing only on short-term effects (Slemp, Lee, & Mossman, 2021).

In addition to studying the impact of the general leadership style as well as of specific behaviors adopted by authority figures such as managers or supervisors, research within SDT examined different sources of need support, such as organizational (Gillet et al., 2013) and colleagues' (e.g., Moreau & Mageau, 2012) support versus supervisors' support. For example, Moreau and Mageau (2012) have shown that supervisors' autonomy support has a positive effect on work satisfaction and subjective well-being and that it also reduces suicidal ideations in sensitive samples of health professionals (physicians, veterinarians, etc.). In addition, colleague autonomy support had a positive effect over and above that of supervisors, showing that not only are good bosses important but so are good colleagues. These studies highlighted that there can be various sources of psychological need support within the organization, each of which plays a unique role in the consequences experienced by employees, and that the interpersonal climate (which includes supervisors and colleagues) is an important predictor of workplace morale (e.g., Slemp et al., 2021).

To help organizations further apply SDT principles to their managerial approaches, Forner and colleagues (2020) discuss how leaders can efficiently support employees' basic

psychological needs through concrete practices. They analyzed strategies used by leaders who reported using SDT and calculated, for each strategy, an index composed of practical salience and theoretical fit. Regarding autonomy, the most relevant practices appeared to be (1) to encourage innovation, (2) to consult with those who are affected by the management's decisions, (3) to be less prescriptive in assigning tasks, (4) to provide workers opportunities to express their ideas, and (5) to provide a rationale for decisions when possible. Regarding the need for competence, practices include (1) providing development and learning opportunities, (2) supporting and helping in building self-esteem and confidence, (3) offering regular positive and constructive feedback, (4) letting team members learn at their own pace, and (5) introducing mentoring opportunities. Finally, regarding the need for relatedness, management practices include (1) implementing team bonding activities, (2) inducting new members into the team, (3) learning about workers outside of the work context, (4) knowing your team members' names, interests, and skills, and (5) respecting others' background and experience.

*Job Design: Demands (Challenges and Hindrances), Resources, and Job Crafting*
The most widely used and recognized model to tackle job design is the job demand resources (JDR) model (e.g., Demerouti et al., 2001). The model posits that any job can be decomposed between resources (i.e., "physical, psychological, social, or organizational aspects of the job that may . . . be functional in achieving work goals, reduce job demands and its related costs, or stimulate personal growth and development"; p. 501) and demands (i.e., "physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs"; p. 501). Research has consistently shown that job demands tend to increase negative consequences, such as burnout, while job resources tend to simultaneously increase positive consequences, like engagement, and diminish negative consequences (e.g., Lesener, Gusy, & Wolter, 2019).

When combining the JDR model with SDT, Trépanier and colleagues (2015) have shown that, on the one hand, job demands increase need frustration, which then increases controlled motivation, which in turn has a positive relation with psychological distress and psychosomatic complaints and a negative relation with work engagement and job performance. On the other hand, results also show that job resources increase psychological need satisfaction, which then activates autonomous motivation, which has a positive impact on work engagement and job performance while having a negative relation with psychological distress and psychosomatic complaints.

To refine the study of job demands, types of demands have recently been separated into two categories: hindrance demands (energy-draining job demands linked to exhaustion and disengagement) and challenge demands (job characteristics that can have motivating effects as well as energy-raising propensities; Van den Broeck et al., 2010). Results suggest that challenges and hindrances are positively and negatively related to

psychological need satisfaction, respectively (Olafsen & Frølund, 2018). Furthermore, based on studies that have demonstrated the importance of studying need satisfaction and frustration separately (e.g., Vansteenkiste et al., 2020), Giebe and Rigotti (2020) used a diary (i.e., within-person) study and showed that job complexity (considered a challenge) increases competence need satisfaction, which then decreases emotional exhaustion, whereas time pressure (considered a hindrance) thwarts the need for autonomy, which then increases exhaustion and reduces job satisfaction. To extend these first results integrating JDR and SDT's need satisfaction and frustration, Crevier-Braud and colleagues (2021) used more comprehensive measures of hindrances, challenges, and resources, and also assessed satisfaction and frustration of all three basic needs, to predict the positive and negative aspects of performance (i.e., counterproductive work behaviors and proficiency, adaptivity, and proactivity) and well-being (i.e., burnout and engagement). With these variables, the portrait becomes clearer in showing that resources reduce need frustration and increase need satisfaction, challenges increase need satisfaction, and hindrances increase need frustration and decrease need satisfaction. Need satisfaction then increases performance and engagement while reducing burnout, and need frustration increases counterproductive behaviors and burnout. From an SDT standpoint, organizations and employers should thus aim at providing their employees with the resources they need, while also putting in place engaging challenges and lowering (when possible) the presence of hindrance-type demands.

Notwithstanding the different resources and demands a job has, employees can proactively act on it in a process called "job crafting," which is portrayed as the manner in which employees take an active role in the way they see and realize their work. Job crafting can thus be seen as a proactive behavior which is initiated at the personal level, not from the organization or management. Slemp and Vella-Brodrick (2014) demonstrated that task crafting, relational crafting, and cognitive crafting are all related to psychological need satisfaction, which then leads to psychological and subjective well-being. Although this type of behavior comes from the employees themselves rather than management, a follow-up study has shown that an antecedent to job crafting is autonomy support (Slemp, Kern, & Vella-Brodrick, 2015). Employees who work in an autonomy-supportive environment will indeed be more likely to play an active role in designing their job, which will then promote the satisfaction of their psychological needs and their well-being. Results pertaining to the JDR model and to job crafting thus suggest that job design plays a crucial role in satisfying employees' psychological needs and, consequently, in their well-being and motivation.

## Versatility of SDT in Studying and Implementing Interventions to Comprehend and Impact the Work Domain

In this section we highlight how SDT can contribute to what we believe are important areas of the work domain that might be transformed over the next few years.

*Career and Talent Management Practices: How SDT Can Guide Organizations to Enhance Need Satisfaction through HR Practices*

To adapt to constant and numerous changes in the workplace, one of the top challenges facing today's organizations is the training and development of HR (Walsh, 2017). Globally in 2019, more than US$360 billion was invested in training and development (Training Industry Research, 2020). Despite these massive investments to develop human potential at work, according to the Chartered Institute of Personnel and Development (2015, p. 20), only a small percentage of organizations (fewer than 10%) consider their practices to be highly effective. The effectiveness of these practices might have something to do with the fundamental beliefs (or "philosophies") about human potential's nature, value, and instrumentality (Meyers & van Woerkom, 2014) that drive their implementation.

HR philosophies/beliefs have been defined as general statements of "how the organization regards its human resources, what role the resources play in the overall success of the business, and how they are to be treated and managed" (Schuler, 1992, p. 21). According to Meyers and van Woerkom (2014), organizations can consider human potential as either *exclusive* (potential is rare; not everyone is a talent) or *inclusive* (potential is common; everyone could be a talent). Many managers still believe that talented employees are rare and, therefore, in a "war for talent," development practices should exclusively focus on top-performer employees (e.g., Cantrell, Cantrell, & Smith, 2010). It is then necessary to attract, identify, and retain talented employees and develop high-potential individuals. While most organizations adopt exclusive approaches to talent management (e.g., Swailes, 2013), empirical evidence regarding their effectiveness is lacking (Dries, 2013).

It is fair to believe that organizations whose management philosophy is based on SDT principles would instead take an inclusive approach to talent management. Indeed, SDT states that humans have an innate and natural inclination toward growth, and that it is the social environment that can stimulate or hinder this (Ryan & Deci, 2017). Therefore, from an SDT standpoint, the role of HR and organizations would be to provide this optimal environment so that all can actualize and emancipate their talents and strengths. In the same way, inclusive philosophies presume that employees and organizations can thrive by aiming at the positive qualities (or the potential) residing in each one of us (Peterson & Park, 2006). The concept of talent is thus seen as universal, meaning that everyone possesses certain positive traits and could be considered talented (Peterson & Seligman, 2004). Training and development practices must either focus on identifying employees' potential and assigning them to tasks that capitalize on their strengths (the inclusive/stable philosophy) or developing everyone according to their talents and strengths (the inclusive/developmental philosophy).

To study talent management within organizations using SDT, and in line with this view of a more inclusive approach to talent development, recent research has investigated the need-supportive potential characteristic of a strengths-based approach. A strengths-based approach, also called an abundance approach, is defined as a viewpoint whereby

everyone has natural strengths which ought to be used for optimal functioning (Forest et al., 2012), and it is the antithesis of a weaknesses- or deficit-based approach, which puts effort into reducing weaknesses, flaws, and faults.

Two preliminary studies (Gradito Dubord, Martin, & Forest, 2021) were conducted to examine the relationships between a strengths-based approach and employee need satisfaction and frustration and motivation. A representative sampling composed of 787 employees from a financial institution was surveyed (Study 1) and an additional 341 workers were recruited through LinkedIn (Study 2). Both studies measured strengths use behaviors; perceived organizational support for strengths use, need satisfaction, and frustration (including the need for benevolence); and autonomous and controlled motivation. The results presented in Table 43.1 show that, in both studies, the direct associations between perceived organizational support for strengths use, strengths use behaviors, need satisfaction, and need frustration are significant.

Furthermore, results from both samples highlighted significant relations between perceived organizational support for strengths use, strengths use behaviors, and benevolence satisfaction and frustration. It is interesting to note that in this study, Gradito Dubord et al. (2021) developed new items to assess the frustration of the need for benevolence. The levels of satisfaction and frustration of this specific need predicted autonomous and controlled motivation over and above the three other psychological needs. Future studies could examine links between the frustration of this need, assessed using the items used in these studies, and employee ill-being. Nevertheless, these studies add to the existing body of literature highlighting the relevance of benevolence in organizational contexts.

Structural equation analyses were conducted by combining both samples. The model in Figure 43.2 portrays perceived organizational support for strengths use and strengths use behaviors as independent variables, need satisfaction and need frustration as mediating

**Table 43.1** Correlations Matrix from Two Preliminary Studies

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Perceived organizational support for strength use | | .67 | .60 | .46 | −.40 | −.38 | .54 | N/S |
| 2. Strengths' use behaviors | .58 | | .69 | .50 | −.42 | −.28 | .57 | N/S |
| 3. Need satisfaction | .65 | .51 | | .57 | −.46 | −.27 | .60 | −.19 |
| 4. Benevolence satisfaction | .42 | .55 | .50 | | −.19 | −.31 | .35 | N/S |
| 5. Need frustration | −.47 | −.34 | −.46 | −.28 | | .44 | −.37 | 0.35 |
| 6. Benevolence frustration | −.42 | −.26 | −.37 | −.26 | .52 | | −.14 | 0.25 |
| 7. Autonomous motivation | .45 | .49 | .52 | .55 | −.32 | −.22 | | −0.22 |
| 8. Controlled motivation | −.37 | −.31 | −.36 | −.35 | .28 | .15 | −42 | |

*Notes*: n1 = 787; n2 = 341. All correlations are significant at $p < 0.001$ (two tailed). **N/S = The relationship is not significant. Correlations of Study 1 are presented below the diagonal; correlations of Study 2 are presented above the diagonal.
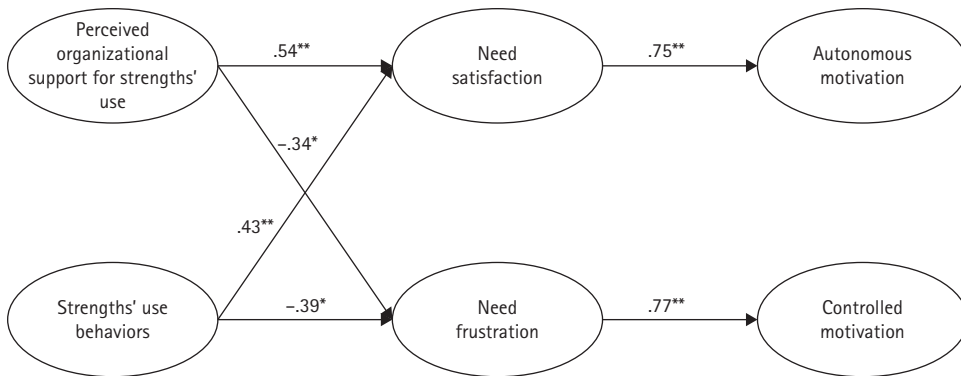
**Figure 43.2** The strengths-based approach model supported by self-determination theory

*Source*: Data from two preliminary studies from Gradito Dubord, Martin, and Forest, 2021.

*Notes*: ** p < .001, *p < 0.05 ($\chi$2/df = 2,34, CFI = 0.94; TLI = 0.93; RMSEA = 0.056 [CI = 0.050–0.062]; SRMR = 0.07)

variables, and autonomous and controlled motivation as dependent variables. Results suggest that perceived organizational support for strengths use and strengths use behaviors might be significant predictors of employee motivation through their impact on need satisfaction and frustration.

Future studies should aim at replicating these results as well as examining the impact of different talent management philosophies on other indicators of optimal and suboptimal functioning. Nonetheless, these results suggest that talent and career management practices oriented toward identifying every employee's potential to help them capitalize on and develop their strengths promote the satisfaction of employees' basic psychological needs and optimal motivation and tend to decrease need frustration. Based on Marescaux, De Winne, and Sels's (2013) recommendation that any HR practice must increase need satisfaction and decrease need frustration to ensure employees' well-being and performance, these results suggest that, to face the current challenges related to retention and development of talent, organizations would benefit from adopting a more humanistic view of their employees and promoting inclusive HR management practices, such as the strengths-based approach, rather than focusing on the maximum development of a minority of individuals.

*Wellness as Fairness: Total Pay, Inequities, and Transparency*

Work is an important sphere of life where we spend a lot of time, and SDT seems well-suited to explain how it can be meaningful and fruitful for the individual, for which most past research has been conducted. However, SDT provides a framework that can be used to understand work life more broadly, not only for individual employees and organizations but also to study the relationship between the working individual, organizations, and society as a whole. In this section, we locate some elements of research and intervention we think are worth exploring at a macro-level. These elements pertain to the job market and

the economy in general, where we will tackle fairness, fiscal transparency, income/wealth/property taxes, and unconditional universal basic income, using the SDT lens.

While money is important for well-being, its effect might be less than we think (Aknin, Norton, & Dunn, 2009). Recent research with representative samples from 164 countries (Jebb, Tay, & Diener, 2018) shows that there is a satiation point where there is "enough money," at least regarding subjective well-being's components of positive and negative emotions and life satisfaction. While money is efficient to reduce sadness (Kushlev, Dunn, & Lucas, 2015) and somewhat useful to put aside life's irritants, over a certain point it has been shown to have little effect (Kahneman & Deaton, 2010), and even *negative* effects past a certain point (Jebb et al., 2018). This suggests, however, that minimally paying people fairly for their work so that they can extract themselves from poverty and have some confidence for the future and their retirement years (Weinstein & Stone, 2018) is critical to wellness.

Obviously, some positions within organizations or within society deserve a higher salary level because of different levels of responsibilities, effort, education, and impact on society (see Örtenblad, 2021). But the subsequent question is how much difference there should be between the highest-paid and lowest-paid worker within an organization or a country. When asking 55,238 individuals in 45 countries how much more CEOs should make compared to the lowest-paid individual in a company, results shows that this difference should (roughly) be between 5 and 10 times the lowest salary (Kiatpongsan & Norton, 2014). It is interesting to note that these results are invariant across political beliefs, socioeconomic status, and countries. Empirical evidence points in the same direction, demonstrating that too much pay inequality leads to lower performance (Bloom, 1999) and more turnover (Bloom & Michel, 2002).

In sum, we suggest that there is such a thing as enough money (Jebb et al., 2018), that everyone should *not* be paid the same (e.g., Örtenblad, 2021), and that the differentiation should not exceed a multiplicative factor of 5 to 10 between the lowest and highest paid (Kiatpongsan & Norton, 2014). How can all this information be integrated to build pay systems that are just and fair and in line with SDT postulates? One way of diminishing perceived injustice can be to increase pay transparency (e.g., Hartmann & Slapničar, 2012). Applied research (e.g., Heisler, 2021) shows that when both distributive justice and procedural justice elements are put forward, employees can make fair-minded and informed judgments about their total pay. The presence of both distributive *and* procedural justice (not just one) is thus mandatory.

At the societal level, too much pay dispersion also leads to lower well-being, social confidence, social mobility, life expectancy, children's health, literacy and creativity, and more homicides, substance use and abuse, infant mortality, school bullying, undesired teenage pregnancies, imprisonment, obesity rates, and pollution (Wilkinson & Pickett, 2020). Perceptions of inequities within organizations and societies therefore appear to be a powerful determinant of many negative consequences at both individual and societal levels.

However, there is an important difference that needs to be made between equal opportunity, where anyone can try to attain a goal, and equal outcomes, where it is expected that everyone shall get the same end-result (e.g., Vandemoortele, 2021). Unequal opportunities lead to unequal outcomes, which then can "self-justify" themselves. In SDT terms, equality of opportunities creates occasions to possibly satisfy psychological needs, while rigged systems only create need-frustrating situations. Data from 104 countries (N = 490,579) shows that personal control (which can be seen as a mix of autonomy and competence) seems to be a universal source of happiness, beyond religion and trust in government, regardless of income growth and inequality (Nguyen, McPhetres, & Deci, 2020).

Research based on data from 34 countries (Oishi & Kesebir, 2015) shows that economic growth is not associated with increases in happiness when it comes simultaneously with growing income inequality. To add some nuance, analyses with data in 166 countries (Ng & Diener, 2019, p. 155) have shown that "people who earned higher incomes had higher life evaluation and positive feelings, and lower negative feelings than those who earned lower incomes, but the effects were stronger in more equal nations." If economic growth can have only a (somewhat) positive effect to raise nationwide and humankind's happiness when money's and wealth's possibilities and capacities are more evenly distributed (hence potentially need-satisfying and capability-producing), the question is how to achieve more equitable distribution of wealth and income.

### Income, Wealth, and Taxes as a Duty for Redistribution

Tackling inequality is a worthy endeavor. Cheung (2018; N = 57,932), for example, has shown that a 10% reduction in inequality increases life satisfaction as much as would do a 37% increase in annual income and, in a sample of 33 countries over 24 years, that a 5% reduction in inequality increased life satisfaction as much as an 11% increase in GDP. Two facts are clear: (1) inequities have now reached levels that are historically high and socially unjustifiable, and (2) reducing inequities is good for everyone, both the rich and the poor (see Wilkinson & Pickett, 2020). Indeed, inequality leads to dissatisfaction (and possibly need frustration in SDT terms; e.g., Schneider, 2019) but also disease, ill-being, and ill-health (Wilkinson & Pickett, 2020).

One way to reduce inequity is through progressive taxation, on both income and capital. For instance, Piketty (2014) proposed a progressive tax system using a multiplicative factor of one's average wealth and income, compared to the general population, to calculate the taxes that one should pay on property and income. Assuming that countries can harmonize their taxation, and that organizations and citizens are not cheating (e.g., Dietsch, 2015), such a system could promote both distributive and procedural justice, which would then increase the possibility of psychological need satisfaction. Distributive (who is paying how much) and procedural (what criteria we use to determine the payments) justice principles could be more easily met and lead to internalization of income compliance (autonomy), efficiency in tax compliance (competence), and solidarity

(relatedness) while doing so. This would be attained since progressive taxes, on both property and income, are a multiplicative factor compared to the general population; the taxes are a multiple of the average of wealth and an average of income. Research on tax compliance and evasion, through SDT, would help explain how economies around the world can create capabilities (or not) for their citizens (see Bradshaw et al., 2021).

Using such a progressive system (again, if citizens do not cheat or lie on their wealth and revenue; e.g., Dietsch, 2015), governments would have enough resources to provide the necessary services to everyone, and possibly increase chances of psychological need satisfaction. Therefore, it is important to know what leads people to be tax-compliant (Gangl & Torgler, 2020) and how paying taxes can be seen as prosocial spending (e.g., Thornton et al., 2019) or a social responsibility (Whillans, Wispinski, & Dunn, 2016). The underlying goal would be to trigger taxation behavior (e.g., Harbaugh, Mayr, & Burghart, 2007) that would increase the happiness and health of all (e.g., Kushlev et al., 2020). Indeed, it has been argued that income redistribution is a chief way to increase life satisfaction (Cheung, 2018) and meaning (Ward & King, 2016).

In line with SDT's principles, research has shown that increasing voice, choice, and autonomy in taxation (e.g., Lamberton, De Neve, & Norton, 2018) increases compliance. Aknin and Whillans (2021) go as far as saying that SDT's psychological needs for autonomy, competence, and relatedness should be tied directly to taxation motivations and behaviors in that taxation is the main way, in economy and politics, to give and help. For example, they suggest that taxes could include a way for citizens to register their choices and preferences in how tax money is spent (need for autonomy), that there should be a demonstration of the efficiency of governments' money spending (need for competence), and that authorities should emphasize the fact that paying income tax is a civic duty which is important for cooperation toward everyone in the population (need for relatedness). It could also be argued that the need for benevolence could be added to this list, as paying taxes is one way to contribute to the betterment of society. In other words, injecting SDT to understand how we can increase volitional prosocial taxation behaviors and reduce deviant taxation behaviors could be a tremendous contribution to fairness for all.

Internalization of tax compliance (according to SDT principles) and psychological need satisfaction could be incorporated into a sequence to get a better understanding as to when and how income and wealth tax is paid *and* is need-satisfying. It is worth mentioning that politicians and economists usually seem to declare that more GDP and more wealth are always better, but it might be a good idea to put forward the idea that there is such a thing as "enough money" and that they should question why they want their economy to make money (Thibault Landry et al., 2016) and why it is such an important result. Money can be seen as a capability activator and can be used to provide human wellness through psychological need satisfaction (Bradshaw et al., 2021; DeHaan, Hirai, & Ryan, 2016).

Time, just like money, can be seen as a resource, and research shows that preferring time over money can predict happiness (Whillans, Weidman, & Dunn, 2016; 2017) and even prosocial behaviors (Whillans & Dunn, 2015). Moreover, it seems that using money to buy experience (hence quality time) and to save time (e.g., by paying someone to do household chores; Whillans et al., 2017) can also increase happiness; hence, time seems to be more important than (or at least a complementary resource to) money. Kasser and Sheldon (2009) have shown in four studies that time affluence has a significant impact on life and family satisfaction as well as subjective well-being over and above material affluence. It thus seems that the efficiency and progress humanity has made in recent decades should be used not to increase wealth, as it is a never-ending and never-winning game (e.g., Macchia, Plagnol, & Powdthavee, 2020), but rather to increase time affluence (Macchia & Whillans, 2019). With data collected in 79 countries in five waves covering the period from 1989 to 2016 (N = 220,000), results show that giving priority to work rather than leisure comes at a cost to the nation's well-being. Real wealth should be calculated with time affluence and need-satisfying daily experiences rather than financial or material affluence; this should be the goal of citizens and governments around the world.

### SDT in the Workplace and the Economy: Sending a Message of Psychological Need Support to Everyone

It is our hope to have shown that SDT can be the bearer of good news: (1) in the workplace, talent is abundant and can be developed using training, development, and HR practices that are strengths-based (and not only aimed at deficit correction); (2) in economics and social policies, we can envision progressive taxation so that everyone can enjoy comfortable material affluence and, more important, time affluence and the basic need satisfaction that could bring more optimal functioning into focus.

Our overview of what SDT has brought to the domain of work has also highlighted the importance of benevolence in the workplace and society. Whether or not benevolence is a basic psychological need, it nonetheless reveals great potential for organizational studies. Moreover, the idea of benevolence reminds us that HR practices should aim at enhancing needs satisfaction and reducing their frustration. In this regard we pointed to the effectiveness of inclusive training and development practices, including a strengths-based approach. All things considered, the effectiveness of inclusive practices at work reflects the need to establish equal opportunities (not equal outcomes) within human systems. Therefore, we discussed examples that demonstrate how equality of opportunities might be obtained in the economy in general by (1) total pay and fiscal transparency to increase procedural and distributive justice and (2) income, wealth, and property tax as a duty for redistribution and to increase social equity.

Social policies and economic and political systems aimed at satisfying psychological needs and providing more quality time to everyone, financed through fair and just (e.g., Akbaş, Ariely, & Yuksel, 2019) wealth and income tax (e.g., Piketty, 2014) is a future we

can hope for. In that stream of thought, it has been suggested that unconditional universal basic income (Van Parijs & Vanderborght, 2017), which is giving an unconditional amount of money per month (usually 25% of the average annual salary) to every citizen, can be a way to alleviate stress and support basic needs (Bregman, 2017). Hüffmeier and Zacher (2021) indeed stress that SDT is one of the theoretical frameworks through which unconditional universal basic income should be studied. Taken together, its clear that there are potential contributions of SDT not only directly to the work domain but also to several critical issues for society arising from the relationship between humans and their work.

## Conclusion

Five decades following the first article on the undermining effect of tangible rewards on intrinsic motivation (Deci, 1971), SDT has now established itself as a comprehensive and useful theory of work motivation. In this chapter we highlighted several contributions of SDT to the work and business context. It should now be clear that employee motivation is a complex phenomenon and that, while intrinsic motivation is important for well-being, identified motivation is the most powerful source of workplace in-role and extra-role performance. We also provided empirical evidence that taking care of employees' psychological needs is a better path to organizational performance than simply paying people more and more. We also reviewed some of the growing literature on the three main antecedents of psychological needs satisfaction/frustration and work motivations, namely compensation, interpersonal relationships/leadership, and job design. We particularly spotlighted research showing that tangible rewards can either be informational or controlling, fair or unfair, and that money can have neutral, self-determined and non-self-determined meanings, differentially affecting motivational and wellness outcomes. Thus, to effectively manage compensation requires understanding the meaning given to money and monetary rewards by a careful analysis of its functional significance.

Finally, SDT can be used to build innovative and efficient trainings and interventions in businesses, focused on well-being, motivation, mindfulness, career and talent management, performance, and support between colleagues. Although the world of work is constantly changing, SDT offers a solid theoretical foundation that can transcend contexts, industries, cultures, countries, and times.

At its core, SDT emphasizes the positive potential and capacities of human beings to be authentic, efficient, connected, and helpful to one another when under need-supportive conditions. It thus also points to ways that workplace and broader economic policies can facilitate these natural tendencies which we are innately good at.

## References

Akbaş, M., Ariely, D., & Yuksel, S. (2019). When is inequality fair? An experiment on the effect of procedural justice and agency. *Journal of Economic Behavior & Organization*, 161, 114–127. https://doi.org/10.1016/j.jebo.2019.02.014

Aknin, L. B., Norton, M. I., & Dunn, E. W. (2009). From wealth to well-being? Money matters, but less than people think. *Journal of Positive Psychology*, *4*(6), 523–527. https://doi.org/10.1080/17439760903271421

Aknin, L. B., & Whillans, A. V. (2021). Helping and happiness: A review and guide for public policy. *Social Issues and Policy Review*, *15*(1), 3–34. https://doi.org/10.1111/sipr.12069

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, *37*(11), 1459–1473. https://doi.org/10.1177/0146167211413125

Bloom, M. (1999). The performance effects of pay dispersion on individuals and organizations. *Academy of Management Journal*, *42*(1), 25–40. https://doi.org/10.5465/256872

Bloom, M., & Michel, J. G. (2002). The relationships among organizational context, pay dispersion, and among managerial turnover. *Academy of Management Journal*, *45*(1), 33–42. https://doi.org/10.5465/3069283

Bregman, R. (2017). *Utopia for realists: And how we can get there*. Bloomsbury.

Bradshaw, E. L., DeHaan, C. R., Curren, R., Duineveld, J. J., Di Domenico, S. I., Parker, P. D., & Ryan, R. M. (2021). *The perceived conditions for living well: Positive perceptions of primary goods linked with basic psychological needs and wellness*. Manuscript submitted for publication.

Cantrell, S., Cantrell, S. M., & Smith, D. (2010). *Workforce of one: Revolutionizing talent management through customization*. Harvard Business Press.

Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin*, *140*(4), 980–999. https://doi.org/10.1037/a0035661

Cerasoli, C. P., Nicklin, J. M., & Nassrelgrgawi, A. S. (2016). Performance, incentives, and needs for autonomy, competence and relatedness: A meta-analysis. *Motivation and Emotion*, *40*(6), 781–813. https://doi.org/10.1007/s11031-016-9578-2

Chartered Institute of Personnel and Developments. (2015). Learning and talent development 2015. Retrieved from http://www.cipd.co.uk/hr-resources/survey-reports/learning-talentdevelopment-2012.aspx.

Cheung, F. (2018). Income redistribution predicts greater life satisfaction across individual, national, and cultural characteristics. *Journal of Personality and Social Psychology*, *115*(5), 867. https://doi.org/10.1037/pspp0000164

Chiniara, M., & Bentein, K. (2016). Linking servant leadership to individual performance: Differentiating the mediating role of autonomy, competence and relatedness need satisfaction. *Leadership Quarterly*, 27(1), 124–141. https://doi.org/10.1016/j.leaqua.2015.08.004

Colquitt, J. A., Scott, B. A., Rodell, J. B., Long, D. M., Zapata, C. P., Conlon, D. E., & Wesson, M. J. (2013). Justice at the millennium, a decade later: A meta-analytic test of social exchange and affect-based perspectives. *Journal of Applied Psychology*, *98*(2), 199. https://doi.org/10.1037/a0031757

Corduneanu, R., Dudau, A., & Kominis, G. (2020). Crowding-in or crowding-out: The contribution of self-determination theory to public service motivation. *Public Management Review*, *22*(7), 1070–1089. https://doi.org/10.1080/14719037.2020.1740303

Crevier-Braud, L., Carpentier, J., Thibault Landry, A., Hoskin, C., & Forest, J. (2021). *Resources, challenges or hindrances? A fresh look at the impact of the work environment on optimal functioning using self-determination theory*. Manuscript submitted for publication.

Dagenais-Desmarais, V., Forest, J., Girouard, S., & Crevier-Braud, L. (2014). The importance of need-supportive relationships for motivation and psychological health at work. *Human Motivation and Interpersonal Relationships*, 263–297. https//doi.org/ 10.1007/978-94-017-8542-6_12

Dahl, M. S., & Pierce, L. (2020). Pay-for-performance and employee mental health: Large sample evidence using employee prescription drug usage. *Academy of Management Discoveries*, *6*(1), 12–38. https://doi.org/10.5465/amd.2018.0007

Dahling, J. J., & Lauricella, T. K. (2017). Linking job design to subjective career success: A test of self-determination theory. *Journal of Career Assessment*, *25*(3), 371–388. https://doi.org/10.1177/1069072716639689

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, *18*(1), 105. https://doi.org/10.1037/h0030644

Deci, E. L., Connell, J. P., & Ryan, R. M. (1989). Self-determination in a work organization. *Journal of Applied Psychology*, *74*, 580–590. https://doi.org/10.1037/0021-9010.74.4.580

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627. https://doi.org/10.1037/0033-2909.125.6.627

DeHaan, C. R., Hirai, T., & Ryan, R. M. (2016). Nussbaum's capabilities and self-determination theory's basic psychological needs: Relating some fundamentals of human wellness. *Journal of Happiness Studies*, *17*(5), 2037–2049. https://doi.org/10.1007/s10902-015-9684-y

Demerouti, E., Nachreiner, F., Bakker, A. B., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, *86*, 499–512. https://doi.org/10.1037//0021-9010.86.3.499

Dietsch, P. (2015). *Catching capital: The ethics of tax competition*. Oxford University Press. https://doi.org/10.1016/j.joep.2007.09.001

Donald, J. N., Bradshaw, E. L., Conigrave, J. Parker, P., Noetel, M., Bryatt, L. & Ryan, R. M. (in press). Paths to the light and dark sides of human nature: A meta-analysis of the prosocial benefits of autonomy and the antisocial costs of control. *Psychological Bulletin*.

Dries, N. (2013). The psychology of talent management: A review and research agenda. *Human Resource Management Review*, *23*(4), 272–285. https://doi.org/10.1016/j.hrmr.2013.05.001

Dysvik, A., Kuvaas, B., & Gagné, M. (2013). An investigation of the unique, synergistic and balanced relationships between basic psychological needs and intrinsic motivation. *Journal of Applied Social Psychology*, *43*(5), 1050–1064. https://doi.org/10.1111/jasp.12068

Eissa, G., & Lester, S. W. (2017). Supervisor role overload and frustration as antecedents of abusive supervision: The moderating role of supervisor personality. *Journal of Organizational Behavior*, *38*(3), 307–326. https://doi.org/10.1002/job.2123

Filosa, L., Cepale, G., Perinelli, E., Cinque, L., Coscarelli, A., & Alessandri, G. (2020). The Military Academic Motivation Scale (MAMS): A new scale to assess motivation among military cadets from a self-determination theory perspective. *European Journal of Psychological Assessment, 37*(3), 193–207. https://doi.org/10.1027/1015-5759/a000593

Forest, J., Gilbert, M.-H., Beaulieu, G., Le Brock, P., & Gagne, M. 2014. Translating research results in economic terms: An application of economic utility analysis using SDT-based interventions. In M. Gagne (Ed), *The Oxford handbook of work engagement, motivation, and self-determination theory* (pp. 335–346). Oxford University Press.

Forest, J., Mageau, G. A., Crevier-Braud, L., Bergeron, É., Dubreuil, P., & Lavigne, G. L. (2012). Harmonious passion as an explanation of the relation between signature strengths' use and well-being at work: Test of an intervention program. *Human Relations*, *65*(9), 1233–1252. https://doi.org/10.1177/0018726711433134

Forner, V. W., Jones, M., Berry, Y., & Eidenfalk, J. (2020). Motivating workers: How leaders apply self-determination theory in organizations. *Organization Management Journal*, 1541–6518. https://doi.org/10.1108/OMJ-03-2020-0891

Fowler, S. (2014). *Why motivating people doesn't work . . . and what does: The new science of leading, energizing, and engaging*. Berrett-Koehler.

Gagné, M. (2018). From strategy to action: Transforming organizational goals into organizational behavior. *International Journal of Management Reviews*, *20*, S83–S104. https://doi.org/10.1111/ijmr.12159

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, *26*(4), 331–362. https://doi.org/10.1002/job.322

Gagné, M., & Forest, J. (2020). Financial incentives to promote optimal work motivation: Mission impossible? *Journal of Total Rewards*, *20*(4), 36–47. http://hdl.handle.net/20.500.11937/82439

Galipeau, C., Carpentier, J., Thibault Landry, A., & Forest, J. (2021). *Study of the mediating role of psychological need satisfaction and frustration in the relationship between organizational justice and employee behaviours*. Unpublished manuscript

Gagné, M., Forest, J., Vansteenkiste, M., Crevier-Braud, L., Van den Broeck, A., Aspeli, A. K., Bellerose, J., Benabou, C., Chemolli, E., Güntert, S. T., Halvari, H., Johnson, P., Indiyastuti, D. L., Molstad, M., Naudin, M., Ndao, A., Olafsen, A. H., Roussel, P., Wang, Z., Westbye, C. (2015). The Multidimensional Work Motivation Scale: Validation evidence in seven Languages and nine countries. *European Journal of Work and Organizational Psychology*, *24*, 178–196. http://dx.doi.org/10.1080/1359432X.2013.877892

Gangl, K., & Torgler, B. (2020). How to achieve tax compliance by the wealthy: A review of the literature and agenda for policy. *Social Issues and Policy Review*, *14*(1), 108–151. https://doi.org/10.1111/sipr.12065

Giebe, C., & Rigotti, T. (2020). Tenets of self-determination theory as a mechanism behind challenge demands: A within-person study. *Journal of Managerial Psychology, 12*(31), 59–87. https://doi.org/10.1108/JMP-11-2019-0648

Gillet, N., Gagné, M., Sauvagère, S., & Fouquereau, E. (2013). The role of supervisor autonomy support, organizational support, and autonomous and controlled motivation in predicting employees' satisfaction and turnover intentions. *European Journal of Work and Organizational Psychology*, *22*(4), 450–460. https://doi.org/10.1080/1359432X.2012.665228

Gillet, N., Morin, A. J. S., Choisay, F. & Fouquereau, E. (2019). A person-centered representation of basic need satisfaction balance at work. *Journal of Personnel Psychology*, *18*(3), 113–128. https://doi.org/10.1027/1866-5888/a000228

Gillet, N., Morin, A. J., Huart, I., Odry, D., Chevalier, S., Coillot, H., & Fouquereau, E. (2018). Self-determination trajectories during police officers' vocational training program: A growth mixture analysis. *Journal of Vocational Behavior*, *109*, 27–43. https://doi.org/10.1016/j.jvb.2018.09.005

Girouard, S., & Forest, J. (2019). A career path leading to well-being and success. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, *36*(2), 193–207. https://doi.org/10.1002/cjas.1488

Gradito Dubord, M.-A., & Forest, J. (2021). *You cannot judge a fish by its ability to climb a tree: Using self-determination theory to explain why a strengths-based approach has more impact on optimal functioning at work than deficit correction*. Manuscript submitted for publication.

Gradito Dubord, M.-A., Martin, L., & Forest, J. (2021). *L'homme (n')est (pas) un loup pour l'homme: La bien-veillance, les motivations et les comportements des travailleurs à la lumière de la théorie de l'autodétermination*. Manuscript submitted for publication.

Graves, L. M., & Luciano, M. M. (2013). Self-determination at work: Understanding the role of leader-member exchange. *Motivation and Emotion*, *37*(3), 518–536. https://doi.org/10.1007/s11031-012-9336-z

Harbaugh, W. T., Mayr, U., & Burghart, D. R. (2007). Neural responses to taxation and voluntary giving reveal motives for charitable donations. *Science*, *316*(5831), 1622–1625. https://doi.org/10.1126/science.1140738

Hartmann, F., & Slapničar, S. (2012). Pay fairness and intrinsic motivation: The role of pay transparency. *International Journal of Human Resource Management*, *23*(20), 4283–4300. https://doi.org/10.1080/09585192.2012.664962

Heisler, W. (2021). Increasing pay transparency: A guide for change. *Business Horizons*, *64*(1), 73–81. https://doi.org/10.1016/j.bushor.2020.09.005

Hepach, R., Vaish, A., & Tomasello, M. (2012). Young children are intrinsically motivated to see others helped. *Psychological Science*, *23*(9), 967–972. https://doi.org/10.1177%2F0956797612440571

Hewett, R., & Conway, N. (2016). The undermining effect revisited: The salience of everyday verbal rewards and self-determined motivation. *Journal of Organizational Behavior*, *37*(3), 436–455. https://doi.org/10.1002/job.2051

Hewett, R., & Leroy, H. (2019). Well it's only fair: How perceptions of manager discretion in bonus allocation affect intrinsic motivation. *Journal of Management Studies*, *56*(6), 1105–1137. https://doi.org/10.1111/joms.12445

Houlfort, N., Fernet, C., Vallerand, R. J., Laframboise, A., Guay, F., & Koestner, R. (2015). The role of passion for work and need satisfaction in psychological adjustment to retirement. *Journal of Vocational Behavior*, *88*, 84–94. https://doi.org/10.1016/j.jvb.2015.02.005

Hüffmeier, J., & Zacher, H. (2021). The basic income: Initiating the needed discussion in industrial, work, and organizational psychology. *Industrial and Organizational Psychology: Perspectives on Science and Practice,14*(4), 531–562.

Huyghebaert-Zouaghi, T., Ntoumanis, N., Berjot, S., & Gillet, N. (2020). Advancing the conceptualization and measurement of psychological need states: A 3 × 3 model based on self-determination theory. *Journal of Career Assessment*, *29*(3), 396–421. https://doi.org/10.1177%2F1069072720978792

Jebb, A. T., Tay, L., & Diener, E. (2018). Happiness, income satiation and turning points around the world. *Nature Humain Behavior, 2*, 33–38. https://doi.org/10.1038/s41562-017-0277-0

Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences*, *107*(38), 16489–16493. https://doi.org/10.1037/0033-2909.125.6.627

Kasser, T., & Sheldon, K. M. (2009). Time affluence as a path toward personal happiness and ethical business practice: Empirical evidence from four studies. *Journal of Business Ethics*, *84*(2), 243–255. https://doi.org/10.1007/s10551-008-9696-1

Kiatpongsan, S., & Norton, M. I. (2014). How much (more) should CEOs make? A universal desire for more equal pay. *Perspectives on Psychological Science*, *9*(6), 587–593. https://doi.org/10.1177%2F1745691614549773

Kim, J. H., Gerhart, B., & Fang, M. (2021). Do financial incentives help or harm performance in interesting tasks? *Journal of Applied Psychology, 33*(7), 51–59. https://psycnet.apa.org/doi/10.1037/apl0000851

Kohn, A. (1993). Why incentive plans cannot work. *Harvard Business Review*, 2–7.

Kong, D. T., & Ho, V. T. (2016). A self-determination perspective of strengths use at work: Examining its determinant and performance implications. *Journal of Positive Psychology*, *11*(1), 15–25. https://doi.org/10.1080/17439760.2015.1004555

Kovjanic, S., Schuh, S. C., Jonas, K., Quaquebeke, N. V., & Van Dick, R. (2012). How do transformational leaders foster positive employee outcomes? A self-determination-based analysis of employees' needs as mediating links. *Journal of Organizational Behavior*, *33*(8), 1031–1052. https://doi.org/10.1002/job.1771 https://doi.org/10.1016/j.hrmr.2020.100792

Kushlev, K., Dunn, E. W., & Lucas, R. E. (2015). Higher income is associated with less daily sadness but not more daily happiness. *Social Psychological and Personality Science*, *6*(5), 483–489. doi:10.1177/1948550614568161

Kushlev, K., Heintzelman, S. J., Lutes, L. D., Wirtz, D., Kanippayoor, J. M., Leitner, D., & Diener, E. (2020). Does happiness improve health? Evidence from a randomized controlled trial. *Psychological Science*, *31*(7), 807–821. https://doi.org/10.1177%2F0956797620919673

Kuvaas, B., Buch, R., Gagne, M., Dysvik, A., & Forest, J. (2016). Do you get what you pay for? Sales incentives and implications for motivation and changes in turnover intention and work effort. *Motivation and Emotion*, *40*(5), 667–680. https://doi.org/10.1007/s11031-016-9574-6

Kuvaas, B., Shore, L. M., Buch, R., & Dysvik, A. (2020). Social and economic exchange relationships and performance contingency: Differential effects of variable pay and base pay. *International Journal of Human Resource Management*, *31*(3), 408–431. https://doi.org/10.1080/09585192.2017.1350734

Lamberton, C., De Neve, J. E., & Norton, M. I. (2018). The power of voice in stimulating morality: Eliciting taxpayer preferences increases tax compliance. *Journal of Consumer Psychology*, *28*(2), 310–328. https://doi.org/10.1002/jcpy.1022

Leroy, H., Anseel, F., Gardner, W. L., & Sels, L. (2015). Authentic leadership, authentic followership, basic need satisfaction, and work role performance: A cross-level study. *Journal of Management*, *41*(6), 1677–1697. https://doi.org/10.1177%2F0149206312457822

Lesener, T., Gusy, B., & Wolter, C. (2019). The job demands-resources model: A meta-analytic review of longitudinal studies. *Work & Stress*, *33*(1), 76–103. https://doi.org/10.1080/02678373.2018.1529065

Macchia, L., Plagnol, A. C., & Powdthavee, N. (2020). Buying happiness in an unequal world: Rank of income more strongly predicts well-being in more unequal countries. *Personality and Social Psychology Bulletin*, *46*(5), 769–780. https://doi.org/10.1177%2F0146167219877413

Manganelli, L., & Forest, J. (2020). Using self-determination theory to understand when and how money buys happiness: A cross-sectional and intervention study. *Applied Research in Quality of Life*, 1–26. https://doi.org/10.1007/s11482-020-09875-6

Manganelli, L., Thibault-Landry, A., Forest, J., & Carpentier, J. (2018). Self-determination theory can help you generate performance and well-being in the workplace: A review of the literature. *Advances in Developing Human Resources*, *20*(2), 227–240. https://doi.org/10.1177%2F1523422318757210

Marescaux, E., De Winne, S., & Sels, L. (2013). HR practices and HRM outcomes: The role of basic need satisfaction. *Personnel Review*, *42*(1), 4–27. https://doi.org/10.1108/00483481311285200

Martela, F., & Riekki, T. J. (2018). Autonomy, competence, relatedness, and beneficence: A multicultural comparison of the four pathways to meaningful work. *Frontiers in Psychology*, *9*, 1157. https://doi.org/10.3389/fpsyg.2018.01157

Martela, F., & Ryan, R. M. (2016). The benefits of benevolence: Basic psychological needs, beneficence, and the enhancement of well-being. *Journal of Personality*, *84*(6), 750–764. https://doi.org/10.1111/jopy.12215

Martela, F., & Ryan, R. M. (2019). Distinguishing between basic psychological needs and basic wellness enhancers: The case of beneficence as a candidate psychological need. *Motivation and Emotion*, *44*(1), 116–133. https://doi.org/10.1007/s11031-019-09800-x

Martela, F., & Ryan, R. M. (2021). In selecting measures for a comprehensive assessment of well-being, it is essential to include indicators of psychological need satisfaction. *Preventive Medicine Reports*, *23*(10), 14–74. https://doi.org/10.1016/j.pmedr.2021.101474

Martela, F., & Sheldon, K. M. (2019). Clarifying the concept of well-being: Psychological need satisfaction as the common core connecting eudaimonic and subjective well-being. *Review of General Psychology*, *23*(4), 458–474. https://doi.org/10.1177%2F1089268019880886

Martela, F., & Steger, M. F. (2016). The three meanings of meaning in life: Distinguishing coherence, purpose, and significance. *Journal of Positive Psychology*, *11*(5), 531–545. https://doi.org/10.1080/17439760.2015.1137623

Meyers, M. C., & van Woerkom, M. (2014). The influence of underlying philosophies on talent management: Theory, implications for practice, and research agenda. *Journal of World Business*, *49*(2), 192–203. https://doi.org/10.1016/j.jwb.2013.11.003

Moller, A. C., Olafsen, A. H., Jager, A. J., Kao, A. C., & Williams, G. C. (2021). Motivational mechanisms underlying physicians' occupational health: A self-determination theory perspective. *Medical Care Research and Review*, *79*(2), 1–12. https://doi.org/10.1177%2F10775587211007748

Moreau, E., & Mageau, G. A. (2012). The importance of perceived autonomy support for the psychological health and work satisfaction of health professionals: Not only supervisors count, colleagues too! *Motivation and Emotion*, *36*(3), 268–286. https://doi.org/10.1007/s11031-011-9250-9

Mueller, M. (2019). Show me the money: Toward an economic model for a cost-benefit analysis of employee engagement interventions. *International Journal of Organization Theory & Behavior,* *22*(1), 43–64. https://doi.org/10.1108/IJOTB-05-2018-0056

Ng, W., & Diener, E. (2019). Affluence and subjective well-being: Does income inequality moderate their associations? *Applied Research in Quality of Life*, *14*(1), 155–170. https://doi.org/10.1007/s11482-017-9585-9

Nguyen, T.-V., McPhetres, J., & Deci, E. L. (2020). Beyond God and government: The role of personal control in supporting citizens' well-being in the face of changing economy and rising inequality. *Social Psychology Bulletin*, *15*(1), 1–21. https://doi.org/10.32872/spb.2663

Nordgren Selar, A., Falkenberg, H., Hellgren, J., Gagné, M., & Sverke, M. (2020). "It's [not] all 'bout the money": How do performance-based pay and support of psychological needs variables relate to job performance? *Scandinavian Journal of Work and Organizational Psychology*, *5*(1), 1–14. http://doi.org/10.16993/sjwop.107

Oishi, S., & Kesebir, S. (2015). Income inequality explains why economic growth does not always translate to an increase in happiness. *Psychological Science*, *26*(1), 1630–1638. http://doi.org/10.1177/0956797615596713

Olafsen, A. H. (2017). The implications of need-satisfying work climates on state mindfulness in a longitudinal analysis of work outcomes. *Motivation and Emotion*, *41*(1), 22–37. https://doi.org/10.1007/s11031-016-9592-4

Olafsen, A. H., Deci, E. L., & Halvari, H. (2018). Basic psychological needs and work motivation: A longitudinal test of directionality. *Motivation and Emotion*, *42*(2), 178–189. https://doi.org/10.1007/s11031-017-9646-2

Olafsen, A. H., & Frølund, C. W. (2018). Challenge accepted! Distinguishing between challenge-and hindrance demands. *Journal of Managerial Psychology,* *33*(4), 345–357. https://doi.org/10.1108/JMP-04-2017-0143

Olafsen, A. H., & Halvari, H. (2017). Motivational mechanisms in the relation between job characteristics and employee functioning. *Spanish Journal of Psychology*, *20,* E38 https//doi.org/doi:10.1017/sjp.2017.34

Olafsen, A. H., Halvari, H., Forest, J., & Deci, E. L. (2015). Show them the money? The role of pay, managerial need support, and justice in a self-determination theory model of intrinsic work motivation. *Scandinavian Journal of Psychology*, *56*(4), 447–457. https://doi.org/10.1111/sjop.12211

Örtenblad, A. (2021). Background and introduction: Why debating equal pay for all? In A. Örtenblad (Ed.), *Debating equal pay for all.* Palgrave Debates in Business and Management. Palgrave Macmillan. https://doi.org/0.1007/978-3-030-53575-9_1

Peterson, C., & Park, N. (2006). Character strengths in organizations. *Journal of Organizational Behavior*, *27*, 1149–1154. https://doi.org/10.1002/job.398

Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. Oxford University Press.

Piketty, T. (2014). *Capital in the twenty-first century*. Harvard Business Press. http://piketty.pse.ens.fr/files/Piketty2014BJS.pdf

Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, *44*(3), 159–175. https://doi.org/10.1080/004615 20903028990

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Schneider, S. M. (2019). Why income inequality is dissatisfying—Perceptions of social status and the inequality-satisfaction link in Europe. *European Sociological Review*, *35*(3), 409–430. https://doi.org/ 10.1093/esr/jcz003

Schuler, R. S. (1992). Strategic human resources management: Linking the people with the strategic needs of the business. *Organizational Dynamics*, *21*, 18–32. https://doi.org/10.1016/0090-2616(92)90083-Y

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology*, *80*(2), 325. https://doi.org/ 10.1037/0022-3514.80.2.325

Slemp, G. R., Kern, M. L., Patrick, K. J., & Ryan, R. M. (2018). Leader autonomy support in the workplace: A meta-analytic review. *Motivation and Emotion*, *42*(5), 706–724. https://doi.org/10.1007/s11 031-018-9698-y

Slemp, G. R., Kern, M. L., & Vella-Brodrick, D. A. (2015). Workplace well-being: The role of job crafting and autonomy support. *Psychology of Well-Being*, *5*(1), 1–17. https://doi.org/10.1186/s13612-015-0034-y

Slemp, G. R., Lee, M. A., & Mossman, L. H. (2021). Interventions to support autonomy, competence, and relatedness needs in organizations: A systematic review with recommendations for research and practice. *Journal of Occupational and Organizational Psychology*, *94*(2), 427–457. https://doi.org/10.1111/ joop.12338

Slemp, G. R., & Vella-Brodrick, D. A. (2014). Optimising employee mental health: The relationship between intrinsic need satisfaction, job crafting, and employee well-being. *Journal of Happiness Studies*, *15*(4), 957–977.

Stupnisky, R. H., BrckaLorenz, A., & Laird, T. F. N. (2019). How does faculty research motivation type relate to success? A test of self-determination theory. *International Journal of Educational Research*, *98*, 25–35. https://doi.org/10.1016/j.ijer.2019.08.007

Swailes, S. (2013). The ethics of talent management. *Business Ethics: A European Review*, *22*(1), 32–46. https:// doi.org/10.1111/beer.12007

Tay, L., & Diener, E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology*, *101*(2), 354–365. https://doi.org/10.1037/a0023779

Thibault Landry, A. Forest, J., Zigarmi, D., Houson, D., & Boucher, É. (2017). The carrot or the stick? Investigating the subjective meaning of cash rewards and their motivational power according to self-determination theory. *Compensation and Benefits Review*, *49*(1), 9–25. https://doi.org/10.1177/088636871 7750904

Thibault Landry, A., Kindlein, J., Trépanier, S.-G., Forest, J., Zigarmi, D., Houson, D., & Brodbeck, F. C. (2016). Why individuals want money matters: Using self-determination theory to explain the differential relations between motives for making money and employee psychological health. *Motivation and Emotion*, *40*, 226–242. https://doi.org/ 10.1007/s11031-015-9532-8

Thibault Landry, A., Zhang, Y., Papachristopoulos, K., & Forest, J. (2020). Applying self-determination theory to understand the motivational impact of cash rewards: New evidence from lab experiments. *International Journal of Psychology*, *55*, 487–498. https://doi.org/10.1002/ijop.12612

Thornton, E. M., Aknin, L. B., Branscombe, N. R., & Helliwell, J. F. (2019). Prosocial perceptions of taxation predict support for taxes. *PloS One*, *14*(11): e0225730. https://doi.org/10.1371/journal.pone.0225730

Training Industry Research. (2020). Size of the training industry. April 1. https://trainingindustry.com/wiki/ outsourcing/size-of-training-industry/

Trépanier, S.-G., Forest, J., Fernet, C., & Austin, S. (2015). On the psychological and motivational processes linking job characteristics to employee functioning: Insights from self-determination theory. *Work & Stress*, *29*(3), 286–305. https://doi.org/10.1080/02678373.2015.1074957

Vandemoortele, J. (2021). The open-and-shut case against inequality. *Development Policy Review*, *39*(1), 135–151.https://doi.org/DOI:10.1111/dpr.12484

Van den Broeck, A., De Cuyper, N., De Witte, H., & Vansteenkiste, M. (2010). Not all job demands are equal: Differentiating job hindrances and job challenges in the job demands-resources model. *European Journal of Work and Organizational Psychology*, *19*(6), 735–759. https://doi.org/10.1080/13594320903223839

Van den Broeck, A., Ferris, D. L., Chang, C. H., & Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *Journal of Management*, *42*(5), 1195–1229.

Van den Broeck, A., Howard, J. L., Van Vaerenbergh, Y., Leroy, H., & Gagné, M. (2021). Beyond intrinsic and extrinsic motivation: A meta-analysis on self-determination theory's multidimensional conceptualization of work motivation. *Organizational Psychology Review*, *11*(3), 1–34. doi:10.1177/20413866211006173

Van Parijs, P., & Vanderborght, Y. (2017). *Basic income: A radical proposal for a free society and a sane economy.* Harvard University Press.

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*(3), 263. https://doi.org/10.1037/a0032359

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020) Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion, 44*, 1–31. https://doi.org/10.1007/s11031-019-09818-1

van Tuin, L., Schaufeli, W. B., & Van den Broeck, A. (2021). Engaging leadership: Enhancing work engagement through intrinsic values and need satisfaction. *Human Resource Development Quarterly, 32*(4), 1–23. https://doi.org/10.1002/hrdq.21430

Walsh, B. (2017). *Rewriting the rules for the digital age 2017: Deloitte global human capital trends.* Deloitte University Press. https://www2. deloitte. com/content/dam/Deloitte/global/Documents/HumanCapital/hc-2017-global-human-capital-trends-gx. pdf

Ward, S. J., & King, L. A. (2016). Poor but happy? Income, happiness, and experienced and expected meaning in life. *Social Psychological and Personality Science*, *7*(5), 463–470. https://doi.org/10.1177%2F1948550615627865

Weinstein, N., & Ryan, R. M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology*, *98*(2), 222. https://doi.org/10.1037/a0016984

Weinstein, N., & Stone, D. N. (2018). Need depriving effects of financial insecurity: Implications for well-being and financial behaviors. *Journal of Experimental Psychology: General*, *147*(10), 1503–1520. https://doi.org/10.1037/xge0000436

Whillans, A. V., & Dunn, E. W. (2015). Thinking about time as money decreases environmental behavior. *Organizational Behavior and Human Decision Processes*, *127*, 44–52. https://doi.org/10.1016/j.obhdp.2014.12.001

Whillans, A. V., Dunn, E. W., Smeets, P., Bekkers, R., & Norton, M. I. (2017). Buying time promotes happiness. *Proceedings of the National Academy of Sciences*, *114*(32), 8523–8527. https://doi.org/10.1073/pnas.1706541114

Whillans, A. V., Weidman, A. C., & Dunn, E. W. (2016). Valuing time over money is associated with greater happiness. *Social Psychological and Personality Science*, *7*(3), 213–222. https://doi.org/10.1177%2F0265407518791322

Whillans, A. V., Wispinski, N. J., & Dunn, E. W. (2016). Seeing wealth as a responsibility improves attitudes towards taxation. *Journal of Economic Behavior & Organization, 127*, 146–154. https://doi.org/10.1016/j.jebo.2016.04.009

Wilkinson, R., & Pickett, K. (2020). *The inner level: How more equal societies reduce stress, restore sanity and improve everyone's well-being.* Penguin Books.

World Health Organization. (2018). Global strategy on occupational health for all: The way to health at work. Retrieved from: http://www.who.int/occupational_health/publications/globstrategy/en/index2.html

Yang, J., Yang, F., & Gao, N. (2020). Enhancing career satisfaction: The roles of spiritual leadership, basic need satisfaction, and power distance orientation. *Current Psychology*, 1–12. https://doi.org/10.1007/s12144-020-00712-5

Zaman, U., Nawaz, S., Javed, A., & Rasul, T. (2020). Having a whale of a time: Linking self-determination theory (SDT), job characteristics model (JCM) and motivation to the joy of gig work. *Cogent Business & Management*, *7*(1), 1807707. https://doi.org/10.1080/23311975.2020.1807707

# How Important Is Money to Motivate People to Work?

Marylène Gagné, Alexander Nordgren Selar, *and* Magnus Sverke

## Abstract

This chapter explores research on the importance of money to motivate people to work. Research on the role of money in people's lives and as a motivator of working shows that even though people need a decent basic income, money is not the best motivator of work performance. A review of research on the effects of performance-based compensation on motivation, performance, and well-being concludes that financial incentives do not seem to be as powerful to drive performance as portrayed in many motivation theories, and that there is still a need to better understand how such incentives relate to need satisfaction and work motivation. Moreover, incentives seem to have undesirable side effects on moral engagement, stress, and well-being. The chapter also explores other aspects of compensation, including how fairness and the relative distribution of money within organizations influence need satisfaction, motivation, and work outcomes, as well as how motivational assumptions and payment norms and preferences might modify how money influences motivation. It ends with an identification of remaining knowledge gaps and suggestions for future research on the effects of compensation on work motivation that would benefit from using self-determination theory, as well as the practical implications of what is known thus far for the design of compensation systems.

**Key Words:** self-determination theory, incentives, rewards, compensation, performance, well-being

It has been argued that work is compensated because "the overwhelming majority of workers would not otherwise perform the tasks" (Lazear, 2018, p. 195). Lazear, an influential behavioral economist, says that without compensation, only enjoyable tasks would get done and those most needed by society would be neglected. Besides the fact that statistics on volunteer work attest to the impressive contributions volunteers make to essential services that are far from always enjoyable (e.g., ABS, 2019; Ironmonger, 2012), and that 76% of people admit they would continue to work even if they did not need money (Paulsen, 2008), views like those of Lazear on the importance of money to motivate work have dominated the field of compensation management (Lawler, 2000; Pfeffer, 2007; Shaw & Mitra, 2017). These perspectives illustrate the classical debate on whether money (compensation) or other factors are the main driver of individual behavior. On the one

side, there are those who emphasize instrumentality and advocate that individuals engage in behavior only if they personally gain from these behaviors (e.g., Lazear, 2018; Olson, 1971). On the other, there are proponents of the view that individual behavior is a function of more intrinsic factors, such as joy, meaningfulness, altruism, values, or the perceived importance of a certain cause (e.g., Sen, 1982; Weber, 1968). Self-determination theory (SDT; Ryan & Deci, 2017) is perfectly suited to explain this range of different motivational drivers of individual behavior.

In this chapter, we explore research on the importance of money, compensation, and compensation systems to motivate people to work so that we can better understand: (1) the importance of money in people's lives and as a motivator of working; (2) how performance-based incentives influence motivation, performance, and well-being; (3) how fairness and the relative distribution of money within organizations influence work outcomes, and; (4) how motivational assumptions and payment norms and preferences might modify how money influences motivation. We end with an identification of remaining knowledge gaps and suggestions for future research on the effects of compensation on work motivation, as well as the practical implications of what is known thus far for the design of compensation systems.

## The Importance of Money

There is no doubt that receiving an income is important in people's lives as it is necessary in most of our currently structured societies to have money to at least meet basic physiological and security needs, as evidenced through how income influences life expectancy (Chetty et al., 2016; Statistics Sweden, 2016). Income influences many of the life decisions people make, including occupational and job choices, as well as other choices such as where to live and whether to get married and have children (Leana & Meuris, 2015). However, once a minimum income threshold is reached, money does not necessarily translate into additional happiness (Jebb et al., 2018; Kahneman & Deaton, 2010), and people often overestimate the extent to which additional money would make them happier (Aknin et al., 2009).

Another important aspect of money is its availability. Insecure employment breeds insecure earnings that create stress (Odle-Dusseau, Mathews, & Wayne, 2018; Sverke, Hellgren, & Näswall, 2002). Thus, not earning an income that meets basic survival needs leads to financial insecurity, which has been associated with numerous negative outcomes, including disrupted cognitive functioning (and consequently learning, decision-making, and work performance), moral disengagement (John, Loewenstein, & Rick, 2014; Pitesa & Thau, 2014; Sharma et al., 2014), and lower health and well-being (Haushofer & Fehr, 2014; Howell, Kurai, & Tam, 2013; Leana & Meuris, 2015). Research on unemployment (e.g., Jahoda, 1982; Warr, 1987) indicates that individuals who lose their jobs lose not only the manifest benefits of work (i.e., their salary) but also various latent benefits associated with having a job (opportunity to make a meaningful contribution, social contact,

status and identity, time structure, and the possibility of engaging in structured activities). This indicates that work/employment offers many benefits beyond money and, contradicting Lazear (2018), many reasons for wanting to work besides money. Research on job insecurity indicates that the perceived risk of losing one's job can have detrimental consequences for employees' attitudes, work-related behavior, and health (for meta-analytic results, see, e.g., Jiang & Lavaysse, 2018; Sverke et al., 2002, 2019).

This might seem at first glance to contradict research showing that having strong materialistic goals is bad for one's well-being (Dittmar et al., 2014; Kasser & Ryan, 1993). However, research actually shows that if the goal underlying the desire for money is to reach income security, it does not negatively impact autonomous work motivation (i.e., meaning and enjoyment-based motivation; Chen & Hsieh, 2015). In line with this, satisfying levels of pay have been found to positively impact autonomous work motivation (Kuvaas et al., 2016), but research shows that this positive impact could shift and even turn negative if the way money is administered and distributed is perceived as controlling the employee (Cerasoli, Nicklin, & Nassrelgrgawi, 2016; Kuvaas, Buch, & Dysvik, 2020).

In addition, the *relative distribution* of money can influence employee pay satisfaction, job satisfaction, willingness to remain, and autonomous work motivation (Card et al., 2012). Of particular interest, previous research has shown that monetarily disadvantaged employees in work units experienced decreases in their pay satisfaction and job satisfaction and increases in their job search intentions when they got access to information about the actual pay differences between them and their peers (i.e., when they understood that they were disadvantaged). However, these variables remained intact among advantaged employees even when they were made aware about the fact that they were better paid than their peers (Card et al., 2012). Taken together, these results indicate that pay inequalities are more likely to decrease disadvantaged employees' job satisfaction, and willingness to remain than they are to increase advantaged employees' relations with these outcomes. Thus, above income insecurity, both the management of compensation (i.e., whether it is controlling and decreases the experience of autonomy) and employee perceptions of being disadvantaged are likely to influence these outcomes—perhaps with the unintended consequence of lowering employee autonomous motivation.

Going back to Lazear's (2018) argument that money is the most powerful motivator of work performance, it can be compared to other means to motivate workers. This can be done by examining its motivational power relative to other key organizational practices likely to affect need satisfaction, such as the provision of feedback, managerial styles, and redesigning work to make it more autonomously motivating.

One meta-analysis of 98 interventions to change one of 11 work practices (e.g., work redesign, training, performance appraisals, goal setting, financial incentives) showed that financial incentives yielded the greatest changes in performance (Guzzo, Jette, & Katzell, 1985). Another review of 61 field experiments on incentives, participation, goal setting, and job enrichment similarly revealed that financial incentives led to slightly greater

performance improvements than the other changes (Locke et al., 1980). Most of the jobs or tasks in these meta-analyses were simple and repetitive physical or algorithmic tasks for which performance is easy to measure and quantify (e.g., tree planting, animal trapping, welding, punch card processing). In contrast, today's work involves more complex tasks that require more cognitive processing and problem-solving in often increasingly uncertain and interdependent contexts (Griffin, Neal, & Parker, 2007). Today's work challenges may thus require more autonomous motivational styles that are more strongly associated with flexibility, proactivity, and creativity than controlling styles (Gagné, Griffin, & Parker, 2021; Van den Broeck et al., 2021). In addition, costs associated with employee turnover and ill-being are increasingly within the scope of organizational concerns, given that they too affect the bottom line. Again, meta-analytic findings show the strong advantage of promoting autonomous motivation over controlled motivation to promote well-being and retention (Van den Broeck et al., 2021). Therefore, it is doubtful that the conclusion drawn from these older meta-analyses, that money is the most powerful motivator of performance, would hold for contemporary work.

Our own recent research (together with Falkenberg and Hellgren) examined the importance of compensation relative to the importance of other sources of psychological need satisfaction in a contemporary sample of workers. In a study of 582 highly skilled white-collar workers in the Swedish energy sector, we found that factors related to a performance-based pay system (i.e., instrumentality, procedural fairness) had negligible and mixed relations to performance relative to other practices that were more strongly related to need satisfaction, particularly job autonomy and, to a lesser extent, receiving constructive feedback (Nordgren Selar et al., 2020). These results concur with a slightly older study of Swedish nurses in which it was found that feedback, job autonomy, and workload were more predictive of work attitudes and performance than justice perceptions related to the pay system (Andersson-Stråberg, Sverke, & Hellgren, 2007). Though more studies are needed, this research supports the idea that performance-based incentives may not have the predicted strong and uniform positive effects for many of today's jobs.

In the contemporary world of work, people need money to fulfill many of their needs, and having secure employment and income therefore matters. To the extent that people can improve their life circumstances through money, it can help fulfill both survival and psychological needs (Di Domenico & Fournier, 2014). However, we should not place too much weight on compensation to motivate performance relative to other means to motivate workers, such as providing them autonomy through good work design and giving adequate feedback to enhance their feelings of competence, as demonstrated in our ongoing research. People do not consider their income in only absolute terms but also in relative social comparison terms. Equity theory (Adams, 1965) has often been used to examine the importance of justice perceptions in pay administration, and there has also been quite a bit of research on pay dispersion (Shaw, 2014), but none so far has considered how pay dispersion may influence autonomous work motivation. Future research could

continue to elaborate on these findings to fully discern how income, both absolute and relative, influences need satisfaction and work motivation. Later in this chapter, we elaborate on equity perceptions, but before that, we consider another aspect of income security caused by using pay-for-performance compensation schemes that deserves attention.

## Performance-Based Compensation

In contrast to skill-based and seniority-based compensation, where pay levels and pay raises depend on factors such as credentials and tenure in an organization, performance-based compensation refers to cases where compensation depends (partly or completely) on how well an individual employee performs their work or produces results (e.g., Gerhart & Fang, 2014; Lawler, 1990). Different types of performance-based pay schemes are used, including merit increases based on (typically) yearly performance appraisals, commissions or "piece-rates" delivered for producing results (e.g., selling a product, manufacturing a widget), and bonuses for reaching a performance target (typical targets include sales quota, customer satisfaction ratings, safety record, attendance, and getting an "exceeds expectations" rating from manager in yearly appraisal). Apart from merit increases, the other forms of performance-based pay imply that one's total compensation can vary upward and downward across time, making the portion of one's income based on performance less secure.

There have been heated debates about the effects of performance-based incentives on work motivation and performance. One of SDT's subtheories, cognitive evaluation theory (Deci & Ryan, 1980), is devoted to understanding the effects of contingent rewards on intrinsic motivation. It proposes that tangible contingent rewards can influence intrinsic motivation through their effects on autonomy and competence satisfaction. A second subtheory, organismic integration theory, similarly argues that autonomy and competence experiences affect autonomous extrinsic motivation (i.e., identified regulation; Ryan & Deci, 2017). Given that it has been shown to be important for workers to have higher autonomous relative to controlled forms of motivation in order to perform well, be engaged, and avoid burnout at work (Howard et al., 2016), it is important to consider how performance-based pay influences workers' basic need satisfaction and motivation.

Numerous meta-analyses and reviews of research on the effects of contingent pay on motivation and performance have been conducted (e.g., Cerasoli, Nicklin, & Ford, 2014; Cerasoli et al., 2016; Deci, Koestner, & Ryan, 1999; Gerhart & Rynes, 2003; Jenkins et al., 1998; Kim, Gerhart, & Fang, 2021; Lazear, 2018; Locke et al., 1980; Weibel, Rost, & Osterloh, 2010). Though incentives have been shown to lead to higher performance across many of these reviews, the effects seem to be limited to performance quantity rather than quality (Cerasoli et al., 2014, 2016; Jenkins et al., 1998) and to simple boring tasks rather than complex interesting ones (Weibel et al., 2010). Although previous research has emphasized the importance of employees seeing a clear connection between their

pay and how they perform (i.e., "clear line of sight"; Lawler, 2000) and perceiving pay decisions as fair (Andersson-Stråberg et al., 2007), employees actually rarely see a clear connection between their pay and performance (Gerhart, Rynes, & Fulmer, 2009; Kuvaas et al., 2016). Many would argue that this lack of perceived instrumentality would make incentives less powerful in driving performance (Jensen & Meckling, 1976; Lawler, 1990; Vroom, 1964). However, meta-analytic results indicate that indirectly contingent incentives (i.e., pay that is loosely related to performance, or lower in instrumentality) are more strongly related to need satisfaction and intrinsic motivation than are directly contingent incentives (i.e., pay that is tightly related to performance, or higher in instrumentality; Cerasoli et al., 2014, 2016). In other words, through their evidenced positive associations with intrinsic motivation and need satisfaction, indirect instrumental incentives are more likely to increase employee performance than are directly instrumental incentives, because intrinsic motivation is much more strongly associated with work performance than is external regulation (Van den Broeck et al., 2021).

It has also been shown that incentives may lead to "collateral damage" such as stress and anxiety (Dahl & Pierce, 2020; Parker et al., 2019). Due to the uncertainty associated with it, performance-based pay can create income insecurity (especially when a significant ratio of one's income is from this source). Insecurity might explain the relation between the introduction of performance-based pay schemes and increases in psychotropic prescriptions for anxiety and depression in a sample of thousands of Danish workers (Dahl & Pierce, 2020). Not surprisingly, stress consequences are more pronounced for high-stakes rewards (i.e., having to meet a quota to obtain the reward) relative to low-stakes rewards (e.g., a piece-rate system; Parker et al., 2019).

Income insecurity can also be caused by using performance-based compensation, which could explain the "collateral damage" associated with the use of performance-based incentives. Research on the effects of performance-based incentives on motivation and performance also suggests that support for classic theories advocating for their use (i.e., agency and expectancy theories; Jensen & Meckling, 1976; Vroom, 1964) is not as solid as portrayed in the general compensation literature. SDT provides alternative views on how performance-based incentives may influence motivation and performance through the satisfaction or frustration of psychological needs, and some recent work, including recent meta-analyses (Cerasoli et al., 2016), provides support for SDT-based predictions. Most intriguing are the results concerning the (lack of) impact of perceived instrumentality on performance. However, much more research is needed to fully understand the impact of incentives on motivation, performance, and well-being.

## Other Important Compensation Characteristics

Until recently, SDT research on compensation had not considered other aspects of compensation that have been examined extensively in compensation research: fairness and pay dispersion.

Many compensation researchers argue that performance-based pay is perceived to be more equitable because it rewards employees based on their contributions (e.g., Lawler, 2000). We think SDT could be used to further understand how and why. First, research indicates there are important relations between need satisfaction and general work-related perceptions of justice (Gillet et al., 2013, 2015), but the causal direction is unclear as studies have mainly used cross-sectional designs.

Justice is generally conceived of as a four-dimensional construct (Colquitt, 2001). Distributive justice refers to the fairness of how resources, such as pay, are distributed in organizations, while procedural justice reflects employees' fairness perceptions regarding the rules or procedures used to make decisions about how to distribute resources (i.e., consistent use of rules, appeals process). Informational justice reflects perceptions of having received sufficient information in time, while interpersonal justice concerns aspects such as being treated with respect and dignity and the absence of discrimination.

Little research to date has examined how each of these forms of justice specifically relates to the satisfaction of competence, autonomy and relatedness, and it would be useful to know this as it would help us understand the psychological function of justice in promoting motivation and performance so we know how to influence need satisfaction through pay. One study has found that both employee perceptions of pay-related justice and congruence between employee and manager reports of their enacted pay-related justice result in more positive work attitudes, a stronger willingness to remain in the organization, and better performance (Malmrud et al., 2020); however, types of justice were collapsed for analyses. Another recent study suggests that some types of pay-related justice may be more important than others in influencing need satisfaction. Olafsen and colleagues (2015) found that it was not the equitable distribution of income that mattered most to satisfying psychological needs and promoting autonomous motivation, but whether procedures to determine the income (i.e., performance evaluation and feedback) were perceived to be just. Still not known is whether different forms of pay (i.e., fixed vs. performance-based) will yield different perceptions of justice, and whether justice perceptions derived from different forms of pay might influence need satisfaction differently.

Another characteristic of compensation systems created by the use of performance-based pay is the dispersion of pay it creates among groups of workers doing the same job. So far, research suggests variable effects of high pay dispersion on performance ranging from positive to negative (Shaw, 2014). Pay dispersion is also directly related to increased turnover, and perceptions of justice are an important moderator of the effect of dispersion on outcomes (Shaw, 2014). Dispersion also leads to lower collaboration and knowledge sharing, consequently lowering firm performance (Siegel & Hambrick, 2005; Kleinbaum, Stuart, & Tushman, 2013).

A recent study of 1,146 Swedish private-sector workers examined the relative importance of different characteristics of compensation systems, including income levels, the perceived dispersion of pay among their work group, the extent to which managers

emphasized the connection between performance and rewards and the perceived procedural justice of their pay system (Nordgren Selar et al., 2022). Interestingly, the best paid group (but with high pay dispersion) had lower task performance and higher turnover intention than employees who had average pay levels but lower pay dispersion. These groups had similar perceived justice levels, indicating that pay dispersion was the variable that impacted outcomes most. In addition, employees with incomes slightly below the national average in Sweden—characterized by pay compression and procedural fairness—were more willing to remain with their organization and experienced lower levels of work-related exhaustion than a moderately dispersed group and one highly dispersed group that were both characterized by relatively similar levels of pay as this compressed profile. What we do not know is why pay dispersion was negatively related to outcomes; therefore, conducting research to look at how it might influence need satisfaction and work motivation would help.

## The Influence of Motivational Assumptions and Payment Norms

Unless explicitly volunteering their time, people expect to be compensated in exchange for their labor. Executives and human resources managers assume that to attract high talent in an organization, compensation must be competitive (Gerhart & Milkovitch, 1990). It is typically assumed that performance-based pay is an effective means to attract talent and drive performance (Kessler & Purcell, 1992; Shaw & Gupta, 2015). Yet, if job candidates say that they are attracted to a job for the monetary compensation it offers, they are seen as less desirable candidates because it is assumed that their desire for money means they have less intrinsic motivation for the job. This is known as the "motivation purity bias" (Derfler-Rozin & Pitesa, 2020), and it is the reason for advising job candidates not to ask questions about compensation during job interviews. Once hired, however, the same decision-makers assume that workers will perform better if they receive performance-based pay! This might be happening simply because people are typically seen as having a preference for extrinsic rather than intrinsic "incentives" (an extrinsic incentives bias; Heath, 1999) when they are in an employment context, because the motivational power of self-interest is often overestimated (Miller & Ratner, 1998) and because it is generally assumed that people work for money and are therefore extrinsically motivated (Deci, Benware, & Landy, 1974). This leads organizations to adopt "Theory X" approaches to managing workers, including monitoring, micro-managing, and paying contingently on performance (McGregor, 1960), which may lead to a self-fulfilling prophecy. Given that decision-makers tend to overemphasize compensation as a motivational factor (Magee, Kilduff, & Heath, 2011) and that, as discussed in the previous section, other work factors seem to actually be more important to motivation than compensation, it seems important to change how business leaders are educated on these matters.

Is there a basis for employers' reluctance to hire people who are motivated by money? Research suggests that a focus on money can have some unintended consequences. The

mere salience of money (which performance-based pay heightens) or wealth can cause lower prosociality and moral disengagement (Gino & Mogilner, 2014; Gino & Pierce, 2009; Kouchaki et al., 2013; Vohs, Mead, & Goode, 2006, 2008). Other research shows that exchange rules might also affect effort and decisions, such that a "market" or economic exchange framing (i.e., short-term transactional) leads people to reduce efforts and act more out of self-interest relative to a social exchange frame (i.e., long-term trust-based; Heyman & Ariely, 2004; Kouchaki et al., 2013). A case in point is recent evidence that people who receive performance-based pay prioritize spending time with colleagues over spending time with family and friends, and they do so in order to reach their performance targets (Hur, Lee-Yong, & Whillans, 2018). Performance-based pay has also been associated with "moral disengagement" that has been deemed responsible for ethical breaches, risky decision-making, and interpersonal deviance (Burns & Kedia, 2006; Donoher, Reed, & Storrud-Barnes, 2007; Gläser, van Gils, & Van Quaquebeke, 2017; Gläser & Van Quaquebeke, 2019; Harris & Bromiley, 2007; Roman & Munuera, 2005; Schweitzer, Ordóñez, & Douma, 2004). Even "charging" for time worked has been associated with increased stress, reduced happiness, and less willingness to volunteer (DeVoe & House, 2012; DeVoe & Pfeffer, 2007a, 2007b, 2010, 2011; Pfeffer & Carney, 2018) because people come to view time as money.

Another interesting question is whether a job candidate's primary motivation influences their attraction to organizations that offer performance-based pay. There is quite limited research on this question. One study found that intrinsically motivated candidates had a preference for merit-pay schemes (which are essentially base salary increases based on performance evaluations) because they offer more performance challenge, while extrinsically motivated candidates were attracted to jobs with higher starting salaries and safer seniority-based pay increases (Clugston, Howell, & Dorfman, 2000). It is possible that intrinsically motivated candidates feel more competent than extrinsically motivated candidates (Vallerand & Reid, 1984), and it has been shown that people who feel competent tend to prefer riskier performance-based compensation programs because they are confident in their chances of getting good compensation this way (Fahr, Griffeth, & Balkin, 1991). What it does to their motivation once in the job has not been examined, meaning that initial motivation has not been evaluated as a boundary condition on the effects of incentives on subsequent work motivation.

Payment norms (i.e., beliefs about whether people should be paid or not for their efforts and whether people expect to be paid) can also influence people's motivation toward tasks. When people are told the norm is to pay for a certain task, their intrinsic motivation toward that task is less likely to be negatively affected by a monetary reward, quite possibly because getting paid is not experienced as controlling one's behavior when the norm and expectation is to be paid (Staw et al., 1980). In other words, pay norms may modify the functional significance of the pay. What has not been considered in research done on the role of payment norms is whether equity considerations could be added to

analyses of functional significance: if the norm is to pay, employees may feel cheated out of something if they do not get paid, but if the norm is not to pay, they might not feel cheated when not rewarded but controlled when rewarded.

Related to the issue of norms is whether people perceive a task as work or play. When a task is rewarded, people are more likely to consider the task as work (i.e., unpleasant) rather than play (i.e., pleasant). For example, research has demonstrated that when children must do one task before being permitted to do another one (where both are equally interesting), children as young as four years assume the first task will be uninteresting before even trying it (Lepper et al., 1982) and show less interest for it when they do engage in it (Lepper & Greene, 1975). Labeling a task as work versus play may also change how people approach the task. For example, labeling a word-puzzle task as work supervised by a "production manager" made MBA students focus more on quantitative performance aspects and use a more goal-directed approach (an ends-oriented approach), whereas labeling a task as play supervised by a "starship captain" made students use a means-oriented approach, focus more on qualitative performance, and provide more elaborate creative responses (they also enjoyed it more; Glynn, 1994). Some researchers argue that relationship rules may account for the finding that rewards lead to framing tasks as work (Heyman & Ariely, 2004). For example, when a prisoner's dilemma game is labeled "the Wall Street Game," people tend to compete more and cooperate less than when it is labeled "the Community Game" (Liberman, Samuels, & Ross, 2004). Economic exchange relationship rules might be triggered by rewards and by other means to labeling a task as "work," whereas communal relationship rules might be triggered by the absence of rewards and through interest and meaning (i.e., autonomous motivation). This was demonstrated in an experiment by Heyman and Ariely (2004) where compensating people with candy did not influence helping (a communal frame), but if the monetary value of the candy was mentioned, it led people to adjust their helping effort to the amount of reward received (an economic frame).

Another interesting set of findings is that when people receive money in exchange for labor, they subsequently place more importance on money than when they receive money from investments or a coin toss (DeVoe, Pfeffer, & Lee, 2013). This apparently happens because money received for labor indicates one's competence, thus imbuing the money with more symbolic value. It is also the case that performance-based pay increases one's desire for money relative to fixed pay, resulting in putting more effort to earn more and less willingness to give it to a charity (Hur & Nordgren, 2016). This is apparently due to such pay schemes creating an attentional fixation on money.

Motivational assumptions influence how money is used to motivate workers, and workers also have expectations and preference for certain pay systems that can be influenced by norms and by their motivations. Money itself appears to influence how people view tasks, and it influences their behavior and well-being. There might very well be a vicious cycle whereby expecting income to be based on performance (which is taught

in most business schools to be the best way to compensate workers) increases attraction into jobs that offer performance-based pay. Once received, the perceived value of monetary incentives might increase, thereby increasing more controlled types of motivation, which are not strongly positively related to performance and well-being (Van den Broeck et al., 2021).

**Future Research Directions**

Besides the identified gaps mentioned in previous sections, we suggest other research avenues. Gerhart and Fang (2015) pointed out the lack of research linking the effects of rewards on intrinsic motivation to the effects of rewards on performance. Howard et al. (2016) have also pointed out the lack of research examining possible interactive effects between different types of motivation and demonstrated, using latent profile analyses, that motivational combinations matter for performance and well-being outcomes: profiles that have relatively higher autonomous versus controlled types of motivation yield better outcomes. In other words, adding controlled motivation (particularly external regulation) to high autonomous motivation leads to decrements in performance and well-being. What remains to be discovered is how performance-based compensation (and its instrumentality and controllingness) and pay inequality influence belongingness to these different work motivation profiles, and how need satisfaction explains these effects.

Both Gagné and Deci (2005) and Gerhart and Fang (2015) have emphasized that the effects of pay-for-performance schemes could change for different types of tasks (interesting vs. boring, algorithmic vs. heuristic) and for different performance measures (behavior vs. results, individual vs. aggregate, and quantitative vs. qualitative, creative and innovative performance). Recently Gagné et al. (2021) also proposed that autonomous motivation may be particularly important for adaptive and proactive performance rather than just for measures of job proficiency. Given that the future of work is likely to be more interdependent and uncertain (requiring cooperation, adaptivity, and proactivity) and where technology is likely to replace humans for simple and algorithmic work (Gagné et al., 2021), autonomous motivation is what we will need to promote foremost. With the evidence we have thus far on the effects of performance-based pay on work motivation, we cannot advocate for its use to promote autonomous motivation. However, research using complex heuristic tasks is lacking. Indeed, most of the research conducted on the effects of incentives on motivation and performance has used rather simple and short-term tasks, even in studies purportedly looking at the interest level of the task or creative ones (e.g., puzzles, coming up with slogans) that do not reflect what people do in most of today's jobs. We need to find ways to study the effects of incentives in realistic contemporary jobs.

It is also difficult to treat the effects of performance-based compensation on motivation and work outcomes without considering what employees plan to do with their money. As shown by the body of research considering money motives, more intrinsic reasons for wanting money lead to more positive outcomes compared to extrinsic reasons

(Thibault Landry et al., 2016). Thus, there might be interactive effects between the characteristics of performance-based pay programs (e.g., how controlling or salient they are experienced to be) and money motives.

It is still unclear whether performance-based pay is perceived as being a fairer way of compensating good performance relative to fixed-pay programs. There are many angles from which to consider fairness, including the view that pay should be based on needs (Dornstein, 1989), that there should be equal pay for all or at least for those doing similar work (e.g., Rawls, 1971), and that pay should be based on performance and contribution to attaining organizational goals (Lawler, 2000). Yet procedural justice has been shown to be more important to autonomous motivation than distributive justice (Olafsen et al., 2015). Meta-analytic evidence also shows that procedural justice is more strongly related to performance than distributive justice (Cohen-Charash & Spector, 2001). Would it therefore be the case that fixed-pay setting decisions, if they are perceived as procedurally fair (i.e., based on accurate information, transparent, with an appeals process), would work as well as, if not better than, performance-based pay decisions? Only more research will help answer this question.

## Implications for the Design of Compensation Systems

Given that compensation accounts for 20% to 50% of total operating expenses in organizations (Gerhart & Milkovitch, 1990), it is surprising that compensation does not seem to have that much effect on employee need satisfaction, motivation, and performance, relative to less costly strategic actions such as creating job autonomy and providing feedback (Nordgren Selar et al., 2020). This does not mean that people do not place any importance on compensation in their lives. People need money to live, so an income that provides for basic physiological and security needs at a minimum is important, and it needs to follow cost-of-living inflation. Income should also be secure enough (i.e., not too heavily based on performance), which means jobs must be secure enough (avoid short-term contractual arrangements when possible).

It is also better to emphasize, when managing employees, common goals rather than using a "This is what you are paid for" mentality. Use other means of motivating people, including enriched job designs, procedurally just performance appraisals with constructive feedback, and the development of relationships based on trust rather than a mere exchange. People are more likely to derive satisfaction for their competence, autonomy, and relatedness needs this way, therefore making such strategies more likely to promote autonomous rather than controlled motivation.

When they design compensation and incentive systems, employers need to think about how they will influence the satisfaction of needs for competence, autonomy, and relatedness if they want to promote autonomous motivation and optimal functioning (i.e., performance and well-being). If performance-based pay is used, they should avoid making it too salient on a day-to-day basis and avoid creating large pay dispersion from it.

## Conclusions

The distinction between money and other factors as drivers of motivation has a long history. For instance, Max Weber (1968) noted that value rationality (doing things based on ethical, ideological, or religious values) is just as rational a motive as instrumental rationality (doing things based on self-interest or personal gain) for engaging in social action. From an organizational theory perspective, Etzioni (1975) noted that utilitarian management principles make employees prone to commit to their organization based on instrumentality (as long as they gain from it). While this was recognized as a better strategy than leading through coercion, Etzioni argued that normative management (through visions, culture, and values) is more effective and will result in moral attachment to the organization. The same lines of reasoning can be found with respect to leadership, where transformational leadership (i.e., charismatic, inspirational, and empowering) is generally argued (and found) to bring about more autonomous motivation than transactional leadership (i.e., a directive approach, contingently rewarding, close monitoring, and sanctions for deviations; Bass, 1985; Gagné et al., 2020; Montano et al., 2017).

All of these theoretical frameworks point to major differences in beliefs about whether motivation stems from internal or external sources. McGregor (1960) made this explicit in his theory of managerial styles, where Theory X describes a management style based on the belief that people are not inherently motivated and must be coerced or seduced (e.g., with rewards) in order to perform, and where Theory Y describes a management style based on the belief that people are inherently motivated and that this motivation can be nurtured by giving people autonomy. We also can see this dichotomy of assumptions about human nature among the theories used to advocate for rewards (e.g., agency and expectancy theories) and theories used to caution against their use (e.g., SDT). Interestingly, these divergent assumptions about what motivates people to work influences how employers use money at different points of an employee's journey, from attracting them, to selecting them based on their motivations, to managing them to perform. Organizations might need to explore their own assumptions and be more aware of how they drive their human resource management decisions.

We began this chapter by questioning how important money is to motivate workers. Money is an important factor to attract and retain workers (Rynes, Gerhart, & Parks, 2005), and there have been repeated calls for more research into its effectiveness as a motivator of performance (Gerhart & Fang, 2015; Gupta & Shaw, 2014). However, we have also highlighted that there is strong debate about the outcomes of the relative distribution of money, as exemplified by contrasting results in previous research about performance-based compensation and pay inequality among colleagues. We particularly need to better understand how and why monetary incentives, and their relative distribution, work by focusing on psychological mechanisms (Rynes et al., 2005). For example, we need to know more about how different compensation systems (e.g., compressed vs. performance-based; see, e.g., Bloom, 1999) and pay inequality influences the motivational profile of

workers once they are hired, and how this influences their performance and well-being, both of which have consequences for organizations. Moreover, we must consider the burden these systems place on managers and organizational resources and whether they are worth it if the impact of performance-based rewards is not as important as once thought. Performance-based pay requires more precise performance measures that are considered "objective" and accurate, and adequate monitoring systems to capture these measures (which can also be experienced as controlling; Enzle & Anderson, 1993; Lepper & Greene, 1975). In addition, performance appraisals based on such measures demand more work from managers.

As noted by Aguinis, Joo, and Gottfredson (2013), money on its own does not improve knowledge or abilities, nor does it improve job quality. However, how money is given and distributed can influence need satisfaction and have consequences for performance and well-being. SDT suggests a focus on the satisfaction of needs for competence, autonomy, and relatedness, with propositions already put forward by Gagné and Forest (2008), some of which were recently tested (Kuvaas et al., 2020). We should continue to develop our knowledge in this area through more research to create better compensation systems that will promote good motivation and optimal functioning in work environments.

## References

ABS. (2019). *General social survey: Summary results, Australia*. Australian Bureau of Statistics. https://www.abs.gov.au/.

Adams, J. S. (1965). Inequity in social exchange. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 267–299). Academic Press.

Aguinis, H., Joo, H., & Gottfredson, R. K. (2013). What monetary rewards can and cannot do: How to show employees the money. *Business Horizons, 56*, 241–249.

Aknin, L. B., Norton, M. I., & Dunn, E. W. (2009). From wealth to well-being? Money matters, but less than people think. *Journal of Positive Psychology, 4*(6), 523–527. https://doi.org/10.1080/17439760903271421.

Andersson-Stråberg, T., Sverke, M., & Hellgren, J. (2007). Perceptions of justice in connection with individualized pay setting. *Economic and Industrial Democracy, 28*(3), 431–464.

Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press.

Bloom, M. (1999). The performance effects of pay dispersion on individuals and organizations. *Academy of Management Journal, 42*(1), 25–40.

Burns, N., & Kedia, S. (2006). The impact of performance-based compensation on misreporting. *Journal of Financial Economics, 79*, 35–67.

Card, D., Mas, A., Moretti, E., & Saez, E. (2012). Inequality at work: The effect of peer salaries on job satisfaction. *American Economic Review, 102*(6), 2981–3003.

Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin, 140*(4), 980.

Cerasoli, C. P., Nicklin, J. M., & Nassrelgrgawi, A. S. (2016). Performance, incentives, and needs for autonomy, competence, and relatedness: A meta-analysis. *Motivation and Emotion, 40*, 781–813.

Chen, C.-A., & Hsieh, C.-W. (2015). Does pursuing external incentives compromise public service motivation? *Public Management Review, 17*(8), 1190–1213.

Chetty, R., Stepner, M., Abraham, S., Lin, S., Scuderi, B., Turner, N., Bergeron, A., & Cutler, D. (2016). The association between income and life expectancy in the United States, 2001–2014. *JAMA, 315*(16), 1750–1766.

Clugston, M., Howell, J. P., & Dorfman, P. W. (2000). Dispositional influences on pay preferences. *Journal of Business and Psychology, 15*(2), 311–320.

Cohen-Charash, Y., & Spector, P. E. (2001). The role of justice in organizations: A meta-analysis. *Organizational Behavior and Human Decision Processes*, *86*(2), 278–321.

Colquitt, J. A. (2001). On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology, 86*(3), 386–400.

Dahl, M. S., & Pierce, L. (2020). Pay-for-performance and employee mental health: Large sample evidence using employee prescription drug usage. *Academy of Management Discoveries*, *6*(1), 12–38.

Deci, E. L., Benware, C., & Landy, D. (1974). The attribution of motivation as a function of output and rewards. *Journal of Personality*, *42*(4), 652–667.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668.

Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13, pp. 39–80). Academic Press.

Derfler-Rozin, R., & Pitesa, M. (2020). Motivation purity bias: Expression of extrinsic motivation undermines perceived intrinsic motivation and engenders bias in selection decisions. *Academy of Management Journal*, *63*(6), 1840–1864.

DeVoe, S. E., & House, J. (2012). Time, money, and happiness: How does putting a price on time affect our ability to smell the roses? *Journal of Experimental Social Psychology*, *48*(2), 466–474.

DeVoe, S. E., & Pfeffer, J. (2007a). Hourly payment and volunteering: The effect of organizational practices on decisions about time use. *Academy of Management Journal*, *50*(4), 783–798.

DeVoe, S. E., & Pfeffer, J. (2007b). When time is money: The effect of hourly payment on the evaluation of time. *Organizational Behavior and Human Decision Processes*, *104*(1), 1–13.

DeVoe, S. E., & Pfeffer, J. (2010). The stingy hour: How accounting for time affects volunteering. *Personality and Social Psychology Bulletin*, *36*(4), 470–483.

DeVoe, S. E., & Pfeffer, J. (2011). Time is tight: How higher economic value of time increases feelings of time pressure. *Journal of Applied Psychology*, *96*(4), 665–676.

DeVoe, S. E., Pfeffer, J., & Lee, B. Y. (2013). When does money make money more important? Survey and experimental evidence. *ILR Review*, *66*(5), 1078–1096.

Di Domenico, S. I., & Fournier, M. A. (2014). Socioeconomic status, income inequality, and health complaints: A basic psychological needs perspective. *Social Indicators Research, 119*, 1679–1697.

Dittmar, H., Bond, R., Hurst, M., & Kasser, T. (2014). The relationship between materialism and personal well-being: A meta-analysis. *Journal of Personality and Social Psychology*, *107*(5), 879–924.

Donoher, W. J., Reed, R., & Storrud-Barnes, S. F. (2007). Incentive alignment, control, and the issue of misleading financial disclosures. *Journal of Management, 33*, 547–569.

Dornstein, M. (1989). The fairness judgments of received pay and their determinants. *Journal of Occupational Psychology, 62*, 287–299.

Enzle, M. E., & Anderson, S. C. (1993). Surveillant intentions and intrinsic motivation. *Journal of Personality and Social Psychology*, *64*(2), 257–266.

Etzioni, A. (1975). *A comparative analysis of complex organizations*. Free Press.

Fahr, J.-L., Griffeth, R. W., & Balkin, D. B. (1991). Effects of choice of pay plans on satisfaction, goal setting, and performance. *Journal of Organizational Behavior, 12*, 55–62.

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, *26*(4), 331–362.

Gagné, M., & Forest, J. (2008). The study of compensation systems through the lens of self-determination theory: Reconciling 35 years of debate. *Canadian Psychology*, *49*(3), 225–232.

Gagné, M., Griffin, M. A., & Parker, S. K. (2021). Work engagement in the future of work. In J. P. Meyer & B. Schneider (Eds.), *Research agenda for employee engagement in a changing world of work* (pp. 137–153). Edward Elgar.

Gagné, M., Morin, A. J. S., Schabram, K., Wang, Z., Chemolli, E., & Briand, M. (2020). Uncovering relations between leadership perceptions and motivation under different organizational contexts: A multilevel cross-lagged analysis. *Journal of Business and Psychology, 35*, 713–732.

Gerhart, B., & Fang, M. (2014). Pay for (individual) performance: Issues, claims, evidence and the role of sorting effects. *Human Resource Management Review*, *24*(1), 41–52.

Gerhart, B., & Fang, M. (2015). Pay, intrinsic motivation, extrinsic motivation, performance, and creativity in the workplace: Revisiting long-held beliefs. *Annual Review of Organizational Psychology and Organizational Behavior, 2*, 489–521.

Gerhart, B., & Milkovich, G. T. (1990). Organizational differences in managerial compensation and financial performance. *Academy of Management Journal, 33*, 663–691.

Gerhart, B., & Rynes, S. (2003). *Compensation: Theory, evidence, and strategic implications*. Sage.

Gerhart, B., Rynes, S. L., & Fulmer, I. S. (2009). Pay and performance: Individuals, groups, and executives. *Academy of Management Annals*, *3*, 251–315.

Gillet, N., Colombat, P., Michinov, E., Pronost, A.-M., & Fouquereau, E. (2013). Procedural justice, supervisor autonomy support, work satisfaction, organizational identification, and job performance: The mediating role of need satisfaction and perceived organizational support. *Journal of Advanced Nursing, 69*, 2560–2571.

Gillet, N., Fouquereau, E., Huyghebaert, T., & Colombat, P. (2015). The effects of job demands and organizational resources through psychological need satisfaction and thwarting. *Spanish Journal of Psychology, 18*, 1–19.

Gino, F., & Mogilner, C. (2014). Time, money, and morality. *Psychological Science*, *25*(2), 414–421.

Gino, F., & Pierce, L. (2009). The abundance effect: Unethical behavior in the presence of wealth. *Organizational Behavior and Human Decision Processes*, *109*(2), 142–155.

Gläser, D., van Gils, S., & Van Quaquebeke, N. (2017). Pay-for-performance and interpersonal deviance. *Journal of Personnel Psychology*, *16*(2), 77–90.

Gläser, D., & Van Quaquebeke, N. (2019). The double-edged sword of financial incentive schemes. In A. Sales (Ed.), *Corporate social responsibility and corporate change: Ethical economy* (Vol. 57, pp. 205–219). Springer.

Glynn, M. A. (1994). Effects of work task cues and play task cues on information processing, judgment, and motivation. *Journal of Applied Psychology*, *79*(1), 34–45.

Griffin, M. A., Neal, A., & Parker, S. K. (2007). A new model of work role performance: Positive behavior in uncertain and interdependent contexts. *Academy of Management Journal*, *50*(2), 327–347.

Gupta, N., & Shaw, J. D. (2014). Employee compensation: The neglected area of HRM research. *Human Resource Management Review*, *24*(1), 1–4.

Guzzo, R. A., Jette, R. D., & Katzell, R. A. (1985). The effects of psychologically based intervention programs on worker productivity: A meta-analysis. *Personnel Psychology*, *38*(2), 275–291.

Harris, J., & Bromiley, P. (2007). Incentives to cheat: The influence of executive compensation. *Organization Science*, *18*(3), 350–367.

Haushofer, J., & Fehr, E. (2014). On the psychology of poverty. *Science*, *344*(6186), 862–867.

Heath, C. (1999). On the social psychology of agency relationships: Lay theories of motivation overemphasize extrinsic incentives. *Organizational Behavior and Human Decision Processes*, *78*(1), 25–62.

Heyman, J., & Ariely, D. (2004). Effort for payment. *Psychological Science*, *15*(11), 787–793.

Howard, J., Gagné, M., Morin, A. J., & Van den Broeck, A. (2016). Motivation profiles at work: A self-determination theory approach. *Journal of Vocational Behavior*, *95*, 74–89.

Howell, R. T., Kurai, M., & Tam, L. (2013). Money buys financial security and psychological need satisfaction: Testing need theory in affluence. *Social Indicators Research*, *110*(1), 17–29.

Hur, J., Lee-Yong, A., & Whillans, A. (2018). *Who is more useful? The impact of performance incentives on work and personal relationships*. Working paper, Harvard Business School.

Hur, J. D., & Nordgren, L. F. (2016). Paying for performance: Performance incentives increase desire for the reward object. *Journal of Personality and Social Psychology*, *111*(3), 301–316.

Ironmonger, D. (2012). *The economic value of volunteering in Victoria*. Department of Planning and Community Development, Victorian Government.

Jahoda, M. (1982). *Employment and unemployment. A socio-psychological analysis*. Cambridge University Press.

Jebb, A. T., Tay, L., Diener, E., & Oishi, S. (2018). Happiness, income satiation and turning points around the world. *Nature Human Behaviour*, *2*(1), 33–38.

Jenkins, D. G., Jr., Mitra, A., Gupta, N., & Shaw, J. D. (1998). Are financial incentives related to performance? A meta-analytic review of empirical research. *Journal of Applied Psychology, 83*(5), 777–787.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360.

Jiang, L., & Lavaysse, L. M. (2018). Cognitive and affective job insecurity: A meta-analysis and a primary study. *Journal of Management*, *44*(6), 2307–2342.

John, L. K., Loewenstein, G., & Rick, S. (2014). Cheating more for less: Upward social comparisons motivate the poorly compensated to cheat. *Organizational Behavior and Human Decision Processes*, *123*(2), 101–109.

Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences, 107*(38), 16489–16493.

Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology, 65*(2), 410–422.

Kessler, I., & Purcell, J. (1992). Performance related pay: Objectives and application. *Human Resource Management Journal, 2*(3), 16–33.

Kim, J. H., Gerhart, B., & Fang, M. (2021). Do financial incentives help or harm performance in interesting tasks? *Journal of Applied Psychology*. Advance online publication.

Kleinbaum, A. M., Stuart, T. E., & Tushman, M. L. (2013). Discretion within constraint: Homophily and structure in a formal organization. *Organization Science*, *24*(5), 1316–1336.

Kouchaki, M., Smith-Crowe, K., Brief, A. P., & Sousa, C. (2013). Seeing green: Mere exposure to money triggers a business decision frame and unethical outcomes. *Organizational Behavior and Human Decision Processes*, *121*(1), 53–61.

Kuvaas, B., Buch, R., & Dysvik, A. (2020). Individual variable pay for performance, controlling effects, and intrinsic motivation. *Motivation and Emotion, 44*, 525–533.

Kuvaas, B., Buch, R., Gagné, M., Dysvik, A., & Forest, J. (2016). Do you get what you pay for? Sales incentives and implications for motivation and changes in turnover intention and work effort. *Motivation and Emotion*, *40*(5), 667–680.

Lawler, E. E. (1990). *Strategic pay*. Jossey-Bass.

Lawler, E. E. (2000). *Rewarding excellence: Pay strategies for the new economy*. Jossey-Bass.

Lazear, E. P. (2018). Compensation and incentives in the workplace. *Journal of Economic Perspectives*, *32*(3), 195–214.

Leana, C. R., & Meuris, J. (2015). Living to work and working to live: Income as a driver of organizational behavior. *Academy of Management Annals*, *9*(1), 55–95.

Lepper, M. R., & Greene, D. (1975). Turning play into work: Effects of adult surveillance and extrinsic rewards on children's intrinsic motivation. *Journal of Personality and Social Psychology*, *31*(3), 479–486.

Lepper, M. R., Sagotsky, G., Dafoe, J. L., & Greene, D. (1982). Consequences of superfluous social constraints: Effects on young children's social inferences and subsequent intrinsic interest. *Journal of Personality and Social Psychology*, *42*(1), 51–65.

Liberman, V., Samuels, S. M., & Ross, L. (2004). The name of the game: Predictive power of reputations versus situational labels in determining prisoner's dilemma game moves. *Personality and Social Psychology Bulletin*, *30*(9), 1175–1185.

Locke, E. A., Feren, D. B., McCaleb, V.M., Shaw, K. N., & Denny, A. T. (1980). The relative effectiveness of four methods of motivating employee performance. In K. D. Duncan, M. M. Gruenberg, & D. Wallis (Eds.), *Changes in working life* (pp. 363–388). Wiley.

Magee, J. C., Kilduff, G. J., & Heath, C. (2011). On the folly of principal's power: Managerial psychology as a cause of bad incentives. *Research in Organizational Behavior, 31*, 25–41.

Malmrud, S., Falkenberg, H., Eib, C., Hellgren, J., & Sverke, M. (2020). Just what I see? Implications of congruence between supervisors' and employees' perceptions of pay justice for employees' work-related attitudes and behaviors. *Frontiers in Psychology, 11*, 2069.

McGregor, D. (1960). *The human side of enterprise*. McGraw-Hill.

Miller, D. T., & Ratner, R. K. (1998). The disparity between the actual and assumed power of self-interest. *Journal of Personality and Social Psychology*, *74*(1), 53–62.

Montano, D., Reeske, A., Franke, F., & Hüffmaier, J. (2017). Leadership, followers' mental health and job performance in organizations: A comprehensive meta-analysis from an occupational health perspective. *Journal of Organizational Behavior*, *38*(3), 327–350.

Nordgren Selar, A., Falkenberg, H., Hellgren, J., Gagné, M., & Sverke, M. (2020). "It's [not] All 'Bout the Money": How do performance-based pay and support of psychological needs variables relate to job performance? *Scandinavian Journal of Work and Organizational Psychology*, *5*(1), 1–14.

Nordgren Selar, A., Gagné, M., Hellgren, J., Falkenberg, H., & Sverke, M. (2022). *"Money, Money, Money, Always Sunny[?]" Compensation profiles' associations with employee outcomes*. Unpublished manuscript.

Odle-Dusseau, H. N., Mathews, R. A., & Wayne, J. H. (2018). Employees' financial insecurity and health: The underlying role of stress and work-family conflict appraisals. *Journal of Occupational and Organizational Psychology*, *91*(3), 546–568.

Olafsen, A. H., Halvari, H., Forest, J., & Deci, E. L. (2015). Show them the money? The role of pay, managerial need support, and justice in a self-determination theory model of intrinsic work motivation. *Scandinavian Journal of Psychology*, *56*(4), 447–457.

Olson, M. (1971). *The logic of collective action: Public goods and the theory of groups*. Harvard University Press.

Parker, S. L., Bell, K., Gagné, M., Carey, K., & Hilpert, T. (2019). Collateral damage associated with performance-based pay: The role of stress appraisals. *European Journal of Work and Organizational Psychology*, *28*(5), 691–707.

Paulsen, R. (2008). Economically forced to work: A critical reconsideration of the lottery question. *Basic Income Studies*, *3*(2), 1–20.

Pfeffer, J. (2007). Human resources from an organizational behavior perspective: Some paradoxes explained. *Journal of Economic Perspectives*, *21*(4), 115–134.

Pfeffer, J., & Carney, D. R. (2018). The economic evaluation of time can cause stress. *Academy of Management Discoveries*, *4*(1), 74–93.

Pitesa, M., & Thau, S. (2014). A lack of material resources causes harsher moral judgments. *Psychological Science*, *25*(3), 702–710.

Rawls, J. (1971). *A theory of justice*. Harvard University Press.

Roman, S., & Munuera, J. L. (2005). Determinants and consequences of ethical behaviour: An empirical study of salespeople. *European Journal of Marketing*, *39*(5–6), 473–495.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Rynes, S. L., Gerhart, B., & Parks, L. (2005). Personnel psychology: Performance evaluation and pay for performance. *Annual Review of Psychology, 56*, 571–600.

Schweitzer, M. E., Ordóñez, L., & Douma, B. (2004). Goal setting as a motivator of unethical behavior. *Academy of Management Journal 47*(3), 422–432.

Sen, A. (1982). Rational fools? A critique of the behavioural foundations of economic theory. In A. Sen (Ed.), *Choice, welfare and measurement* (pp. 84–106). Blackwell.

Sharma, E., Mazar, N., Alter, A. L., & Ariely, D. (2014). Financial deprivation selectively shifts moral standards and compromises moral decisions. *Organizational Behavior and Human Decision Processes*, *123*(2), 90–100.

Shaw, J. (2014). Pay dispersion. *Annual Review of Psychology and Organizational Behavior, 1*, 521–544.

Shaw, J. D., & Gupta, N. (2015). Let the evidence speak again! Financial incentives are more effective than we thought. *Human Resource Management Journal*, *25*(3), 281–293.

Shaw, J. D., & Mitra, A. (2017). The science of pay-for-performance systems: Six facts that all managers should know. *World at Work Journal*, 3rd quarter, 19–27.

Siegel, P. A., & Hambrick, D. C. (2005). Pay disparities within top management groups: Evidence of harmful effects on performance of high-technology firms. *Organization Science*, *16*(3), 259–274.

Statistics Sweden. (2016). *Livslängd och dödlighet i olika sociala grupper,( Life expectancy and mortality in different social groups)*. Demografiska rapporter (Demographic reports). Rapport 2016:2. https://www.scb.se/en/finding-statistics/statistics-by-subject-area/population/population-projections/demographic-analysis-demog/pong/publications/life-expectancy-and-mortality-in-different-social-groups/

Staw, B. M., Calder, B. J., Hess, R. K., & Sandelands, L. E. (1980). Intrinsic motivation and norms about payment. *Journal of Personality*, *48*(1), 1–14.

Sverke, M., Hellgren, J., & Näswall, K. (2002). No security: A meta-analysis and review of job security and its consequences. *Journal of Occupational Health Psychology*, *7*(3), 242–264.

Sverke, M., Låstad, L., Hellgren, J., Richter, A., & Näswall, K. (2019). A meta-analysis of job insecurity and employee performance: Testing temporal aspects, rating source, welfare regime, and union density as moderators. *International Journal of Environmental Research and Public Health*, *16*(14), 25–36.

Thibault Landry, A., Kindlein, J., Trépanier, S.-G., Forest, J., Zigarmi, D., Houson, D., & Brodbeck, F. C. (2016). Why individuals want money is what matters: Using self-determination theory to explain the differential relationship between motives for making money and employee psychological health. *Motivation and Emotion*, *40*(2), 226–242.

Vallerand, R. J., & Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory. *Journal of Sport Psychology*, *6*(1), 94–102.

Van den Broeck, A., Howard, J. L., Van Vaerenbergh, Y., Leroy, H., & Gagné, M. (2021). Beyond intrinsic and extrinsic motivation: A meta-analysis on self-determination theory's multidimensional conceptualization of work motivation. *Organizational Psychology Review*. Advance online publication.

Vohs, K. D., Mead, N. L., & Goode, M. R. (2006). The psychological consequences of money. *Science*, *314*(5802), 1154–1156.

Vohs, K. D., Mead, N. L., & Goode, M. R. (2008). Merely activating the concept of money changes personal and interpersonal behavior. *Current Directions in Psychological Science*, *17*(3), 208–212.

Vroom, V. (1964). *Work and motivation*. Wiley.

Warr, P. (1987). *Work, unemployment and mental health*. Clarendon Press.

Weber, M. (1968). *Economy and society*. University of California Press.

Weibel, A., Rost, K., & Osterloh, M. (2010). Pay for performance in the public sector—Benefits and (hidden) costs. *Journal of Public Administration Research and Theory*, *20*(2), 387–412.

# Leadership: A Self-Determination Theory Perspective

Anja Van den Broeck *and* Gavin R. Slemp

### Abstract

Leaders have a strong impact on employee motivation. Scholars have thus invested considerable effort toward investigating which leadership styles relate to employee motivation, as well as organizational dynamics that impact these relationships, using self-determination theory (SDT) as a guiding framework. This has led to two prevailing yet relatively disparate research streams, one heavily invested in the motivational effects of the more classic leadership frameworks typically examined in the industrial and organizational psychology literature (e.g., transformational leadership) and another descendant of early SDT research on the effects of motivating styles (e.g., autonomy support). This chapter seeks to bridge these two parallel streams, presenting an overview of the most important research findings in both traditions and highlighting their strengths and weaknesses. It concludes by presenting a way forward with recommendations for future research.

**Key Words:** Key words: leadership, autonomous motivation, basic need satisfaction, autonomy support, change-oriented leadership, relation-oriented leadership

Self-determination theory (SDT; Deci & Ryan, 2000) is a broad theory of human motivation that proposes people have an inherent potential to grow, to be motivated, and to feel well. This inherent potential is assumed to be an essential part of human nature, but it does not come about automatically: it surfaces only when people find the necessary nutriments in their environment to satisfy their basic psychological needs for *autonomy* (i.e., having a sense of volition and choice in behavior), *relatedness* (i.e., mutual feelings of love and care for others) and *competence* (i.e., feeling effective in what one does). Once these basic psychological needs are satisfied, people generally report high-quality (i.e., autonomous) rather than low-quality (i.e., controlled) motivation and, in turn, optimal functioning (Van den Broeck, Carpini, & Diefendorff, 2019; Van den Broeck et al., 2021).

Both structural (e.g., culture, policy) and social-contextual (e.g., caregivers, friends, family) aspects in one's environment may enable or obstruct the satisfaction of the basic psychological needs. Within the work environment, managers, supervisors, and leaders (henceforth referred to as leaders) represent one such social-contextual factor thought to be crucial for employee motivation, providing a central avenue toward the satisfaction

or frustration of employee basic psychological needs and, in turn, autonomous and controlled motivation (Deci, Olafsen, & Ryan, 2017; Van den Broeck et al., 2016).

The role of leaders in fostering employee self-determined motivation has been studied extensively, but scholars have used different perspectives to do so. Thus far, researchers studying leaders' ability to motivate employees from an SDT perspective have tended to fall within two specific camps. Scholarship in management and/or industrial and organizational psychology relies heavily on well-established and classic leadership theories (e.g., *transformational* and *servant leadership*) as a way to advance understanding about how leaders influence employee motivation (e.g., Kovjanic et al., 2012). Another group of researchers has approached scholarship using leadership theories that have descended from parallel SDT research, focusing on *autonomy support* and the *control* of behavior (e.g., Moreau & Mageau, 2012; Slemp et al., 2018). These two research streams share a common goal of understanding leader influences on employee motivation but have developed somewhat independently, potentially impeding a more complete and integrative understanding of how leaders shape motivational processes in work organizations. In this chapter, we aim to familiarize the reader with these two approaches in a first step to advance understanding of how leadership affects motivation in the workplace.

Our chapter is structured as follows. We first present an overview of the research conducted on the more classic leadership styles and examine how these are connected with employee motivational processes in organizations. We then focus on leadership research that has descended from SDT literatures, focusing primarily on leadership approaches designed to support employee basic psychological needs. We critically review the strengths and weaknesses of both approaches before presenting a way forward with recommendations for future research.

## Self-Determination Theory in the Traditional Leadership Literature

Leadership is arguably one of the most researched and debated topics in the field of work and organizational psychology (Derue et al., 2011). This line of research traditionally examines *transactional, transformational, or empowering* leadership styles and looks at their effects on employee outcomes. Within this tradition, researchers are increasingly adopting an SDT perspective to understand how such leader styles impact employee motivation. For example, a simple Web of Science search for records that make a link between leadership and self-determination, basic needs, or motivation in the title or topic area shows a progressively growing number of research papers, as shown in Figure 45.1. Clearly observable in the figure is that prior to 2005, only a few papers per year combined traditional leadership approaches and SDT. From 2005 to 2010 this research started to grow, eventually expanding to more than 50 papers a year by 2015, and to more than 100 papers per year by 2017. Most of these papers appear in the fields of management, with some additional studies published in the fields of applied psychology and business. To a lesser extent, leadership-focused studies were published in, for example, the fields of education, public
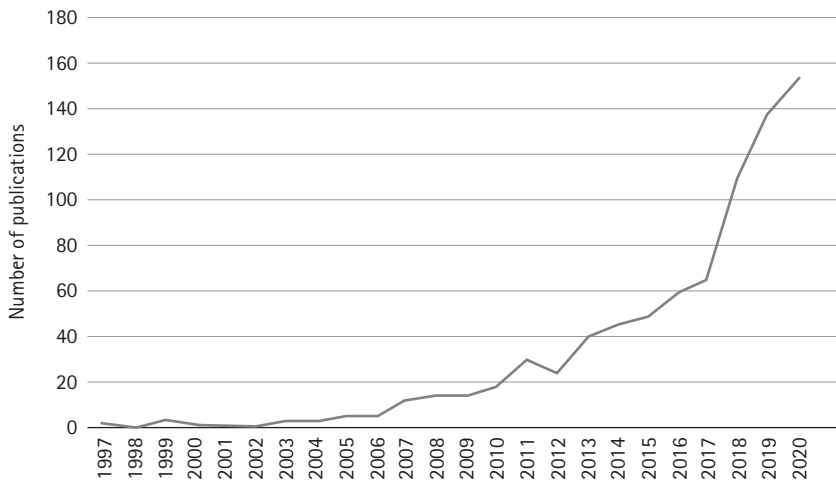
**Figure 45.1** Number of publications of traditional leadership theories and self-determination theory

administration, hospitality, and sport, showing the broad reach of SDT. SDT-inspired leadership research has been published in a wide variety of journals and also surfaced in top journals such as *Leadership Quarterly*.

An overview of these studies shows that SDT has been inspirational to leadership scholars in three ways. First, it has allowed them to understand whether and to what degree different leadership styles may evoke different forms of employee motivation. Second, it has inspired them to define new leadership styles. Third, SDT has shed light on the process through which particular leadership styles may relate to employee motivation. We elaborate on each of these three points in the following sections.

### The Motivating Potential of Traditional Leadership Styles

The research marrying SDT with traditional approaches to leadership has focused on how myriad leadership styles tend to prompt motivation in employees. Following the framework of Derue et al. (2011), who attempted to reconcile the proliferation of leadership behaviors and styles in the literature, research on leadership in the realm of SDT has focused mostly on change-oriented and relationship-oriented leadership styles. Hence, the traditional literature on leadership using SDT seeks to understand motivation from the perspective of how leaders may affect the direction, intensity, and persistence of employee behavior by focusing on (1) leaders communicating an appealing vision and encouraging change-related behaviors among employees or (2) leaders developing a personal connection with their employees and the dynamics of such relations.

One of the most studied leadership styles alongside SDT is *transformational leadership* (Bass, 1998). Transformational leaders are oriented toward change and aim to inspire employees by creating and sharing a vision for the future (*inspirational motivation*),

adopting behavior to embody an ideal role model for employees (*idealized influence*), taking a genuine interest in the needs and feelings of followers (*individualized consideration*), and taking action to stimulate employee innovation and creativity (*intellectual stimulation*). Thus, transformational leaders are a prototype of leaders who consider the needs of employees, help employees to see value in what they do, and facilitate employee engagement in tasks they find interesting and enjoyable.

Research suggests that employees who perceive their leaders to be transformational report less controlled and more autonomous motivation (Eyal & Roth, 2011; Fernet et al. 2015) and feel more satisfied in their basic needs (Kovjanic et al., 2012). Experimental research shows that working under the supervision of a transformational leader fosters greater autonomy, relatedness, and competence satisfaction and—through the latter two—stimulates engagement, performance, creativity, and persistence (Kovjanic, Schuh, & Jonas, 2013).

Other studies have focused on relation-oriented leadership styles, including *empowering* leadership and *servant* leadership and, to a lesser degree, *participative* leadership and *benevolent* leadership. Leaders who display behaviors consistent with these styles tend to show concern for employees, build mutual respect, and focus on the welfare of the group.

Like transformational leaders, *relation-oriented leaders* who embody these styles tend to exert positive effects on employee motivation. For example, *empowering* leadership is associated with employee autonomous motivation and, in turn, subsequent work performance, because empowering leaders help to satisfy employees' basic needs (O'Donoghue & van der Werff, 2021). *Servant* leaders may equally satisfy the basic needs of their employees and thus stimulate not only employee task performance but also citizenship behaviors that are helpful for colleagues and the organization (Chiniara & Bentein, 2016).

Far less research has examined *task-oriented leadership* styles, such as *transactional* leadership, or *passive* leadership styles, such as *laissez-faire* leadership. This is not necessarily a surprise; although the motivational impact of providing structure is heavily studied in the educational context (Aelterman et al., 2019), SDT-based leadership research has not typically focused on how leaders initiate structure to prompt need satisfaction and autonomous motivation. Moreover, SDT argues that task-related behaviors such as the provision of contingent rewards and/or being directive may frustrate basic needs and prompt more controlled forms of motivation, as these leadership behaviors tend to undermine rather than facilitate employee autonomy by placing limits on volitional behavior (Deci, Koestner, & Ryan, 1999). Research also suggests that laissez-faire and transactional leadership styles are significantly less supportive of employee needs compared to transformational or servant leadership (Van Dierendonck et al., 2014). Indeed, transactional leadership is associated with controlled rather than autonomous motivation (Kanat-Maymon, Elimelech, & Roth, 2020).

*New Leadership Styles Inspired by SDT*

A focus on the most cited studies that incorporate leadership and SDT reveals that SDT has inspired scholars to further delineate and refine different yet existing leadership styles, of which there are several examples in the literature. For example, building on the notion of intrinsic motivation, Fry, Vitucci, and Cedillo (2005, p. 835) defined *spiritual leadership* as comprising "the values, attitudes, and behaviors required to intrinsically motivate one's self and others in order to have a sense of spiritual survival" (i.e., well-being). By providing faith, hope, vision, and altruistic love, spiritual leaders are thought to elicit a sense of meaning in employees' work and lives, prompting belief that they are making a difference. Spiritual leaders also ensure employees feel understood and appreciated, such that they perceive themselves to be valuable members of the organization. In terms of SDT, spiritual leaders are therefore expected to satisfy employees' needs for autonomy, competence, and relatedness, which is supported by empirical research (Yang, Yang, & Gao, 2022). This is especially true in cultures that are lower in Hofstede's (2001) cultural dimension of power distance, potentially because in these cultures spiritual leadership traits are more conspicuous.

Focusing on the process of internalization, SDT also partly inspired the notion of *authentic leadership* (Walumbwa et al., 2008). Authentic leaders demonstrate self-awareness, relational transparency, internalized moral perspective, and balanced processing of information. In line with Kernis's (2003) model of authentic functioning, authentic leadership scholars assume that "when organizational leaders know and act upon their true values, beliefs, and strengths, while helping others to do the same, higher levels of employees' well-being will accrue, which in turn have been shown to positively impact follower performance" (Walumbwa et al., 2008, p. 91). In line with this position, authentic leadership has been positively associated with more autonomous relative to controlled motivation (Levesque-Côté et al., 2021) and with need satisfaction and employee performance (Leroy et al., 2015). Such effects are amplified when employees feel they are themselves authentic in their work environment (Leroy et al., 2015), which suggests a possible additive benefit between authenticity and autonomous motivation.

Basic psychological needs theory (Vansteenkiste, Soenens, & Ryan, this volume), a mini-theory within the broader SDT framework, inspired Schaufeli's (2015) *engaging leadership*. Engaging leaders are thought to motivate their followers by building enthusiasm for an important mission, connecting to their followers, and strengthening them by providing autonomy and delegating tasks. As such, they promote the satisfaction of their followers' basic needs for autonomy, relatedness, and competence, respectively. Empirical findings suggest that need satisfaction is the key process connecting engaging leadership with employee engagement (van Tuin, Schaufeli, Van den Broeck et al., 2020; van Tuin, Schaufeli, & van Rhenen, 2020). Other studies suggest that engaging leaders stimulate basic need satisfaction by increasing perceptions of job resources (e.g., autonomy, skill use) among followers (Rahmadani, Schaufeli, & Stouten, 2020).

*Understanding Motivational Processes*

Studies combining traditional leadership styles and SDT have also advanced understanding of the process through which leaders may impact employee motivation. For example, building on the intrinsic motivation theory of creativity (Amabile, 1979), Shin and Zhou (2003) argued that transformational leaders facilitate employee intrinsic motivation because transformational leaders enable them to better focus on the tasks at hand and thus develop interest in their work. Through transformational leadership, employees are also encouraged to challenge the status quo, develop curiosity, and experiment in their approach to work, all of which aids employees in their ability to focus on their work rather than on external contingencies. Notably, this effect is stronger for employees who are highly open to feedback and suggestions from their leaders, potentially because they have strong conservation values.

Relation-oriented leaders are also thought to facilitate intrinsic work motivation. Zhang and Bartol (2010), for example, showed that empowering leaders facilitate employee intrinsic motivation because they increase employees' psychological empowerment in how they approach their work, which includes feelings of self-determination and sense of choice (Spreitzer, 1995). This process, in turn, predicted employee creative process engagement, as well as leader-rated employee creativity (Zhang & Bartol, 2010). Together, these studies show that, across leadership styles, leaders may particularly motivate employees via providing freedom and autonomy.

Some research evidence suggests that transformational or ethical leaders may impact employee motivation by introducing structural changes to the way the jobs are designed (Piccolo & Colquitt, 2006). Such studies suggest that transformational leadership associates with employee intrinsic motivation via employees' perceptions of having motivating job characteristics: task variety, task identity, task significance, autonomy, and feedback. It remains an open question whether transformational leaders actively change the job design of employees (e.g., by regrouping tasks such that jobs become more varied; Parker, Andrei, & Van den Broeck, 2019) or whether they merely change employee appraisals and the accompanying meaning of the jobs. However, this line of research (see also, e.g., Fernet et al., 2015) indicates that the social and structural factors influencing employee motivation may also be mutually related.

## SDT-Based Conceptual Frameworks for Leadership Research

SDT-based leadership research began to emerge in the 1980s, with much of this work focusing on the importance of supporting individual autonomy as a route to intrinsic and autonomous forms of motivation. It can be traced back to the early studies of the motivational and well-being benefits of teacher supports for student autonomy in classrooms (e.g., Deci, Nezlek, & Sheinman, 1981; Deci, Schwartz et al., 1981), which later broadened into organizational research (see Deci, Connell, & Ryan, 1989).

In recent organizational studies, the most heavily studied leadership style within SDT is *leader autonomy support* (aka autonomy-supportive leadership or supervision), which is

viewed as a leader-initiated motivating style and a social-contextual motivational precursor to employee satisfactions of their basic needs, and in turn autonomous employee motivation (Deci et al., 2017; Slemp et al., 2018). In this sense, leader supports for basic needs are viewed as antecedent pathways to fuller internalization and thus more autonomous types of employee motivation (Deci et al., 2017).

In the workplace "leader autonomy support" is generally used to refer to a set of leader-initiated behaviors that promote a climate of trust and support within leader-worker relationships, thereby fostering more agentic, self-determined, and discretionary work behaviors (Slemp et al., 2018; Reeve, 2015). Specific behaviors thought to embody autonomy support in the workplace include acknowledging employee perspectives, encouraging self-initiation, offering opportunities for choice and input, avoiding the use of contingent rewards or sanctions to motivate behavior, and communicating in an informational rather than a controlling manner (Slemp et al., 2018; Su & Reeve; 2011).

By contrast, a *controlling leadership* style—typically considered the inverse of autonomy-supportive (Moreau & Mageau, 2012)—describes leaders imposing external pressure on employees to motivate specific and ostensibly desired behaviors. Thus, controlling leaders do not tend to consider employee needs, feelings, or motivations; rather, they treat employees as a means to an end (Deci & Ryan, 1987; Moreau & Mageau, 2012). Examples of controlling strategies to motivate behavior include threats of sanctions, intimidating behaviors, deploying pressure tactics to induce shame or guilt, or excessive forms of interpersonal control that constrain autonomy (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2009; Bartholomew et al., 2011; Moreau & Mageau, 2012). The use of contingent rewards, whereby leaders prompt specific job behaviors or outcomes via the promise of external incentives, is also considered to be controlling insofar as it limits employee autonomy (Deci & Ryan, 1980), as it may shift motivation to an external perceived locus of causality, thereby undermining intrinsic and autonomous forms of motivation (Deci et al., 1999; Deci, Koestner, & Ryan, 2001).

Research has shown positive effects of autonomy-supportive leader behavior on employee functioning, wellness, and internalized motivation (e.g., Deci, Ryan et al., 2001; Gillet et al., 2013; Liu, Chen, & Yao, 2011). In a recent meta-analysis, Slemp et al. (2018) showed leader autonomy support associates positively with employee basic needs for autonomy, competence, and relatedness, as well as autonomous forms of work motivation. They also showed positive associations with employee well-being, and negative associations with ill-being, such as burnout. In line with the universality assumption of SDT (Chirkov, Sheldon, & Ryan, 2010), these effects were not moderated by national culture, meaning effect sizes remained consistent irrespective of the cultural origin of the study. They also showed that effects were not moderated by leader proximity, suggesting that effects remained consistent when the leader was one's direct supervisor or someone more senior in the organizational hierarchy.

Recent research is beginning to explore other, similar moderation hypotheses of leader autonomy support in the workplace. For example, there is some evidence to suggest that autonomy support buffers the effect of role overload on burnout (e.g., Montani & Dagenais-Desmarais, 2018). That is, if overloaded employees work for an autonomy-supportive leader, they are less likely to suffer the exhaustive effects of burnout, potentially because their work is more likely to be autonomously motivated. Grounding their research in the job demands-resources model (Bakker & Demerouti, 2007), Chen, Shih, and Chi (2018) found similar results, demonstrating that leader autonomy support acts as a job resource that can boost work engagement, even when emotional job demands (e.g., customer misbehavior; unreasonable requests from clients) and job insecurity are high. Thus, leader autonomy support acts as a job resource that can buffer employees from the negative consequences of their job demands. Autonomy support also appears to interact with proactive behaviors in the workplace, such as job crafting (Slemp, Kern, & Vella-Brodrick, 2015) suggesting that when employees craft their work while managed by an autonomy-supportive leader, a synergistic effect emerges in which employees record higher well-being than if either job crafting or autonomy support were present in isolation.

While there exists a substantial body of research on the correlates and consequences of autonomy support (see Slemp et al., 2018), some related yet less studied leadership styles that also emerged within SDT are competence- and relatedness-supportive leadership styles. Collectively, these three clusters of leader behaviors are referred to as "need-supportive leadership" (Deci et al., 2017), reflecting their tendency to engender support for the autonomy, competence, and relatedness employee needs, respectively. Yet, SDT argues that autonomy-supportive leadership, because it includes understanding employees' perspectives, yields greater leader awareness and responsiveness to all three needs, including competence and relatedness (Ng et al., 2012; Slemp et al., 2018), explaining why it is the most frequent target of study (Ryan & Deci, 2017).

Generally speaking, "leader competence support" is used to refer to a cluster of leader behaviors that promote employee competence, growth, and mastery experiences in the workplace. They can involve, for example, the provision of clear and understandable guidelines and expectations, providing relevant constructive feedback, and providing opportunities for employees to develop job-related competencies (Tafvelin & Stenling, 2018). "Leader relatedness support" is generally used to refer to behaviors that foster a climate of respect, mutual caring, and interest within leader-worker relationships (Parfyonova et al., 2019). Example behaviors include demonstrating a genuine interest in and appreciation for employees, applying active listening, taking steps to spend time with employees, and demonstrating care and concern for employees' needs by acknowledging their feelings and expressing concerns (Tafvelin & Stenling, 2018).

*What Leads to Autonomy-Supportive Leader Behaviors?*

As a route to cultivating more autonomous work motivation in employees, studies have examined whether leaders can be trained to develop more need-supportive leadership styles in the workplace. Research in this area began with Deci et al. (1989), who tested a leadership training intervention focused on guiding leaders toward maximizing opportunities for employee initiative-taking (supporting autonomy), providing positive informational feedback (supporting competence), and promoting acceptance of employee needs and feelings (supporting relatedness). Thus, the training covered elements of need-supportive leadership that cut across all three basic needs, though this was referred to as "autonomy support" at the time. Results showed that subordinates perceived their leaders as more autonomy-supportive after the leadership training, which corresponded with elevated satisfaction with supervision, as well as job satisfaction and increased trust in leadership. They did not evaluate whether the training elevated perceptions of competence- or relatedness-supportive behaviors.

Since then, further leadership training studies have been conducted (see, e.g., Hardré & Reeve, 2009; Tafvelin, von Thiele Schwarz, & Stenling, 2019; Yong, Roche, & Sutton, 2019). Slemp et al. (2021) recently synthesized these studies in a qualitative systematic review and observed that while training interventions were generally effective at yielding benefits for participants, some mixed findings emerged. The authors concluded that effectiveness is likely moderated by several factors. For example, they argued that leadership training studies may be impacted by the samples in which changes were observed, with proximal (leader) training participants generally yielding stronger postintervention effect sizes than the more distal (subordinate) samples. They also observed that effects may be moderated by follow-up length, with longer follow-up periods generally yielding stronger results. This suggests a possible sleeper effect, which occurs in intervention research when effectiveness is enhanced only after a sufficient period of incubation (Frese & Zapf, 1988; Nesselroade, 1991). For leadership training studies, sufficient time is required for the benefits to trickle down to subordinates, and researchers need to allow for that process to fully transpire if they are to detect benefits at the subordinate level (Slemp et al., 2021). This is not unique to SDT-based leadership training studies, as meta-analyses of the benefits of general leadership training also tend to show smaller meta-analyzed effects at the subordinate level (e.g., Lacerenza et al., 2017).

## Future Research Directions

The aim of this chapter was to advance understanding of how leadership is studied using SDT as a guiding theory. We first provided insights about how SDT helps to gain understanding of more traditional leadership styles that have thus far dominated the work and organizational literature. We then delved deeper into the motivating impact of autonomy-supportive and controlling leadership, two leadership styles that emerged from SDT. Although both of these literatures have addressed the motivational impact of leaders

within organizations, they developed in parallel rather than being closely intertwined. Within both streams, researchers have invested considerable effort to uncover motivational consequences of different forms of leadership, often using cross-sectional designs at an individual level of analysis. Further questions remain about the unique variance in employee motivation attributable to these different leadership styles across these different literatures, and whether different conclusions would emerge if researchers use more advanced research designs. In this final section, we expand on these ideas and identify three areas of research that may be addressed in future leadership research involving an SDT perspective, which we suggest will help to further our understanding of how leaders can facilitate optimal forms of employee motivation.

### Research Area 1: Examining the Divergent Validity of Autonomy Support and Other Leadership Styles

From the overview of both streams in the literature, it becomes clear that various leadership styles and behaviors impact employee needs and (autonomous) motivation. This may, however, raise some questions regarding the distinctiveness of the various leadership styles in predicting motivation, including leader autonomy support. If autonomy-supportive leadership has similar associations with basic need satisfaction, motivation, well-being, and performance as, for example, transformational and/or servant leadership, and also strongly relates to these leadership styles, one may wonder whether scholars and practitioners should keep thinking of these leadership styles as conceptually distinct. Indeed, questions concerning the "old wine in new wineskins" phenomenon might be raised if these different literatures are not sufficiently integrated in future work.

This question becomes even more pertinent when one considers the substantial conceptual overlap between these leadership styles. While various studies have already lamented the proliferation and lack of differentiation of traditional leadership styles (Lemoine, Hartnell, & Leroy, 2019; van Knippenberg & Sitkin, 2013), we suggest that future research should examine the divergent validity of autonomy-supportive leadership against more traditional leadership styles. From our reading, autonomy-supportive leadership appears most closely aligned with relationship-oriented forms of leadership, such as servant and empowering leadership. These styles equally stress the importance of considering employee perspectives and providing choice as much as possible. However, autonomy-supportive leaders also share characteristics of change-oriented leadership styles such as transformational and charismatic leadership in that they stress providing rationales for requests, particularly when offering choice is not possible.

This may indicate that autonomy-supportive leadership represents the sweet spot where leader goals toward attending to their relationship with subordinates coexist with creating a shared vision for the future. Such overlap between change-oriented and relationship-oriented leadership is already apparent within transformational leadership, which includes individualized consideration alongside the change-oriented components

of idealized influence and inspirational motivation, with the former considered a relationship-oriented facet (Derue et al., 2011). Yet, autonomy-supportive leadership may represent *the* leadership style in which both aspects are apparent and thus might be the most predictive of employee motivation. However, to date, such a conclusion is highly speculative. Before such a claim can be made, future research needs to further empirically examine the aspects of these leadership styles that are unique or overlapping, with a view to better integrating these literatures.

### Research Area 2: Clarifying the Notion of Autonomy Support

In a first step to examine the differences between autonomy-supportive and other leadership styles, SDT scholars could seek further precision in the exact definition of leader autonomy support. For example, one issue is that autonomy-supportive leadership has been described in operational terms, listing a set of behaviors that autonomy-supportive leaders enact to facilitate optimal motivation (e.g., providing choice, giving a rationale when choice is not possible, being empathic). Exactly how these behaviors interact and combine to create the perceptions of autonomy support, and how this leads to need satisfaction and different types of motivation, is underdeveloped and could be addressed in ongoing work.

In refining leadership research models, scholars could also work toward greater clarity on the critical facets that should be included in autonomy support. Currently, definitions vary depending on the context being studied (Su & Reeve, 2011). For example, the use of noncontrolling language and patience is stressed for autonomy-supportive teachers (Reeve, 2009), whereas in the parenting (Grolnick & Apostoleris, 2002) and coaching (Mageau and Vallerand, 2003) literatures, encouraging problem-solving and providing opportunities for initiative-taking are typically emphasized. Similarly, while in the coaching literature it is highlighted that autonomy support entails the provision of choice within specific rules and limits (Mageau & Vallerand, 2003), in the leadership literature it is not necessarily stressed that the provision of choice occurs within certain boundaries (Gagné & Deci, 2005). Although these variations in the operational definitions of autonomy support may reflect context-specific adaptations, the literature would nonetheless benefit from scrutinizing the specific clusters of need-supportive behaviors across research domains to establish which clusters of behaviors are general across contexts and distinguish those that are context-specific.

SDT scholars may want to come to terms about the link between (leader) autonomy support and support for the competence and relatedness needs. SDT suggests that leader autonomy support is an important motivational precursor to the satisfaction of not only the need for autonomy but also the competence and relatedness needs (Ryan & Deci, 2017), which is also supported by available meta-analyses (e.g., Ng et al., 2012; Slemp et al., 2018). The connection with autonomy is clear: autonomy support opens possibilities

for more agentic, volitional behaviors at work because it unburdens employees from perceived external pressures about how they ought to think, feel, or behave—creating the perception that the self is the origin of behavior (Deci & Ryan, 1987). Yet, also implied by SDT is that it facilitates the competence and relatedness needs because autonomy support (1) involves the leader being receptive to and understanding of employees' conditions and (2) facilitates the necessary conditions that allow employees to self-govern how they pursue competence- and relatedness-supportive activities at work (Ryan & Deci, 2017).

What is less clear is whether the observed associations between autonomy support and the three needs are explained by the causal process proposed by SDT, or whether they are an artifact of the most prominent measures of leader behaviors in SDT. For example, the Work Climate Questionnaire (Baard, Deci, & Ryan, 2004) is the most frequently used measure of leader autonomy support in the workplace (see Slemp et al., 2018). Yet it contains items that closely resemble competence-supportive (e.g., "My manager made sure I really understood the goals of my job and what I need to do") and relatedness-supportive (e.g., "I feel that my manager cares about me as a person") leader behaviors. This may be inflating the meta-analyzed correlations with the competence and relatedness needs. Still, earlier measures of autonomy support, such as the Work Climate Scale (e.g., Deci, Ryan et al., 2001), as well as more recent measures that contain specifically purposed subscales to distinguish autonomy-supportive from competence- and relatedness-supportive leader behaviors (e.g., Parfyonova et al., 2019; Tafvelin & Stenling, 2018) also tend to yield strong associations between autonomy support and all three needs, endorsing the claims of SDT. While these more recent measures have added greater nuance in measuring leader behaviors consistent with optimal motivation, the three need-supportive leadership subscales are very strongly correlated ($r$'s typically > .80; Parfyonova et al., 2019; Tafvelin & Stenling, 2018), raising the possibility of what might be construed as construct redundancy (Banks et al., 2018). However, unlike many theories, SDT expects, and typically finds, very high correlations between perceived supports for these three basic need satisfactions when measured in a domain or in general, with correlations dropping in more momentary or situational assessments (Ryan & Deci, 2017). Establishing the relations of competence- and relatedness-supportive leader behaviors to autonomy support, and their unique effects on employee outcomes, remains a promising direction for ongoing work, along with consideration of the time frames of satisfaction measurements.

### Research Area 3: Using Stronger Research Designs

While the cross-sectional self-report associations between various leadership styles and employee motivation are well-established by now, less is known about how leadership dynamics may differentially influence motivational processes within groups, over time, and using different sources of measurement.

Unlike education-focused research (e.g., Jang, Kim, & Reeve, 2016; Jang, Reeve, & Deci, 2010), there is a dearth of multilevel studies in SDT that focus on leadership dynamics. This is an important issue given the fact that leadership itself is an inherently multilevel phenomenon (Yammarino & Dansereau, 2008). Thus, more research is needed to examine how leadership dynamics impact motivational processes at a group level, such as work teams. Such designs also better account for common method variance (Podsakoff et al., 2003) making a cumulative science more informative. The few existing multilevel studies have yielded some fascinating advances that future work could develop. For example, consistent with individual-level research, Liu et al. (2011) showed a positive effect of team-leader autonomy support on subordinate psychological empowerment and turnover. However, by using multilevel research with teams, they showed these effects were moderated by within-team dispersion in perceptions of autonomy support. In other words, their findings showed that while the absolute level of leader autonomy support impacts subordinate empowerment and turnover, at a team level this was moderated by the extent to which employees perceived this support to vary between team members. Similarly designed future research could incorporate dispersion features into team-level research to yield similar insights about whether various leadership styles exert differential impacts on basic needs, motivation, and well-being outcomes in work teams.

## CAUSAL RELATIONSHIPS

SDT makes strong claims about causality. In the leadership literature, leadership is positioned as an influential antecedent to employee basic need satisfaction, which, in turn, influences motivation, wellness, and behavioral outcomes (Deci et al., 2017). Yet the vast majority of studies have not used study designs that will allow confirmation of this basic causal process. Unlike comparable SDT literatures, such as healthcare, where several intervention-based meta-analyses of randomized controlled trials (RCTs) support the beneficial effects of training designed to engender need-supportive behavior (e.g., Gillison et al., 2019; Ntoumanis et al., 2021), in the organizational sciences only one RCT (e.g., Hardré & Reeve, 2009) and a handful of quasi-experimental trials (e.g., Deci et al., 1989; Forner, 2019; Tafvelin et al., 2019; Yong et al., 2019) have examined the effect of need-supportive leadership. Even fewer studies have used multiwave longitudinal designs together with appropriate statistical models to test causal relationships, as seen in various panel designs (see Hamaker, Kuiper, & Grasman, 2015; Zyphur, Allison et al., 2020; Zyphur, Voelkle et al., 2020). Confirmation of whether the causal benefits of specific leadership styles are consistent with the causal process proposed by SDT is an important opportunity for future work.

## SOURCES OF LEADERSHIP MEASUREMENT

Most leadership research in SDT invites individual employee observations about their leader's behavior as a basis for research, yet it remains less clear how research observations

are impacted when ratings of leadership are invited by different sources (e.g., self, sub-ordinates, peers, or superiors). It is likely that effect sizes will vary as a function of who is rating the style of leadership, which has been demonstrated in related research. For example, Harms and Credé (2010) showed that associations between both transformational and transactional leadership behaviors with emotional intelligence varied as a function of whether measures were completed by the same source or by different sources. Moderate to strong associations were observed when same-source ratings were used, and only small associations were observed when multisource ratings were used, likely because the latter better account for common method variance (Podsakoff et al., 2003). Whether SDT research incorporating multisource ratings of leadership would exert similar effects on basic needs, motivation, or wellness remains another unanswered question for future research. This could be addressed using more innovative designs that converge multiple perspectives of leadership, such as where the dyad is the unit of analysis.

## Conclusion

This chapter aimed to provide insight into the two productive yet relatively disparate streams of leadership research relevant to SDT. It showed how SDT has helped the general organizational behavior literature to understand the motivational impact of established leadership styles (e.g., transformational leadership, servant leadership), as well as shed light on the processes through which leaders may enhance employee motivation. The chapter also provided a brief overview of the literature on forms of leadership that focus on support for employee autonomy, competence, and relatedness needs. Providing a full overview of the literature on leadership and SDT falls beyond the scope of a single chapter, but these overviews already make clear that future research efforts may benefit from a closer integration of both research streams. Such future research may start with clarifying how autonomy-supportive leadership overlaps with or complements the broader leadership literature. Clarifying the unique and overlapping aspects of leader autonomy, competence, and relatedness support is also important. By improving our measurement and using more advanced research designs, we can more fully understand the impact of leaders on employee motivation and better facilitate and support optimal functioning in the workplace.

## References

Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J. R. J., & Reeve, J. (2019). Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. *Journal of Educational Psychology*, *111*(3), 497–521. https://doi.org/10.1037/edu0000293

Amabile, T. M. 1979. Effects of external evaluation on artistic creativity. *Journal of Personality and Social Psychology, 37*, 221–233.

Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, *34*(10), 2045–2068.

Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, *22*(3), 309–328. https://doi.org/10.1108/02683940710733115

Banks, G. C., Gooty, J., Ross, R. L., Williams, C. E., & Harrington, N. T. (2018). Construct redundancy in leader behaviors: A review and agenda for the future. *Leadership Quarterly*, *29*(1), 236–251. https://doi.org/10.1016/j.leaqua.2017.12.005

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, *37*(11), 1459–1473.

Bartholomew, K. J., Ntoumanis, N., & Thøgersen-Ntoumani, C. (2009). A review of controlling motivational strategies from a self-determination theory perspective: Implications for sports coaches. *International Review of Sport and Exercise Psychology*, *2*(2), 215–233. https://doi.org/10.1080/17509840903235330

Bass, B. (1998). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology, 8*, 9–32.

Chen, S. L., Shih, C. T., & Chi, N. W. (2018). A multilevel job demands-resources model of work engagement: Antecedents, consequences, and boundary conditions. *Human Performance*, *31*(5), 282–304. https://doi.org/10.1080/08959285.2018.1531867

Chiniara, M., & Bentein, K. (2016). Linking servant leadership to individual performance: Differentiating the mediating role of autonomy, competence and relatedness need satisfaction. *Leadership Quarterly*, *27*(1), 124–141. https://doi.org/10.1016/j.leaqua.2015.08.004

Chirkov, V. I., Sheldon, K. M., & Ryan, R. M. (2010). The struggle for happiness and autonomy in cultural and personal contexts: An overview. In V. I. Chirkov, K. M. Sheldon, & R. M. Ryan (Eds.), *Human autonomy in a cross-cultural context: Perspectives on the psychology of agency, freedom, and well-being* (pp. 1–32). Springer.

Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In *Advances in experimental social psychology* (Vol. 13, pp. 39–80). Academic Press.

Deci, E. L., Connell, J. P., & Ryan, R. M. (1989). Self-determination in a work organization. *Journal of Applied Psychology*, *74*(4), 580–590. https://doi.org/10.1037/0021-9010.74.4.580

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627–668.

Deci, E. L., Koestner, R., & Ryan, R. M. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research, 71*, 1–27. https://doi.org/10.3102/00346543071001001

Deci, E. L., Nezlek, J., & Sheinman, L. (1981). Characteristics of the rewarder and intrinsic motivation of the rewardee. *Journal of Personality and Social Psychology, 40*, 1–10. https://doi.org/10.1037/0022-3514.40.1.1

Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior, 4*, 19–43. https://doi.org/10.1146/annurev-orgpsych-032516-113108

Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, *53*(6), 1024–1037. https://doi.org/10.1037/0022-3514.53.6.1024

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry*, *11*(4), 227–268.

Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern Bloc country: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin, 27*(8), 930–942. https://doi.org/10.1177/0146167201278002

Deci, E. L., Schwartz, A. J., Sheinman, L., & Ryan, R. M. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology, 73*, 642–650. https://doi.org/10.1037/0022-0663.73.5.642

Derue, D. S., Nahrgang, J. D., Wellman, N., & Humphrey, S. E. (2011). Trait and behavioral theories of leadership: An integration and meta-analytic test of their relative validity. *Personnel Psychology*, *64*(1), 7–52. https://doi.org/10.1111/j.1744-6570.2010.01201.x

Eyal, O., & Roth, G. (2011). Principals' leadership and teachers' motivation: Self-determination theory analysis. *Journal of Educational Administration*, *49*(3), 256–275. https://doi.org/10.1108/09578231111129055

Fernet, C., Trépanier, S.-G., Austin, S., Gagné, M., & Forest, J. (2015). Transformational leadership and optimal functioning at work: On the mediating role of employees' perceived job characteristics and motivation. *Work & Stress*, *29*(1), 11–31. https://doi.org/10.1080/02678373.2014.1003998

Forner, V. (2019). *Reducing turnover in volunteer organisations: A leadership intervention based on self-determination theory* (Unpublished doctoral dissertation). University of Wollongong.

Frese, M., & Zapf, D. (1988). Methodological issues in the study of work stress: Objective versus subjective measurement of work stress and the question of longitudinal studies. In C. L. Cooper & R. Payne (Eds.), *Causes, coping, and consequences of stress at work* (pp. 375–411). Wiley.

Fry, L. W., Vitucci, S., & Cedillo, M. (2005). Spiritual leadership and army transformation: Theory, measurement, and establishing a baseline. *Leadership Quarterly*, *16*(5), 835–862. https://doi.org/10.1016/j.leaqua.2005.07.012

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, *26*(4), 331–362.

Gillet, N., Gagné, M., Sauvagère, S., & Fouquereau, E. (2013). The role of supervisor autonomy support, organizational support, and autonomous and controlled motivation in predicting employees' satisfaction and turnover intentions. *European Journal of Work and Organizational Psychology*, *22*(4), 450–460. https://doi.org/10.1080/1359432X.2012.665228

Gillison, F. B., Rouse, P., Standage, M., Sebire, S. J., & Ryan, R. M. (2019). A meta-analysis of techniques to promote motivation for health behaviour change from a self-determination theory perspective. *Health Psychology Review*, *13*(1), 110–130.

Grolnick W. S., & Apostoleris N. H. (2002). What makes parents controlling? In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 161–203). University of Rochester Press.

Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods, 20*(1), 102–116. https://doi.org/10.1037/a0038889

Hardré, P. L., & Reeve, J. (2009). Training corporate managers to adopt a more autonomy-supportive motivating style toward employees: An intervention study. *International Journal of Training and Development*, *13*(3), 165–184. https://doi.org/10.1111/j.1468-2419.2009.00325.x

Harms, P. D., & Credé, M. (2010). Emotional intelligence and transformational and transactional leadership: A meta-analysis. *Journal of Leadership & Organizational Studies*, *17*(1), 5–17.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations.* Sage.

Jang, H., Kim, E. J., & Reeve, J. (2016). Why students become more engaged or more disengaged during the semester: A self-determination theory dual-process model. *Learning and Instruction, 43*, 27–38. https://doi.org/10.1016/j.learninstruc.2016.01.002

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology*, *102*(3), 588–600. https://doi.org/10.1037/a0019682

Kanat-Maymon, Y., Elimelech, M., & Roth, G. (2020). Work motivations as antecedents and outcomes of leadership: Integrating self-determination theory and the full range leadership theory. *European Management Journal*, *38*(4), 555–564.

Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological inquiry*, *14*(1), 1–26.

Kovjanic, S., Schuh, S. C., & Jonas, K. (2013). Transformational leadership and performance: An experimental investigation of the mediating effects of basic needs satisfaction and work engagement. *Journal of Occupational and Organizational Psychology*, *86*, 543–555. https://doi.org/10.1111/joop.12022

Kovjanic, S., Schuh, S. C., Jonas, K., Van Quaquebeke, N., & Van Dick, R. (2012). How do transformational leaders foster positive employee outcomes? A self-determination-based analysis of employees' needs as mediating links. *Journal of Organizational Behavior*, *33*, 1031–1052. https://doi.org/10.1002/job

Lacerenza, C. N., Reyes, D. L., Marlow, S. L., Joseph, D. L., & Salas, E. (2017). Leadership training design, delivery, and implementation: A meta-analysis. *Journal of Applied Psychology, 102*, 1686–1718. https://doi.org/10.1037/apl0000241

Lemoine, G. J., Hartnell, C. A., & Leroy, H. (2019). Taking stock of moral approaches to leadership: An integrative review of ethical, authentic, and servant leadership. *Academy of Management Annals*, *13*(1), 148–187. https://doi.org/10.5465/annals.2016.0121

Leroy, H., Anseel, F., Gardner, W. L., & Sels, L. (2015). Authentic leadership, authentic followership, basic need satisfaction, and work role performance. *Journal of Management*, *41*(6), 1677–1697. https://doi.org/10.1177/0149206312457822

Levesque-Côté, J., Fernet, C., Morin, A. J. S., & Austin, S. (2021). On the motivational nature of authentic leadership practices: A latent profile analysis based on self-determination theory. *Leadership & Organization Development Journal*, *42*(2), 178–194. https://doi.org/10.1108/LODJ-12-2019-0522

Liu, D., Chen, X. P., & Yao, X. (2011). From autonomy to creativity: A multilevel investigation of the mediating role of harmonious passion. *Journal of Applied Psychology*, *96*(2), 294–309. https://doi.org/10.1037/a0021294

Mageau, G. A., & Vallerand, R. J. (2003). The coach-athlete relationship: A motivational model. *Journal of Sports Science, 21*(11), 883–904. https://doi.org/10.1080/0264041031000140374

Montani, F., & Dagenais-Desmarais, V. (2018). Unravelling the relationship between role overload and organizational citizenship behavior: A test of mediating and moderating effects. *European Management Journal*, *36*(6), 757–768. https://doi.org/10.1016/j.emj. 2018.03.001

Moreau, E., & Mageau, G. A. (2012). The importance of perceived autonomy support for the psychological health and work satisfaction of health professionals: Not only supervisors count, colleagues too! *Motivation and Emotion*, *36*(3), 268–286. https://doi.org/10.1007/s11031-011-9250-9

Nesselroade, J. R. (1991). Interindividual differences in intraindividual change. In L. M. Collins & J. L. Horn (Eds.), *Best methods for the analysis of change: Recent advances, unanswered questions, future directions* (pp. 92–105). American Psychological Association.

Ng, J. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-determination theory applied to health contexts: A meta-analysis. *Perspectives on Psychological Science, 7*(4), 325–340. https://doi.org/10.1177/1745691612447309

Ntoumanis, N., Ng, J. Y., Prestwich, A., Quested, E., Hancox, J. E., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Lonsdale, C., & Williams, G. C. (2021). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health Psychology Review*, *15*(2), 214–244.

O'Donoghue, D., & van der Werff, L. (2021). Empowering leadership: Balancing self-determination and accountability for motivation. *Personnel Review, 51*(4), 1205–1220. https://doi.org/10.1108/PR-11-2019-0619

Parfyonova, N. M., Meyer, J. P., Espinoza, J. A., Anderson, B. K., Cameron, K. A., Daljeet, K. N., & Vaters, C. (2019). Managerial support for employees' psychological needs: A multidimensional approach. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement*, *51*(2), 122.

Parker, S. K., Andrei, D. M., & Van den Broeck, A. (2019). Poor work design begets poor work design: Capacity and willingness antecedents of individual work design behavior. *Journal of Applied Psychology*, *104*(7), 907–928. https://doi.org/10.1037/apl0000383

Piccolo, R. F., & Colquitt, J. A. (2006). Transformational leadership and job behaviors: The mediating role of core job characteristics. *Academy of Management journal*, *49*(2), 327–340.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879.

Rahmadani, V. G., Schaufeli, W. B., & Stouten, J. (2020). How engaging leaders foster employees' work engagement. *Leadership and Organization Development Journal*, *41*(8), 1155–1169. https://doi.org/10.1108/LODJ-01-2020-0014

Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, *44*(3), 159–175.

Reeve, J. (2015). Giving and summoning autonomy support in hierarchical relationships. *Social and Personality Psychology Compass*, *9*(8), 406–418. https://doi.org/10.1111/ spc3.12189

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation development and wellness*. Guilford.

Schaufeli, W. B. (2015). Engaging leadership in the job demands-resources model. *Career Development International*, *20*(5), 446–463. https://doi.org/10.1108/CDI-02-2015-0025

Shin, S. J., & Zhou, J. (2003). Transformational leadership, conservation, and creativity: Evidence from Korea. *Academy of Management Journal*, *46*(6), 703–714. http://www.jstor.com/stable/30040662

Slemp, G. R., Kern, M. L., Patrick, K. J., & Ryan, R. M. (2018). Leader autonomy support in the workplace: A meta-analytic review. *Motivation and Emotion*, *42*(5), 706–724. https://doi.org/10.1007/s11031-018-9698-y

Slemp, G. R., Kern, M. L., & Vella-Brodrick, D. A. (2015). Workplace well-being: The role of job crafting and autonomy support. *Psychology of Well-Being*, *5*(1), 1–17. https://doi.org/10.1186/s13612-015-0034-y

Slemp, G. R., Lee, M. A., & Mossman, L. H. (2021). Interventions to support autonomy, competence, and relatedness needs in organizations: A systematic review with recommendations for research and practice. *Journal of Occupational and Organizational Psychology*, *94*(2), 427–457. https://doi.org/10.1111/joop.12338

Slemp, G. R., Zhao, Y., Hou, H., & Vallerand, R. J. (2021). Job crafting, leader autonomy support, and passion for work: Testing a model in Australia and China. *Motivation and Emotion*, *45*(1), 60–74. https://doi.org/10.1007/s11031-020-09850-6

Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal*, *38*(5), 1442–1465..

Su, Y. L., & Reeve, J. (2011). A meta-analysis of the effectiveness of intervention programs designed to support autonomy. *Educational Psychology Review*, *23*(1), 159–188. https://doi.org/10.1007/s10648-010-9142-7

Tafvelin, S., & Stenling, A. (2018). Development and initial validation of the Need Satisfaction and Need Support at Work Scales: A validity-focused approach. *Scandinavian Journal of Work and Organizational Psychology*, *3*(1), 1–14. https://doi.org/10.16993/ sjwop.30

Tafvelin, S., von Thiele Schwarz, U., & Stenling, A. (2019). Leadership training to increase need satisfaction at work: A quasi-experimental mixed method study. *Frontiers in Psychology, 10*, 2175. https://doi.org/10.3389/fpsyg.2019.02175

Van den Broeck, A., Carpini, J. A., & Diefendorff, J. (2019). Work motivation. In R. M. Ryan (Ed.), *The Oxford handbook of human motivation* (pp. 506–524). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190666453.013.27

Van den Broeck, A., Ferris, D. L., Chang, C.-H., & Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *Journal of Management*, *42*(5), 1195–1229. https://doi.org/10.1177/0149206316632058

Van den Broeck, A., Howard, J. L., Van Vaerenbergh, Y., Leroy, H., & Gagné, M. (2021). Beyond intrinsic and extrinsic motivation: A meta-analysis on self-determination theory's multidimensional conceptualization of work motivation. *Organizational Psychology Review*, *11*(3), 240–273. https://doi.org/10.1177/20413866211006173

Van Dierendonck, D., Stam, D., Boersma, P., de Windt, N., & Alkema, J. (2014). Same difference? Exploring the differential mechanisms linking servant leadership and transformational leadership to follower outcomes. *Leadership Quarterly*, *25*(3), 544–562. https://doi.org/10.1016/j.leaqua.2013.11.014

van Knippenberg, D., & Sitkin, S. B. (2013). A critical assessment of charismatic-transformational leadership research: Back to the drawing board? *Academy of Management Annals*, *7*(1), 1–60. https://doi.org/10.1080/19416520.2013.759433

van Tuin, L., Schaufeli, W. B., Van den Broeck, A., & van Rhenen, W. (2020). A corporate purpose as an antecedent to employee motivation and work engagement. *Frontiers in Psychology*, *11*. https://doi.org/10.3389/fpsyg.2020.572343

van Tuin, L., Schaufeli, W. B., & van Rhenen, W. (2020). The satisfaction and frustration of basic psychological needs in engaging leadership. *Journal of Leadership Studies*, *14*(2), 6–23. https://doi.org/10.1002/jls.21695

Walumbwa, F. O., Avolio, B. J., Gardner, W. L., Wernsing, T. S., & Peterson, S. J. (2008). Authentic leadership: Development and validation of a theory-based measure. *Journal of Management*, *34*(1), 89–126. https://doi.org/10.1177/0149206307308913

Yammarino, F. J., & Dansereau, F. (2008). Multi-level nature of and multi-level approaches to leadership. *Leadership Quarterly*, *19*(2), 135–141. https://doi.org/10.1016/j.leaqua.2008.01.001

Yang, J., Yang, F. & Gao, N. (2022) Enhancing career satisfaction: The roles of spiritual leadership, basic need satisfaction, and power distance orientation. *Current Psychology*, *41*, 1856–1867. https://doi.org/10.1007/s12144-020-00712-5

Yong, A., Roche, M., & Sutton, A. (2019). Training and maintaining autonomy-supportive supervisory style in low-skilled occupations. *Journal of Management & Organization*, 1–19. https://doi.org/10.1017/jmo.2019.67

Zhang, X., & Bartol, K. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management*, *53*(1), 107–128. https://doi.org/10.1108/dlo.2010.08124ead.007

Zyphur, M. J., Allison, P. D., Tay, L., Voelkle, M. C., Preacher, K. J., Zhang, Z., Hamaker, E. L., Shamsollahi, A., Pierides, D. C., Koval, P., & Diener, E. (2020). From data to causes I: Building a general cross-lagged panel model (GCLM). *Organizational Research Methods*, *23*(4), 651–687. https://doi.org/10.1177/10944 28119847278

Zyphur, M. J., Voelkle, M. C., Tay, L., Allison, P. D., Preacher, K. J., Zhang, Z., Hamaker, E. L., Shamsollahi, A., Pierides, D. C., Koval, P., & Diener, E. (2020). From data to causes II: Comparing approaches to panel data analysis. *Organizational Research Methods*, *23*(4), 688–716. https://doi.org/10.1177/109442811 9847280

# How to Motivate People to Care about Prejudice Reduction in the Workplace

Nicole Legate *and* Netta Weinstein

## Abstract

Despite investing billions of dollars annually, workplace efforts to curb prejudice and discrimination typically fall short of creating effective or long-lasting change. This chapter uses insights from self-determination theory to understand why that is, and suggests the remedy is to motivate employees to *care* about prejudice reduction. Workplaces can inspire this type of motivation by supporting employees' needs for autonomy (aligning prejudice reduction with people's core values and beliefs), competence (providing concrete guidance and skills to change), and relatedness (fostering connections with the motivator and diverse others). The chapter reviews the specific need-supportive strategies that promote motivation to care about prejudice reduction and what these might look like in the context of workplace diversity initiatives. It discusses evidence for existing need-based prejudice-reduction approaches, including within policing, an organizational setting in which prejudice reduction is of utmost importance. It advocates that organizations infuse these motivational strategies into ongoing diversity initiatives to inspire long-lasting change.

**Key Words:** motivation, prejudice, racism, diversity, unconscious bias, self-determination theory

Despite increasing diversity (Tossi, 2012), prejudice in the workplace on the basis of sex, gender identity, race, ethnicity, disability, and religion continues to be a widespread problem. Prejudiced attitudes—negative attitudes about a group and the individuals belonging to that group (Davey, 1981)—have been explained as resulting from structural and cultural factors like laws, policies, and established norms that systematically advantage some groups and disadvantage others, interpersonal interactions throughout development, as well as processes internal to the individual (Fiske, 1998). Not surprisingly, prejudiced attitudes can influence people's behavior at work, and billions of dollars are invested in workplace diversity and prejudice-reduction efforts each year (Staley, 2017). However, these efforts to curb workplace prejudice tend to fall short (Dobbin & Kalev, 2016, 2018). As one example of this, a recent meta-analysis found no decline in racial discrimination in hiring toward African American applicants in the United States in the 25-year period

they examined (Quillian et al., 2017). Why do racism and other forms of prejudice and discrimination persist despite increasing efforts to eradicate them?

In this chapter, we review common approaches used in workplaces to tackle prejudice and argue that, though well-intentioned, they are missing a critical ingredient necessary for long-term change: motivation. Using insights from self-determination theory (SDT; Ryan & Deci, 2017), we argue that the most effective challenge to an individual's prejudice comes from appealing to forces already *within* the individual. We make the case that in order for diversity training and other workplace diversity initiatives to be effective, they must support people's needs for autonomy (aligning with their core values and beliefs), competence (providing concrete guidance and skills to change), and relatedness (fostering connection with the motivator and diverse others). We further explain two reasons need-supportive strategies work: they reduce defensiveness, a common obstacle for diversity trainings and initiatives, and enhance people's autonomous motivation for prejudice reduction. We then review the specific need-supportive strategies that organizations can apply to their diversity efforts to motivate people to *care* about the problem of prejudice and to actively root it out of the workplace. Finally, we review existing evidence for this motivational approach for prejudice reduction, including in policing, a setting where prejudice reduction is of utmost importance.

## How Prejudice Is Tackled in the Workplace

We focus on prejudice reduction in the workplace, a domain of life which has a concrete need for meeting this challenge and infrastructure for doing so. Organizations have good reasons to promote an inclusive climate: creating a workplace where employees are free from harassment and discrimination, endorsing "socially conscious" values to attract diverse talent and consumers, and avoiding lawsuits and image problems caused by public incidents of discrimination (Dover, Kaiser, & Major, 2020). To achieve this, organizations must get employees on board with these goals and, at minimum, curb prejudiced workplace behaviors such as biased hiring and promotion practices and hurtful or demeaning language and humor (Gelfand et al., 2005). Although there is not a one-to-one correspondence between attitudes and behavior, attitudes can underlie and drive these behaviors, and arguably, tackling the behavior without effectively changing the underlying attitude will not likely yield long-term success (Ajzen & Fishbein, 1977; Chang et al., 2019).

Organizations generally take two main approaches that tackle problems of prejudice, and ideally, they do both: diversity trainings and changes to the broader workplace culture around issues of diversity and inclusion. Diversity training, which is often used interchangeably in the literature with 'antibias training' and 'inclusion training', refers to interventions intended to reduce prejudice and improve inclusion across diverse groups in the workplace. Approaches to these trainings vary widely, and there is little systematization or tracking of the components that do and do not work. Reviews of workplace diversity trainings show that common elements include education, contact with diverse groups, encouraging attendees to see diverse others' perspectives, and a focus on multiculturalism

(recognizing and celebrating group difference; FitzGerald et al., 2019; Kalev, Dobbin, & Kelly, 2006; Kalinoski et al., 2013).

The most ubiquitous approach to reducing prejudice involves challenging unconscious bias (automatic negative responses to outgroups) by bringing the biases and their negative consequences to awareness (Fassinger, 2008). Because of the promising theoretical basis of this work (Greenwald & Krieger, 2006) and the relative ease by which it can be implemented in real-world settings, billions of dollars have been invested in unconscious bias training. But despite its promise, it has shown little success in making meaningful or lasting change (Noon, 2018), or arguably, any change at all (Lai et al., 2016), and regulators are now calling for it to be dramatically reformed or scrapped altogether (e.g., Lopez, 2020).

There is also increasing recognition that trainings will not change the problem of prejudice without making changes to the broader workplace climate (Applebaum, 2019; Dobbin & Kalev, 2018). The workplace culture encompasses policies against discrimination, official communications about the organization's commitment to diversity and inclusion, and organizational initiatives such as leadership positions within the organization dedicated to diversity and inclusion (Kalev et al., 2006). It can also include more informal aspects such as organizational norms and informal communication among employees. One measure that organizations use to tackle the issue of prejudice and discrimination is sanctioning those who violate workplace antidiscrimination policies. Provided there is compelling evidence of biased behaviors, sanctions can include demotion, losing opportunities for career advancement, unpaid suspensions, or termination of employment. It is reasonable and appropriate to impose sanctions in response to prejudiced actions, and not doing so can send the message that the organization does not take acts of discrimination seriously. However, this common and intuitively appealing strategy has proven challenging and often ineffectual. In a number of organizational settings, researchers have found that the fear of sanctions fails to ensure workers' cooperation (De Lara, 2006), particularly if the threatening policy is perceived to be unjust (Ball, Trevino, & Sims, 1994).

### What's Missing? Motivation

Using insights from SDT, we believe that existing approaches are missing critical elements that all coalesce around one broad shortcoming: they do not motivate people. Reviews of antibias trainings come to the same conclusion: motivation is a crucial ingredient that is missing from these trainings, rendering them less effective as a result (Carter, Onyeador, & Lewis, 2020; Dobbin & Kalev, 2018; Hagiwara et al., 2020). We argue that organizations can motivate buy-in from employees through both antibias trainings and the broader workplace climate to *care* about the problem of prejudice and to actively reduce it in their workplace. A lack of buy-in can set trainings and initiates up for failure from the start. For example, presenting people with information about the pervasiveness of sexism or the nuances of how racism is manifested (e.g., it is more than expressions of hatred or malice) in a training can fall flat if we have not first achieved buy-in. Worse, without doing

the motivational groundwork, these trainings and diversity initiatives can make people feel accused (e.g., "I'm not a racist") or defensive (Howell & Ratliff, 2017; Onyeador, Hudson, & Lewis, 2021), and they can backfire, sending a message that is the opposite of what was intended ("White people are treated unfairly"; Dover et al., 2020). Together, this previous work highlights the need for supportive climates that motivate people to generate positive change and avoid harm.

### What Do We Mean by "Motivation"?

When we talk about motivation being missing from most diversity trainings and workplace initiatives, we are referring to motivation that is autonomous, or aligned with people's deeply held values and beliefs. When people are autonomously motivated, they have internalized the value and importance of the change. Deeply autonomous motivation is also integrated with other important values and identities that the person has (e.g., Wilson et al., 2006). Those who are autonomously motivated see minimizing prejudice and promoting inclusivity as important tasks, and ones that are well-aligned with their core values, beliefs, and identities. This is in contrast to motivation that is controlled, or not aligned with the self. When people act from controlled motivation, they feel pressure to change due to direct demands from others, or they act to avoid feelings of shame or guilt (self-imposed pressures and demands that echo the voices of others). People who are controlled in their motivation to reduce prejudice are doing so to avoid feeling guilty or being looked down on by others, or because they fear they will get in trouble if they do not. Distinguishing these two types of motivation is key because autonomous and controlled motivation have different implications for change in the short and long term.

Building on initial work by Plant and Devine (1998) contrasting external with internal, or personal, reasons for reducing prejudice, work by Legault and colleagues has led the way in differentiating autonomous and controlled motivations for prejudice reduction (see review in Legault & Amiot, 2014). The authors found that autonomous motivation predicts lower prejudice compared to controlled motivation in the form of lower implicit and explicit bias (Legault et al., 2007), and less interracial anxiety and negative outgroup affect (Legault & Green-Demers, 2012). Importantly, the authors also identified that autonomous motivation to reduce one's prejudice is linked to more automatization of prejudice regulation, so that even when individuals were depleted, they were able to self-regulate and avoid acting on biases (Legault et al., 2007). Legault's work underscores a need to fuel autonomous motivation for a deep and long-lasting commitment to prejudice reduction, even when no one is looking.

### Reducing Defensiveness and Defiance

Some people already care about prejudice reduction, and we do not have to work very hard to achieve their buy-in or autonomous motivation. How do we motivate those who

do not already care about prejudice reduction, and those more extreme, who deny that there is a problem worth tackling? These groups may be more likely to feel defensive or self-protective when faced with workplace prejudice-reduction efforts (Hart, 2014). Therefore, reducing defensiveness becomes a critical task, yet it has received surprisingly little attention in the context of prejudice-reduction efforts.

The topic of prejudice can make people defensive and deny that there is a problem in their workplace or in themselves that needs addressing (Dover et al., 2020). For one, it is not socially acceptable to express one's prejudice, and as a result, people want to appear unbiased in front of others (Whitley & Kite, 2016). This makes talking openly about prejudiced attitudes that one wants to change difficult and risky. As well, people may have trouble admitting to themselves that they have a prejudice, as it may stand in conflict with how they think of themselves (e.g., "I'm a good person"; Weinstein, Deci, & Ryan, 2011). Further, because of public incidents of prejudice and discrimination, organizations face a lot of pressure to be "bias-free" that trickles down to employees. As a result of these social pressures, people may not feel safe or able to grapple with the prejudice they have and how it might impact their behavior.

To engage with this challenging and uncomfortable topic, it is critical to first reduce feelings of defensiveness by creating an open, nonjudgmental climate. This allows people to critically examine themselves, see their imperfections, and eventually rethink assumptions (Itzchakov et al., 2020). When individuals feel understood and accepted, they are less likely to reject messages from motivators (Vansteenkiste et al., 2014). In this way, we see the strategies of perspective-taking and avoiding pressure and shame reviewed below as being particularly effective at reducing defensiveness and helping people be open to self-examination. These strategies are essential because people shut down when they feel like they are not being heard or feel put down (Bentley, 2012; Jacobs, 1995).

Without an open climate, change attempts can invoke a threat response that elicits defiance, or doing the opposite of what is being requested (Brehm, 1989; Hodgins, Yacko, & Gottlieb, 2006). In the context of prejudice reduction, defiance can have harmful real-world consequences, resulting in reduced work engagement and, worse, feelings of resentment and even greater prejudice toward vulnerable groups. The conclusion is in line with lab research showing that controlling prejudice-reduction efforts can backfire and increase prejudiced attitudes relative to a neutral condition (Legault, Gutsell, & Inzlicht, 2011). Therefore, we see creating an open and nonjudgmental climate as essential to getting people to engage with this challenging topic in a way that could lead to sustained motivation for prejudice reduction.

## How Do You Motivate Change?

Understanding that having more autonomous versus controlled motivation for regulating one's prejudice is important for long-term prejudiced attitude change and that defensiveness

can get in the way of change efforts, it seems important to outline the social environmental conditions that reduce defensiveness and promote autonomous motivation. Decades of research in SDT show that change attempts are most successful when people's basic needs for autonomy, competence, and relatedness are supported. Supporting people's autonomy, or their need to behave in line with their authentic self and act on their values and beliefs, activates autonomous motivation connected to core values held by nearly everyone to be egalitarian and kind to others (Amiot et al., 2012). Supporting the need for competence, or to feel capable and effective, is also critical because people must feel they have the ability, not just the desire, to effectively tackle prejudice reduction. Lastly, supporting relatedness, or feeling close and connected to others, promotes a sense of alignment with the motivator and a perception that one is part of a team that drives positive change.

Indeed, the importance of need-supportive strategies has been evidenced in other domains where motivators attempt to change behaviors, particularly in the domain of healthcare (Hagger & Protogerou, 2020), including in smoking cessation (Williams & Deci, 2001), problematic drinking (Resnicow & McMaster, 2012), and exercise (Wilson & Rodgers, 2004). Few studies have tested this in the realm of prejudiced or inclusive attitudes, but those that have suggest that need-supportive strategies are promising (Moore et al., 2020; Weinstein et al., 2021). Although prejudice reduction is different from the types of behavior change commonly studied (e.g., healthcare behaviors such as reducing smoking or problematic drinking), several key features are shared. First, in both contexts, one is motivating familiar and identity-relevant behaviors that individuals seek to maintain on some level. For example, both smoking and prejudice are closely connected to people's social identity (Smith, 1993). Second, both can be met with negative judgments by others since they are considered moral topics (Killen & Cooley, 2014; Pennock et al., 2002). Finally, it is common and appealing for people to try to motivate both through criticism and threats of negative consequences (Potter-Efron & Carruth, 2014). Therefore, we argue that a lot can be learned about how to reduce prejudice from these behavior-change domains in which SDT has been applied. Despite this, we must recognize that attitude change in organizational settings is a specific application of motivational change approaches that has its nuances. Herein, we describe the specific motivational strategies that drive attitudinal change around prejudice reduction. We conceptualize them as interrelated strategies that work to achieve buy-in and reduce defensiveness in complementary ways.

### Need-Supportive Strategies

**Avoid pressure and shame.** It is understandable that when colleagues and leaders in an organization see prejudiced behaviors, they respond by shaming and pressuring the offender, and they try to prevent such behaviors through the same mechanisms. Prejudice is easy to moralize. As compared to more minor transgressions, for example making personal phone calls at work or dressing unprofessionally, expressions of prejudice tap strongly

into moral values and emotions. Moral emotions may be understood as linked to the interests of society and individuals (Haidt, 2003), and shame, in particular, is reflected in public exposure and disapproval because an individual violated the social order (Tangney, Stuewig, & Mashek, 2007). It makes sense that prejudice would activate these moral emotions, then, as prejudice threatens cohesion of the organizational community and the well-being of its members.

A second reason that pressure and shame may be commonplace in workplace contexts is that there is likely a trickle-down effect of pressure and shame from the organizational level to the individuals being motivated across ranks. Studies in organizations show positive trickle-down effects like feeling empowered (Byun et al., 2020), along with negative ones like pressure, especially in a high-stakes environment (e.g., Bouwma-Gearhart, 2010). There are high stakes of public incidents of prejudice and discrimination that organizations face, such as lawsuits, losing clientele, and public shaming (Dover et al., 2020). To the extent that organizations are concerned with this possibility, shame may be passed down from the higher ranks throughout the organization in the context of supervisory-employee relationships and in organization-level decision-making.

While pressure and shame are understandable reactions, they are unlikely to get people on board with a change. When people feel shamed, they are motivated to hide from and deny the situation that gave rise to the feeling (Tangney, 1993). In organizational climates, research findings similarly show that motivating through pressure can alienate those being motivated (Moran et al., 2012), and in relation to behavior, can breed burnout (Lemyre, Treasure, & Roberts, 2006) and antisocial behavior (Hodge & Lonsdale, 2011). Even in the specific context of attitude change, pressuring motivational messages can not only fail to change attitudes but can also backfire and engender *more* prejudice (Legault et al., 2007). In other words, pressure and shame can breed defensiveness and defiance.

However, this issue is not simple. Shame has been shown to activate prosocial behavior, but only in individuals who already engage in or endorse the behavior as valuable (Panagopoulos, 2010). Shame can be a powerful, and sometimes necessary, tool for producing accountability for change at the organizational level (Kornhaber, 2020). Furthermore, the feeling of guilt can activate moral behavior (Tangney et al., 2007), particularly if the individual is otherwise amotivated to behave morally. In our research, although motivators' guilt and shame backfired when they attempted to regulate bullying behaviors, threat of punishment, another pressuring motivational tactic, was related to less bullying. It is possible that punishment linked to positive outcomes because not using punishments in this context may function to condone antisocial behavior (Legate, Weinstein, & Przybylski, 2019). Recognizing these nuances, the key to motivating prejudice reduction may lie in setting high expectations and reasonable consequences while providing strategies that support needs.

**Support choice.** From the perspective of SDT, though shaming undermines autonomous motivation, supporting choice enhances it. Feeling choiceful allows individuals to consider what their specific motivations are for behavior, and they therefore have the opportunity to connect with reasons and values for action. If they are choiceless in their actions, individuals cannot experience being the agent of change. For these reasons, when individuals feel they can be choiceful in their actions, they are more engaged in the process of change and self-improvement (Katz & Assor, 2007).

To support individuals as change agents, motivators underline choice in action (Murray et al., 2019). For example, in healthcare settings, offering the choice *not* to change typically motivates people to change, aligning their actions with healthcare providers' goals (Williams et al., 2006). Clarifying what choice means in the context of prejudice reduction in organizational settings is critical, however. Organizations cannot offer employees the choice of being prejudiced or not; doing so would sanction unacceptable attitudes and behaviors. Therefore, motivators can place emphasis on the choice to *embrace* prejudice-reduction efforts. Whether people embrace prejudice-reduction efforts or merely comply with policy is a real choice that individuals have. Even when something is mandated, people can be more or less endorsing of it (Legate & Weinstein, 2021); it is the subjective experience, not the objective one, that drives behavior.

**Give a meaningful rationale.** Easing off the pressure and supporting choice is not enough to motivate action, but it will open the door for strategies that inspire and energize. One such strategy is to provide a rationale, or a compelling reason or set of reasons, for change (Schartel, 2012). When motivators provide reasons for behavior, it helps those being motivated to understand the importance and purpose of their effort. This understanding is crucial to buy-in because it provides a legitimate reason for action. Without explanations, those being motivated have no reason to take action, besides any external forces acting on them (Reeve et al., 2002; Vansteenkiste et al., 2004). Since personally held values drive internalized, autonomous motivation to reduce prejudice, compelling reasons spark the internal debate that founds those values.

Legitimate reasons are recognized as a source of buy-in in clinical approaches, as well, and evidence suggests that clients who agree with the reasons for changing their behavior have better treatment outcomes (Ilardi & Craighead, 1994). In the workplace, leaders' rationales are understood in terms of "sensemaking" when enacting changes (Kraft, Sparr, & Peus, 2018). In both therapy and workplace contexts, communicating a real need to pursue a common goal helps individuals make sense of the goal and experience themselves as partners in executing it. Building on this work, we argue that certain conditions must be met for a rationale to be effective. First, the individual communicating the rationale must be seen to be genuine, a legitimate source of information that can communicate moral guidance. Second, the reasons themselves must be seen to be legitimate and sufficient to warrant the change. We argue that reasons that feel "off the shelf," are deemed

outdated, or are out of touch with the lived reality of the people involved will not produce buy-in. In order to sink in, the reasons for increasing inclusion with the organization must resonate with those being motivated.

**Activate inclusive values.** Discussions of autonomous motivation often touch on the importance of behaving in line with one's deeply held values (Koestner et al., 2008), but often, how to tap into people's values is not directly addressed in autonomy-supportive strategies aimed at behavioral change. In addition to the strategies outlined above, we argue that activating values is crucial for autonomous motivation in the context of prejudice reduction (see Assor et al., 2020 for an example of how to do this). This may be especially true for those who do not already care about the issue of prejudice, but we suspect that it would also strengthen motivation for those who do care. In this way, we believe it is critical for people to explore how prejudice reduction may fit in with their core values, and how current prejudiced attitudes or behaviors may be in conflict with those values.

Why would activating values be effective in reducing prejudice? Values are trans-situational goals that serve as guiding principles throughout life (Schwartz, 1992) and are understood to be core aspects of one's self-concept (Hitlin, 2003). Most people have deep-rooted values for equality and inclusivity (Amiot et al., 2012). Other work shows that many endorse self-transcendence values that are diametrically opposed to prejudice: benevolence, which involves care and concern for the welfare of those with whom one frequently interacts, and universalism, showing tolerance and concern for all people and even out-group members. When these values are made salient to individuals, they are more likely to behave in accord with them; this is especially true for those values that are central to the self-concept (Verplanken & Holland, 2002). By activating core values, motivators can change attitudes and behavior in partnership with the self (Sagiv et al., 2017). Given that most people value inclusiveness and kindness, when they are able to reflect on their prejudices, these prejudices do not hold up (Itzchakov et al., 2020). In other words, most people will naturally move toward inclusivity when they reflect on their deeply held values and beliefs (Ryan & Hawley, 2016).

**Take the perspective of those being motivated.** A last important, and perhaps counterintuitive, autonomy-supportive strategy is to understand the perspective of individuals being asked to tackle their prejudices. Prejudice reduction is difficult and effortful; it is a lifelong commitment to break habits, and that may feel threatening and alienate individuals from others in their social sphere who share their worldview (Dasgupta, 2013; Devine et al., 2012). Although it is critically important that this change happen, it is understandable that people may initially dismiss or resist the need to do so. Importantly, taking individuals' perspectives does not equate with agreement or endorsement of their worldview; instead, motivators can recognize the difficulties and discomfort of challenging one's worldview and empathize with the frustration of being asked to reconsider worldviews for those individuals who feel they have no biases to address. Many training contexts,

for example, are mandated, and trainers can empathize with any frustration at a training being assigned to them when they are already overworked. Further, racial-, ethnic-, and gender-minority individuals may be tired of another training or initiative that ticks the diversity box yet does nothing to change the culture.

Allowing people to feel heard and validated in their feelings—whatever they may be—can go a long way in motivating buy-in. For one, instances of perspective-taking can build rapport that drives an open and nondefensive attitude to the motivator (Galinsky, Ku, & Wang, 2005). This is likely the case in this context especially since many expect—or have had past experiences with—trainings or diversity initiatives that try to get people to change via pressure and shame (as reviewed above). In other words, it can build trust in a motivator on a topic people expect will be dogmatic and controlling.

Another insight into why perspective taking works comes from *motivational interviewing* (Miller & Rollnick, 2012), a therapeutic approach to motivating behavior change: it may help elicit ambivalent feelings in people (Markland et al., 2005). Motivational interviewing assumes that people have multiple and often competing motives for making a change, and we believe the same is likely true for those contemplating prejudice reduction in their own lives. People may want to "do the right thing" and treat others fairly, but they may be overwhelmed with other priorities or be scared to stand up to team members who discriminate. Giving voice to these ambivalent feelings allows people to more fully grapple with them and, likely, bring them in line with core values and beliefs. This may be the most important strategy when working with those who have stronger prejudices and lower buy-in at the start—the group that motivators want to change most (Chang et al., 2019). Allowing them to give voice to their true feelings and accepting these feelings (but not the prejudice) as valid can catalyze the change process.

**Build relatedness.** Closely related to the issue of perspective taking is the most widely used strategy to tackle prejudice, intergroup contact, which we see as a way to build relatedness between people of diverse backgrounds. The contact approach exposes individuals from different backgrounds to interact with one another (e.g., Pettigrew, 1986). One of the main reasons that contact can be effective is because it helps people see the perspective of those who are different from them, building empathy for problems faced by outgroup members (Pettigrew & Tropp, 2008). Alone, however, the efficacy of the contact approach in real-life settings such as the workplace is limited (Paluck, Green, & Green, 2019). Because it is also quite difficult to intentionally connect individuals from different backgrounds under ideal circumstances, it has not received traction with the same enthusiasm as other strategies for promoting attitude change in the workplace. In the right motivational context, however, contact works well alongside other strategies (Devine et al., 2012), likely because it builds relatedness between diverse individuals.

Another important aspect of relatedness is building a sense of cohesion with the motivator and the organization in working toward the shared goal of prejudice reduction

(Ryan & Deci, 2017). Helping individuals view themselves as part of a team that is driving positive change in the organization gives them another reason to care. Many of the other strategies already discussed (e.g., perspective taking, offering a meaningful rationale) can help to build this a sense of relatedness with the motivator and the larger organization as they work to curb prejudice together.

**Guidance and structure.** After they recognize that there is a problem to be tackled, people usually wonder *how* to reduce prejudice since it is a complex problem with individual and structural levels. Thus, building competence by giving people guidance and structure—actionable strategies and skills—to tackle prejudice is key to sustained motivation for prejudice reduction. Indeed, a study in the workplace showed that feeling competent in responding appropriately to culturally diverse individuals required some level of guidance, in this case, among healthcare workers (Pecukonis, Doyle, & Bliss, 2008). In the absence of this guidance, people can easily feel overwhelmed and stick with the status quo because it is easier.

The specific skills and actionable strategies may look quite different in different workplace settings, but broadly they aim to equip people with the tools to effectively reduce prejudice at work and in their lives. They might fit best in a training, but they could also be implemented if the workplace wanted to change a policy. For example, one concrete skill might be soliciting feedback from others and examining one's own behavior for biases. This might be best executed with a structural change like a workplace policy of incorporating feedback about bias and inclusion behaviors into periodic performance reviews. Applied to trainings, guidance and structure could involve role-plays of interacting with diverse customers and getting feedback from the larger group.

A more challenging set of skills might involve thinking about confronting others expressing prejudice, especially if it is a common occurrence in the workplace. For example, imagine hearing coworkers frequently making fun of customers for their accent or their religious apparel. Confronting these coworkers represents a challenging task because it could hurt relatedness with those coworkers. Equipping people with skills to navigate these interactions in a way that also supports relatedness is empowering and makes people more effective if they do want to make a change.

### Need-Based Approaches to Reducing Prejudice

We view these need-supportive strategies as complementary, and there is evidence that they work together to meaningfully reduce prejudice. One example of this is a multifaceted, need-based intervention by Devine and colleagues (2012), which was designed to increase autonomous motivation for prejudice reduction by providing skills and guidance to support competence and by supporting relatedness through encouraging contact with and taking the perspective of diverse individuals. Devine et al. found that this need-supportive intervention reduced race bias compared to a control group immediately and at follow-up. Similarly, Legault et al. (2011) tested the impact of both

autonomy-enhancing and autonomy-undermining strategies. They showed that controlling tactics like pressure and shame backfired by *increasing* prejudice, and that providing a meaningful rationale and promoting choiceful action reduced prejudice by increasing autonomous motivation.

Our own correlational work in policing, a context in which prejudice reduction is of upmost importance (Cooper & Fullilove, 2020; Lammy, 2017), shows similar patterns. Like other organizations, policing has invested heavily in unconscious bias training as a way to solve the problem of racial and other expressions of bias, despite a lack of evidence to support its effectiveness in other organizational settings (Hagiwara et al., 2020). In a national survey of 34,529 police officers and staff in the United Kingdom, we found a negligible effect ($r = .04$) of participating in an unconscious bias training predicting lower prejudiced attitudes. Further, we observed that there was only an effect of training when people perceived that the force communicated about prejudice reduction in need-supportive ways; there was no effect of unconscious bias training in the absence of a need-supportive climate for prejudice reduction (Legate et al., 2021).

Even outside its influence on diversity training, need-supportive climates matter, and this points to the importance of communication that occurs regularly in workplaces, which influence attitudes in positive and negative ways. In another large-scale study with police officers and staff in the United Kingdom (Weinstein et al., 2021), we observed that communicating about prejudice in need-supportive ways linked to less prejudiced attitudes with moderate effect sizes. Further, except for the provision of choice, each autonomy-supportive element uniquely predicted variance in prejudiced attitudes. Thus, when organizations communicate about prejudice reduction, it may be particularly useful to avoid pressure and shame, provide a rationale, take individuals' perspectives, and offer guidance, and that any one of these strategies may produce attitude change. Arguably, if police and other organizations embrace and incorporate need-supportive strategies into the way they approach inclusion and diversity efforts at work, this may energize cumulative positive change in the long term.

Although this research represents a promising start to understanding how need-supportive approaches can reduce prejudice, randomized designs must test their efficacy in real-world organizational settings. As field experiments in organizational settings work to increase autonomous motivation more generally (Jungert et al., 2018; Slemp, Lee, & Mossman, 2021), it will be important to understand how need-supportive strategies work in tandem and in isolation to increase autonomous motivation to reduce prejudice, reduce defiance, and, ultimately, promote inclusive attitudes. Understanding boundary conditions in the implementation of need-supportive interventions such as dosage, aspects of the trainer, and the setting (e.g., real-world vs. laboratory) will be critical for future research in this area.

## Conclusion

Billions of dollars are invested every year in training and initiatives to support diversity and inclusion within organizations, yet these approaches often miss the mark. We argue they do so because changing attitudes, much like changing deeply ingrained behaviors, is difficult—particularly when the attitude is strongly felt and habitual (Maio, Haddock, & Verplanken, 2018). People must therefore be effectively motivated to invest effort in change. To be clear, we are not advocating against any of the commonly used approaches to tackling prejudice (e.g., trainings, antidiscrimination policies, sanctions for violating those policies). Quite the contrary: we believe that workplaces need substantial investments in initiatives to actively root out prejudice in their workplaces. We believe, however, that SDT's motivational principles can be applied to improve the delivery and internalization of these efforts. Motivators must actively work to decrease defensiveness and increase people's buy-in via need-supportive strategies to help employees fully stand behind the view that prejudice, in general and at their workplace, is a problem that merits their attention and effort.

## References

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, *84*(5), 888–918.

Amiot, C. E., Sansfaçon, S., Louis, W. R., & Yelle, M. (2012). Can intergroup behaviors be emitted out of self-determined reasons? Testing the role of group norms and behavioral congruence in the internalization of discrimination and parity behaviors. *Personality and Social Psychology Bulletin*, *38*(1), 63–76.

Applebaum, B. (2019). Remediating campus climate: Implicit bias training is not enough. *Studies in Philosophy and Education*, *38*(2), 129–141.

Assor, A., Soenens, B., Yitshaki, N., Ezra, O., Geifman, Y., & Olshtein, G. (2020). Towards a wider conception of autonomy support in adolescence: The contribution of reflective inner-compass facilitation to the formation of an authentic inner compass and well-being. *Motivation and Emotion*, *44*(2), 159–174.

Ball, G. A., Trevino, L. K., & Sims, H. P., Jr. (1994). Just and unjust punishment: Influences on subordinate performance and citizenship. *Academy of Management Journal*, *37*(2), 299–322.

Bentley, T. (2012). Shame in organisations. *Gestalt Review*, *16*(1), 88–109.

Brehm, J. W. (1989). Psychological reactance: Theory and applications. *ACR North American Advances, 16*, 72–55.

Bouwma-Gearhart, J. (2010). Pre-service educator attrition informed by self-determination theory: Autonomy loss in high-stakes education environments. *Problems of Education in the 21st Century*, *26*, 30–41.

Byun, G., Lee, S., Karau, S. J., & Dai, Y. (2020). The trickle-down effect of empowering leadership: A boundary condition of performance pressure. *Leadership & Organization Development Journal*, *41*(3), 399–414.

Carter, E. R., Onyeador, I. N., & Lewis, N. A., Jr. (2020). Developing and delivering effective anti-bias: Challenges and recommendations. *Behavioral Science & Policy*, *6*(1), 57–70.

Chang, E. H., Milkman, K. L., Gromet, D. M., Rebele, R. W., Massey, C., Duckworth, A. L., & Grant, A. M. (2019). The mixed effects of online diversity training. *Proceedings of the National Academy of Sciences*, *116*(16), 7778–7783.

Cooper, H. L., & Fullilove, M. T. (2020). *From enforcers to guardians: A public health primer on ending police violence*. Johns Hopkins University Press.

Dasgupta, N. (2013). Implicit attitudes and beliefs adapt to situations: A decade of research on the malleability of implicit prejudice, stereotypes, and the self-concept. *Advances in Experimental Social Psychology*, *47*, 233–279.

Davey, A. G. (1981). Prejudice and group conflict. *Patterns of Prejudice*, *15*(1), 3–14.

De Lara, P. Z. M. (2006). Fear in organizations: Does intimidation by formal punishment mediate the relationship between interactional justice and workplace internet deviance? *Journal of Managerial Psychology*, *21*(6), 580–592.

Devine, P. G., Forscher, P. S., Austin, A. J., & Cox, W. T. (2012). Long-term reduction in implicit race bias: A prejudice habit-breaking intervention. *Journal of Experimental Social Psychology*, *48*(6), 1267–1278.

Dobbin, F., & Kalev, A. (2016). Why diversity programs fail. *Harvard Business Review, 94*, 1–10.

Dobbin, F., & Kalev, A. (2018). Why doesn't diversity training work? The challenge for industry and academia. *Anthropology Now*, *10*(2), 48–55.

Dover, T. L., Kaiser, C. R., & Major, B. (2020). Mixed signals: The unintended effects of diversity initiatives. *Social Issues and Policy Review*, *14*(1), 152–181.

Fassinger, R. E. (2008). Workplace diversity and public policy: Challenges and opportunities for psychology. *American Psychologist*, *63*(4), 252–268.

Fiske, S. T. (1998). Stereotyping, prejudice, and discrimination. In D. T. Gilbert & S. T. Fiske (Eds.), *The handbook of social psychology* (Vol. 2, pp. 357–411). McGraw Hill.

FitzGerald, C., Martin, A., Berner, D., & Hurst, S. (2019). Interventions designed to reduce implicit prejudices and implicit stereotypes in real world contexts: A systematic review. *BMC Psychology*, *7*(1), 1–12.

Galinsky, A. D., Ku, G., & Wang, C. S. (2005). Perspective-taking and self-other overlap: Fostering social bonds and facilitating social coordination. *Group Processes & Intergroup Relations*, *8*(2), 109–124.

Gelfand, M. J., Nishii, L. H., Raver, J., & Schneider, B. (2005). Discrimination in organizations: An organizational level systems perspective. In R. Dipboye & A. Colella (Eds.), *Discrimination at work: The psychological and organizational bases* (pp. 89–116). Erlbaum.

Greenwald, A. G., & Krieger, L. H. (2006). Implicit bias: Scientific foundations. *California Law Review*, *94*(4), 945–967.

Hagger, M. S., & Protogerou, C. (2020). Self-determination theory and autonomy support to change healthcare behavior. In A. Hadler, S. Sutton, & L. Osterberg (Eds), *The Wiley handbook of healthcare treatment engagement: Theory, research, and clinical practice* (pp. 141–158). Wiley Blackwell.

Hagiwara, N., Kron, F. W., Scerbo, M. W., & Watson, G. S. (2020). A call for grounding implicit bias training in clinical and translational frameworks. *The Lancet*, *395*, 1457–1460.

Haidt, J. (2003). The moral emotions. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 852–870). Series in Affective Science. Oxford University Press.

Hart, J. (2014). Toward an integrative theory of psychological defense. *Perspectives on Psychological Science*, *9*(1), 19–39.

Hitlin, S. (2003). Values as the core of personal identity: Drawing links between two theories of self. *Social Psychology Quarterly*, *66*(2), 118–137.

Hodge, K., & Lonsdale, C. (2011). Prosocial and antisocial behavior in sport: The role of coaching style, autonomous vs. controlled motivation, and moral disengagement. *Journal of Sport and Exercise Psychology*, *33*(4), 527–547.

Hodgins, H. S., Yacko, H. A., & Gottlieb, E. (2006). Autonomy and nondefensiveness. *Motivation and Emotion*, *30*(4), 283–293.

Howell, J. L., & Ratliff, K. A. (2017). Not your average bigot: The better-than-average effect and defensive responding to Implicit Association Test feedback. *British Journal of Social Psychology*, *56*(1), 125–145.

Ilardi, S. S., & Craighead, W. E. (1994). The role of nonspecific factors in cognitive-behavior therapy for depression. *Clinical Psychology: Science and Practice*, *1*(2), 138–155.

Itzchakov, G., Weinstein, N., Legate, N., & Amar, M. (2020). Can high quality listening predict lower speakers' prejudiced attitudes? *Journal of Experimental Social Psychology*, *91*, 104022.

Jacobs, L. (1995). Shame in the therapeutic dialogue. *British Gestalt Journal*, *4*, 86–90.

Jungert, T., Van den Broeck, A., Schreurs, B., & Osterman, U. (2018). How colleagues can support each other's needs and motivation: An intervention on employee work motivation. *Applied Psychology*, *67*(1), 3–29.

Kalev, A., Dobbin, F., & Kelly, E. (2006). Best practices or best guesses? Assessing the efficacy of corporate affirmative action and diversity policies. *American Sociological Review*, *71*(4), 589–617.

Kalinoski, Z. T., Steele-Johnson, D., Peyton, E. J., Leas, K. A., Steinke, J., & Bowling, N. A. (2013). A meta-analytic evaluation of diversity training outcomes. *Journal of Organizational Behavior*, *34*(8), 1076–1104.

Katz, I., & Assor, A. (2007). When choice motivates and when it does not. *Educational Psychology Review*, *19*(4), 429–442.

Killen, M., & Cooley, S. (2014). Morality, exclusion, and prejudice. In M. Killen & J. G. Smetana (Eds.), *Handbook of moral development* (2nd ed., pp 340–360). Psychology Press.

Koestner, R., Otis, N., Powers, T. A., Pelletier, L., & Gagnon, H. (2008). Autonomous motivation, controlled motivation, and goal progress. *Journal of Personality*, *76*(5), 1201–1230.

Kornhaber, S. (2020). How callout culture reinforces the street protests. *The Atlantic,* July 16. https://www.theatlantic.com/culture/archive/2020/06/callout-culture-black-lives-matter-adidas-bon-appetit-lea-michele/613054/

Kraft, A., Sparr, J. L., & Peus, C. (2018). Giving and making sense about change: The back and forth between leaders and employees. *Journal of Business and Psychology*, *33*(1), 71–87.

Lai, C. K., Skinner, A. L., Cooley, E., Murrar, S., Brauer, M., Devos, T., Calanchini, J., Xiao, Y. J., Pedram, C., Marshburn, C. K., Simon, S., Blanchar, J. C., Joy-Gaba, J. A., Conway, J., Redford, L., Klein, R. A., Roussos, G., Schellhaas, F. M. H., Burns, M., Hu, X., McLean, M. C., Axt, J. R., Asgari, S., Schmidt, K., Rubinstein, R., Marini, M., Rubichi, S., Shin, J. E., L., & Nosek, B. A. (2016). Reducing implicit racial preferences: II. Intervention effectiveness across time. *Journal of Experimental Psychology: General*, *145*(8), 1001–1016.

Lammy, D. (2017). *Lammy review: Final report. An independent review into the treatment of, and outcomes for Black, Asian and Minority Ethnic individuals in the criminal justice system.* Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/643001/lammy-review-final-report.pdf

Legate, N., Weinstein, L., Graham, L., & Plater, M. (2021). *Does participating in unconscious bias training predict more inclusive attitudes within policing?* Manuscript under review.

Legate, N., & Weinstein, N. (2021). Can we convey support *and* a mandate? How motivating aspects of communications relate to motivation to stay at home across the COVID-19 pandemic. *Health Communication*. Online advanced publication. https://www.tandfonline.com/doi/abs/10.1080/10410236.2021.1921907

Legate, N., Weinstein, N., & Przybylski, A. K. (2019). Parenting strategies and adolescents' cyberbullying behaviors: Evidence from a preregistered study of parent-child dyads. *Journal of Youth and Adolescence*, *48*(2), 399–409.

Legault, L., & Amiot, C. E. (2014). The role of autonomy in intergroup processes: Toward an integration of self-determination theory and intergroup approaches. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships* (pp. 159–190). Springer.

Legault, L., & Green-Demers, I. (2012). The protective role of self-determined prejudice regulation in the relationship between intergroup threat and prejudice. *Motivation and Emotion*, *36*(2), 143–158.

Legault, L., Green-Demers, I., Grant, P., & Chung, J. (2007). On the self-regulation of implicit and explicit prejudice: A self-determination theory perspective. *Personality and Social Psychology Bulletin*, *33*(5), 732–749.

Legault, L., Gutsell, J. N., & Inzlicht, M. (2011). Ironic effects of antiprejudice messages: How motivational interventions can reduce (but also increase) prejudice. *Psychological Science*, *22*(12), 1472–1477.

Lemyre, P. N., Treasure, D. C., & Roberts, G. C. (2006). Influence of variability in motivation and affect on elite athlete burnout susceptibility. *Journal of Sport and Exercise Psychology*, *28*(1), 32–48.

Lopez, J. (2020). Unconscious bias training: Statement made on 15 December 2020. U.K. Parliament. Retrieved from https://questions-statements.parliament.uk/written-statements/detail/2020-12-15/hcws652

Maio, G. R., Haddock, G., & Verplanken, B. (2018). *The psychology of attitudes and attitude change*. Sage.

Markland, D., Ryan, R. M., Tobin, V. J., & Rollnick, S. (2005). Motivational interviewing and self-determination theory. *Journal of Social and Clinical Psychology*, *24*(6), 811–831.

Miller, W. R., & Rollnick, S. (2012). *Motivational interviewing: Helping people change.* Guilford Press.

Moore, M. E., Vega, D. M., Wiens, K. M., & Caporale, N. (2020). Connecting theory to practice: Using self-determination theory to better understand inclusion in STEM. *Journal of Microbiology & Biology Education*, *21*(1), 1–7.

Moran, C. M., Diefendorff, J. M., Kim, T. Y., & Liu, Z. Q. (2012). A profile approach to self-determination theory motivations at work. *Journal of Vocational Behavior*, *81*(3), 354–363.

Murray, A., Hall, A., Williams, G. C., McDonough, S. M., Ntoumanis, N., Taylor, I., Jackson, B., Copsey, B., Hurley, D. A. & Matthews, J. (2019). Assessing physiotherapists' communication skills for promoting patient autonomy for self-management: Reliability and validity of the communication evaluation in rehabilitation tool. *Disability and Rehabilitation*, *41*(14), 1699–1705.

Noon, M. (2018). Pointless diversity training: Unconscious bias, new racism and agency. *Work, Employment and Society*, *32*(1), 198–209.

Onyeador, I. N., Hudson, S. K. T., & Lewis, N. A., Jr. (2021). Moving beyond implicit bias training: Policy insights for increasing organizational diversity. *Policy Insights from the Behavioral and Brain Sciences*, *8*(1), 19–26.

Paluck, E. L., Green, S. A., & Green, D. P. (2019). The contact hypothesis re-evaluated. *Behavioural Public Policy*, *3*(2), 129–158.

Panagopoulos, C. (2010). Affect, social pressure and prosocial motivation: Field experimental evidence of the mobilizing effects of pride, shame and publicizing voting behavior. *Political Behavior*, *32*(3), 369–386.

Pecukonis, E., Doyle, O., & Bliss, D. L. (2008). Reducing barriers to interprofessional training: Promoting interprofessional cultural competence. *Journal of Interprofessional Care*, *22*(4), 417–428.

Pennock, D. M., Flake, G. W., Lawrence, S., Glover, E. J., & Giles, C. L. (2002). Winners don't take all: Characterizing the competition for links on the web. *Proceedings of the National Academy of Sciences*, *99*(8), 5207–5211.

Pettigrew, T. F. (1986). *The intergroup contact hypothesis reconsidered*. In M. Hewstone & R. Brown (Eds.), *Social psychology and society: Contact and conflict in intergroup encounters* (pp. 169–195). Basil Blackwell.

Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *European Journal of Social Psychology*, *38*(6), 922–934.

Plant, E. A., & Devine, P. G. (1998). Internal and external motivation to respond without prejudice. *Journal of Personality and Social Psychology*, *75*(3), 811–832.

Potter-Efron, R., & Carruth, B. (2014). *Shame, guilt, and alcoholism: Treatment issues in clinical practice* (Vol. 2). Routledge.

Quillian, L., Pager, D., Hexel, O., & Midtbøen, A. H. (2017). Meta-analysis of field experiments shows no change in racial discrimination in hiring over time. *Proceedings of the National Academy of Sciences*, *114*(41), 10870–10875.

Reeve, J., Jang, H., Hardre, P., & Omura, M. (2002). Providing a rationale in an autonomy- supportive way as a strategy to motivate others during an uninteresting activity. *Motivation and Emotion, 26*, 183–207.

Resnicow, K., & McMaster, F. (2012). Motivational interviewing: Moving from why to how with autonomy support. *International Journal of Behavioral Nutrition and Physical Activity*, *9*(1), 1–9.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., & Hawley, P. (2016). Naturally good? Basic psychological needs and the proximal and evolutionary bases of human benevolence. In K. W. Brown & M. R. Leary (Eds.), *Handbook of hypoegoic behavior* (pp. 205–222). Oxford University Press.

Sagiv, L., Roccas, S., Cieciuch, J., & Schwartz, S. H. (2017). Personal values in human life. *Nature Human Behaviour*, *1*(9), 630–639.

Schartel, S. A. (2012). Giving feedback: An integral part of education. *Best Practice & Research Clinical Anaesthesiology*, *26*(1), 77–87.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). Academic Press.

Slemp, G. R., Lee, M. A., & Mossman, L. H. (2021). Interventions to support autonomy, competence, and relatedness needs in organizations: A systematic review with recommendations for research and practice. *Journal of Occupational and Organizational Psychology*, *94*(2), 427–457.

Smith, E. R. (1993). Social identity and social emotions: Toward new conceptualizations of prejudice. In D. M. Mackie & D. L. Hamilton (Eds.), *Affect, cognition and stereotyping* (pp. 297–315). Academic Press.

Staley, O. (2017). Out of corporate America's diversity failures, a new industry is emerging. *Quartz,* October 10. https://qz.com/work/1092540/techs-diversity-failures-are-a-massive-business-opportunity-for-the-minority-recruitment-industry/

Tangney, J. P. (1993). Shame and guilt. In C. G. Costello (Ed.), *Symptoms of depression* (pp. 161–180). Wiley Series on Personality Processes. John Wiley & Sons.

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behavior. *Annual Review of Psychology, 58*, 345–372.

Tossi, M. (2012). Labor force projections to 2020: A more slowly growing workforce. *Monthly Labor Review, 135*, 43.

Vansteenkiste, M., Lens, W., Elliot, A. J., Soenens, B., & Mouratidis, A. (2014). Moving the achievement goal approach one step forward: Toward a systematic examination of the autonomous and controlled reasons underlying achievement goals. *Educational Psychologist*, *49*(3), 153–174.

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology*, *87*(2), 246–260.

Verplanken, B., & Holland, R. W. (2002). Motivated decision making: Effects of activation and self-centrality of values on choices and behavior. *Journal of Personality and Social Psychology*, *82*(3), 434–447.

Weinstein, N., Deci, E. L., & Ryan, R. M. (2011). Motivational determinants of integrating positive and negative past identities. *Journal of Personality and Social Psychology*, *100*(3), 527–544.

Weinstein, N., Legate, N., Graham, L., Zheng, Y., Plater, M., Al-Khouja, M., & Moller, A. C. (2021). *How to get buy-in: Motivational strategies for supportive attitude change*. Manuscript under review.

Whitley, B. E., & Kite, M. E. (2016). *Psychology of prejudice and discrimination*. Psychology Press.

Williams, G. C., & Deci, E. L. (2001). Activating patients for smoking cessation through physician autonomy support. *Medical Care*, *39*(8), 813–823.

Williams, G. C., McGregor, H. A., Sharp, D., Levesque, C., Kouides, R. W., Ryan, R. M., & Deci, E. L. (2006). Testing a self-determination theory intervention for motivating tobacco cessation: Supporting autonomy and competence in a clinical trial. *Health Psychology*, *25*(1), 91–101.

Wilson, P. M., & Rodgers, W. M. (2004). The relationship between perceived autonomy support, exercise regulations and behavioral intentions in women. *Psychology of Sport and Exercise*, *5*(3), 229–242.

Wilson, P. M., Rodgers, W. M., Loitz, C. C., & Scime, G. (2006). "It's who I am . . . really!" The importance of integrated regulation in exercise contexts. *Journal of Applied Biobehavioral Research*, *11*(2), 79–104.

# Media and Technology Applications

# Captivated by Meaning: A Self-Determination Theory Perspective on Motivation for Entertainment Media

Paul J. C. Adachi *and* C. Scott Rigby

## Abstract

This chapter reviews how self-determination theory (SDT) clarifies the motivational dynamics of entertainment media and informs moral questions of its impact. A growing body of SDT research has gone behind the flash and spectacle on the screen to assess the psychological fulfillments and key experiences that account for much of its motivational pull. This work provides a blueprint of the specific experiences, content, and features that deepen fulfillment. As important, SDT offers a process model of how fulfilling experiences predict sustained engagement over time. The chapter beings with a review of the research on the motivational pull of video games, whose immersive contexts can provide rich satisfactions of basic psychological needs enhancing intrinsic motivation to play. It then turns to more traditional forms of entertainment media, discussing the recent work applying SDT to investigate a process model of engagement with TV shows, exploring how basic need fulfillments in narratives impact engagement. Finally, practical considerations as well as directions for future research are discussed.

**Key Words:** entertainment media, video games, television, eudaimonia, narratives, sustained engagement

In 1896, the Lumière brothers debuted one of the first movie screenings: a 50-second film of a train entering a station. It was a brief, silent, black-and-white strip of celluloid involving a single shot from a fixed camera. And yet legend has it that the effect was so immersive that the audience gasped in amazement, some even leaping from their seats as the train approached. Storytelling, which had always been an important part of the human experience, could now be vividly brought to life in a way that seemed almost magical.

From this humble beginning, entertainment media—and in particular video entertainment—has grown into a staple of modern life, with the average American adult spending over four hours per day watching television and streaming media (Nielsen, 2020). Alongside this, modern video games enable the audience to not simply watch and listen to stories passively but to step across the proscenium into a story's virtual world. Players actively participate in the tale being told, empowered by the very best games to build their personal narrative from the ground up. Remarkable levels of engagement have been the

result: more than 3 billion people worldwide play video games (DFC Intelligence, 2021), pushing the industry to more than twice the size of Hollywood.

With the strong motivational pull of entertainment media so self-evident in daily life, it is reasonable to want to understand both its causes and its consequences. Does entertainment media offer fulfillment and meaningful experiences, or—as suggested by Britain's current prime minister Boris Johnson (2006)—does screen time debase us into a society of "blinking lizards" tricked by "hypnotic little machines?"

This chapter reviews how self-determination theory (SDT; Ryan & Deci, 2017) both elucidates the motivational dynamics of entertainment media and informs moral questions of its impact. A growing body of SDT research has gone behind the flash and spectacle on the screen to assess the psychological fulfillments and key experiences that account for much of its motivational pull. This work provides an ever-clearer blueprint of the specific experiences, content, and features that deepen fulfillment. As important, it offers a process model of how fulfilling experiences predict sustained engagement over time. The practical result is this: research supports SDT as a framework that can both guide the development of engaging entertainment media as well as help each of us make mindful entertainment choices that are to our genuine benefit.

We begin our discussion with a review of the research on the motivational pull of video games, whose immersive contexts can provide rich satisfactions of basic psychological needs enhancing intrinsic motivation to play. We then turn to more traditional forms of entertainment media, discussing the recent work applying SDT to investigate a process model of engagement with TV shows, exploring how basic need fulfillments in narratives impact engagement. Finally, we discuss practical considerations as well as directions for future research.

## The Motivational Pull of Video Games

The prevalence of video games in daily life has prompted a significant amount of research focused on the impact of their content and healthy levels of engagement (see Ferguson, 2013 for a review; Przybylski & Weinstein, 2019). Through its well-articulated model of basic human needs and intrinsic motivation, SDT research has largely focused on how meaningful and fulfilling experiences within games can account for player satisfaction and games' strong motivational pull (for reviews, see Adachi & Willoughby, 2017; Przybylski, Rigby, & Ryan, 2010; Uysal & Yildirim, 2016).

Based on an initial treatise by Rigby (2004) on "player motivational analysis," foundational research work was done by Ryan, Rigby, and Przybylski (2006) examining video games' potential to satisfy players' basic psychological needs. The researchers hypothesized that people's engagement with games—and indeed, their experience of fun itself—would be largely accounted for by the basic need fulfillments game experiences afforded. For example, players would experience autonomy when choosing among interesting goals to pursue, competence when they feel effective and successful

at overcoming game challenges, and relatedness through interaction with other players. Ryan and colleagues conducted three studies with a variety of games and methodology to test these need-fulfillment hypotheses, and the results converged to show that video games could provide significant satisfaction of basic psychological needs, which, in turn, accounted for enjoyment and sustained engagement with these games. Further, need satisfaction in video games predicted short-term increases in well-being, including mood and vitality.

Building on this work, Tamborini et al. (2010) conducted an experimental study in which they manipulated features of video games to directly impact basic need satisfactions, and then tested the effect on video game enjoyment. For example, players' experience of competence was enhanced by providing better control devices for play. The results showed that basic need satisfactions accounted for over 50% of the variance in video game enjoyment. Tamborini and colleagues (2011) replicated these findings when controlling for hedonic-based predictors.

Contributing to this experimental literature, Peng et al. (2012) conducted an experiment to test the effects of autonomy and competence satisfactions on sustained engagement with an exercise video game. Players in the autonomy-enhanced condition were provided with choices to customize their character, and players in the competence-enhanced condition had the difficulty level of the game adjusted to their ability to provide them with optimal challenges. Consistent with previous research, the results showed that the effects of these game conditions on enjoyment and motivation for future play were mediated by players' autonomy and competence fulfillment.

The focus on need fulfillment has also informed the research focused on game content, such as violence. Przybylski, Ryan, and Rigby (2009) investigated the important motivational question of whether violent content itself draws players into games and motivates their continued play. Przybylski and colleagues examined this question in a series of experimental and survey studies and found that play was motivated not by the violent content but by the basic need satisfactions that were afforded by the game design. For example, even when video games were modified to reduce the level of violence, players remained just as intrinsically motivated to play as long as the need-satisfying features remained stable. In related research, associations between video game play and player hostility and aggression have also been shown to be accounted for by competence-need frustration rather than violent content per se (Przybylski et al., 2014).

While much of the early work on video games focused on playing solo, the majority of video game play now occurs in dynamic, online environments with other people (e.g., Adachi et al., 2016). In fact, 65% of American video game players now average almost an hour daily playing with others (ESA, 2020). The current market leader, Fortnite (2020), reported more than 350 million players and 3.3 billion hours of gameplay during one month alone. Fortnite, along with other market leaders such as Call of Duty, are almost exclusively built around multiplayer modes that encourage cooperation, competition, and

socializing during play, increasing opportunities for relatedness satisfactions alongside autonomy and competence.

Given the popularity of such multiplayer video games, Reer and Kramer (2020; see also Reer & Kramer, 2018) conducted a laboratory study to examine whether basic need satisfactions within a multiplayer first-person shooter game accounted for players' enjoyment and well-being. The researchers were particularly interested in whether collaborative team dynamics and communication between players were associated with basic need satisfactions. The results of structural equation models (SEMs) showed that after controlling for players' skill level, collaborative team play and communication among players positively predicted enjoyment and increased well-being via competence and relatedness satisfactions. Simply put, when people collaborated and communicated as a team to achieve game goals, they experienced greater competence and relatedness satisfaction in first-person shooter games, which, in turn, predicted greater enjoyment and increased well-being.

Taken together, the research on the motivational pull of video games from the lens of SDT converges to show that players' experiences of autonomy, competence, and relatedness fulfillments consistently drive their experience of "fun" and sustained engagement with these games. In fact, evidence shows that these meaningful in-game need satisfactions impacted players' sustained engagement even when accounting for hedonic elements, violent content, and different game contexts, such as multiplayer formats and exercise games. Put differently, need fulfillment appears to be at the heart of what makes games so compelling, affording players the opportunity for meaningful experiences of discovery, growth, and belonging.

### Dysregulated Video Game Use and Basic Need Frustration

It is precisely because video games can provide such rich experiences of basic psychological needs with great immediacy and density (Rigby & Ryan, 2011; Rigby, this volume) that they can be overused by some players. Specifically, Rigby and Ryan postulated the need density hypothesis, which holds that people who have deficiencies in need satisfactions or need frustrations in their everyday lives may be strongly attracted to media such as video games, which provide immediate, rich, and consistent need experiences. For example, a child with overly controlling parents may be prone to spend too much time in open-world games that provide opportunities for exploration and autonomy. Similarly, an employee who experiences little success or competence feedback in their job might be drawn to the just-in-time learning and incremental mastery building that characterize the competence ramps of most games. Put simply, people who have low need satisfaction and high need frustration in their daily lives may be at increased risk for dysregulated use of media—such as video games—that are experienced as need-supportive.

In support of the need density hypothesis, Przybylski, Weinstein et al. (2009) found that video game players who reported low levels of daily need satisfaction were more

likely to have an obsessive passion for video game play, in that they felt a strong sense of *having* to play. Interestingly, these same players reported lower levels of enjoyment of video games. In contrast, players with high need satisfaction in their everyday lives did not experience their video game play as an obsessive passion, even when regularly engaging with games. (See also Masur et al., 2014 for similar findings when investigating social networking activities.)

Przybylski and Weinstein (2019) further examined the links between daily need frustration, satisfaction, and dysregulated video game use in a cross-sectional study of 2,008 adolescents and their caregivers. They found that levels of need frustration in the adolescents' life overall predicted dysregulated video game play and psychosocial functioning. Interpreting these results from a need density perspective, it may be that youth with frustrated daily needs have general difficulty regulating their behavior within densely need-supportive environments—such as video games—that offer accessible experiences of rich informational feedback, open worlds for exploration, and opportunities for collaborative teamwork. Perhaps even moderate levels of need satisfaction within these supportive environments could prove too enticing for some, should experiences of need frustration elsewhere in life be particularly strong.

In sum, the growing research showing SDT's utility as a framework for understanding how video games motivate and satisfy—and indeed how "fun" itself in these games is largely a function of need satisfaction—argues strongly for SDT as an applied framework for creating successful games. In this regard, Rigby and Ryan (2007) introduced the Player Experience of Need Satisfaction to the game developer community as an applied framework for building more fulfilling game experiences, leading to broad adoption within the industry. In parallel, this SDT-based framework has helped inform and clarify the psychological dynamics of engagement in the "gamification" movement, which is focused on applying game mechanics to nongame contexts in order to deepen engagement (Rigby, 2014).

## The Motivational Pull of TV Shows

The motivational pull of more traditional entertainment media, such as TV shows, can also be understood through the SDT framework, although the mechanisms for fulfillment are inherently different given the lack of direct interactions between the content and its audience.

Specifically, unlike video games that provide active contexts in which players can make choices, build skills and competencies, and play collaboratively with others, TV viewers passively view shows without overt opportunities to engage in need-satisfying behaviors (Adachi et al., 2018). Thus, rather than afford viewers opportunities to actively satisfy their needs, TV shows must provide need-fulfilling content and themes that foster their interest in and intrinsic motivation to continue viewing the show. Specifically,

SDT posits that content and themes related to basic psychological needs will account for viewers' intrinsic motivation to watch TV shows. A particular area of focus has been on eudaimonic aspects of entertainment media and the satisfactions they afford viewers (Rigby & Ryan, 2017).

Eudaimonia describes living a meaningful and virtuous life in which one engages in deep reflection, behaves with integrity, and strives to realize one's full potential (Huta, 2017; Ryan, Curren, & Deci, 2013; Ryan, Huta, & Deci, 2008). Eudaimonia can be contrasted with hedonia, which refers to seeking immediate pleasure or positive affect (Huta, 2017; Huta & Ryan, 2010). Importantly, SDT posits that eudaimonia yields rich satisfactions of basic needs, which, in turn, enhance autonomous motivation (Ryan et al., 2008).

Eudaimonic themes within entertainment media are abundant. TV shows can be intellectually stimulating, touching, or inspiring, and can convey meaningful and virtuous messages of moral challenges, deep love and connection, and self-sacrifice. In their overview of eudaimonia in entertainment media, Rigby and Ryan (2017) discuss how eudaimonic themes in TV shows and film often emerge within tragic or sad content. They offer the example of the popular film *Marley and Me* that ends sadly with the death of the family dog. Rigby and Ryan suggest that this conclusion is experienced by many viewers as poignant and meaningful because the loss of a beloved family pet signifies that a meaningful relationship was impacted, fostering feelings of relatedness and connection. Similarly, although the action and adventure genre is generally characterized by excitement and thrill, the underlying narratives within this genre often contain meaningful themes that embody all three psychological needs (Rigby & Przybylski, 2009). For example, in the heroic story of Batman, Bruce Wayne chooses to dedicate himself to ridding the world of evil, a life that requires great volition and conviction for what is right (autonomy). As Batman, he must overcome great challenges to successfully defeat formidable foes (mastery), and in doing so he saves innocent people and protects humanity (relatedness; Rigby & Ryan, 2011).

In line with these eudaimonic themes in TV shows and broader narratives, there is a growing literature demonstrating that consumers desire eudaimonic satisfactions in entertainment media. Vorderer (2011) proposed a two-factor model of media enjoyment that differentiates between more hedonic lower-order satisfactions of immediate pleasures and a higher-order factor of basic psychological need satisfactions of autonomy, competence, and relatedness (see also Vorderer & Reinecke, 2015). Similarly, Oliver and Raney (2011) examined individuals' desire for films with meaningful content that made them more reflective and challenged their perspective (eudaimonic motives), in addition to pleasure-seeking (hedonic motives). Findings across four studies converged to show that people report both euadimonic and hedonic preferences for films, and that these distinct preferences are related to different affective experiences.

Building upon this work, Bailey and Ivory (2016) conducted a laboratory experiment in which they tested the effect of watching a TV show clip with hedonic versus eudaimonic content on the viewer's subsequent affect and preference for continued

viewing. They found that participants who watched the eudaimonic clips experienced greater meaningful affect (e.g., inspired, introspective) and less fun affect (e.g., amused, humored) than those who watched the hedonic clips. Further, they found partial evidence that participants who watched a eudaimonic clip were more likely to prefer subsequent eudaimonic clip options than participants who watched a hedonic clip. Taken together, these studies suggest that passive forms of entertainment media (e.g., TV shows and films) can contain both eudaimonic and hedonic content, each of which can result in different affective experiences and preferences for subsequent content.

Given that eudaimonia facilitates basic need satisfactions, which, in turn, foster autonomous motivation (Ryan & Deci, 2017), eudaimonic themes in TV shows may drive sustained engagement with these shows via the need satisfactions they afford viewers. In particular, Adachi and colleagues (2018) suggest that eudaimonic themes in TV shows may enhance intrinsic viewing motivation in part by fostering a sense of relatedness with the characters in the show. Specifically, when viewers perceive characters as part of meaningful, touching, and thought-provoking storylines, their feelings of connection and investment in these characters can be enhanced.

To illustrate this process, we offer an example from the Academy Award–winning film *Forrest Gump* (1994). The film features Forrest, an innocent and kind protagonist, who, due to his simple nature, struggles to make friends. As a young man, Forrest joins the army and is sent to the war in Vietnam. He befriends a fellow solider named Bubba, and together they weather the arduous conditions of war, supporting each other and day-dreaming about partnering in the shrimping boat business.

One day while marching through the thick jungle, Forrest's platoon is brutally ambushed. Shell-shocked and frantic, Forrest, Bubba, and the remaining platoon retreat through the jungle in search of safety. Because of Forrest's extraordinary speed, he quickly gains ground on his fellow soldiers and eventually finds a safe place by a river. But Forrest's selfless nature and connection to his friend Bubba sends him running back into the fray, where he finds wounded members of his team. One by one he carries them to safety, only to return to his search, despite being wounded himself in the process. Finally, he finds a mortally wounded Bubba and carries him to the river, holding him close as he dies. Adachi and colleagues (2018) suggest that for many viewers, the eudaimonic themes of self-sacrifice, steadfast loyalty, and the loss of a loved one will elicit feelings of compassion, admiration, and a deep sense of connection to Forrest that will make their experience of the film more meaningful and deepen engagement. Put differently, such scenes can move viewers from simply liking a character like Forrest to genuinely *caring* about him and feeling invested in his journey.

### Predicting Sustained Engagement with TV Dramas

To test these links, Adachi and colleagues (2018) examined the motivational pull of TV dramas from the SDT perspective. The researchers developed a descriptive process model

to examine how a set of five need-related experiences and themes, including eudaimonic themes, relatedness with characters, viewing competence (feeling successful at following the storyline of a show), as well as elements of surprise and novelty, predicted sustained engagement with TV dramas. To assess these experiences, the researchers employed a new assessment developed from SDT, the Assessment of Media Engagement and Satisfaction Questionnaire (AMES).

The process model was tested across three studies. In Study 1, a lab-based design randomly assigned participants to watch the pilot episode of preselected TV dramas to examine how the AMES model predicted their intrinsic motivation to view the next episode. Path model results showed that the AMES variables accounted for a large amount of variance in sustained engagement. Consistent with our *Forrest Gump* example, eudaimonic themes predicted sustained engagement directly as well as indirectly via relatedness with characters. These results were replicated in a second study that controlled for the attention requirements of the shows.

A third study tested the ecological validity of this process model with a variety of self-selected drama shows that a sample of TV viewers watched in their free time, adding measures of how the viewer identified personally with the protagonist and story events over time. Results were again replicated, with eudaimonic themes and identification predicting engagement even when controlling for differences in show content.

Taken together, this set of studies offers promising initial evidence for the application of SDT to linear shows, and potentially films as well. The SDT-based AMES model identified and measured key experiences and themes of TV dramas that pull viewers in and motivate them to watch the next episode. The authors also note that this study is perhaps the first application of SDT to a passive motivational context; while previous applications of SDT have been focused on motivation for human action and behavior in dynamic environments, this work demonstrates the utility of the SDT framework to also explain motivational dynamics of passive media engagement, a dominant activity in the lives of many. While these results represent a promising starting point for understanding how eudaimonic themes motivate viewing of dramatic TV shows, the question is whether such themes would be salient in other genres that ostensibly entertain through other means, such as comedic content.

### Predicting Sustained Engagement with TV Comedies

Adachi and Ryan (2021) expanded the application of the AMES model to investigate its predictive power of engagement with TV comedies. While eudaimonic themes may seem endemic to dramatic content, one might argue the opposite for comedies. The humorous, happy, and lighter tone of comedies certainly seems to render eudaimonic themes unnecessary, and perhaps even problematic to the hedonic pleasure comedies seek to provide.

Some evidence supports that this is true when people make selections about what to watch. Kim (2020) found that people's preferences for eudaimonic and meaningful

content in TV shows predicted more viewing of TV dramas. It was not, however, related to choosing to watch TV comedies.

Of course, after choosing what to watch, there is the experience of actually watching. The comedy-watcher who does not report a preference for deep or "meaningful" themes may still be impacted by such themes *within* comedy shows. Indeed, SDT holds that the dynamics of basic needs operate regardless of whether their value is consciously held. If comedic content can, for example, evoke meaningful identification with characters and a sense of relatedness, it may further deepen engagement. Many successful comedies seem to overtly embrace this idea: the critically acclaimed comedy *Modern Family* is focused on delivering laughs, yet concludes each episode with meaningful messages involving family relationships, child development, and the importance of intrinsic aspirations of love and connection. Does this formula of offering meaning alongside humor contribute to the show's success?

Adachi and Ryan (2021) applied the AMES process model to address these questions, predicting that eudaimonic themes would indeed be a fundamental driver, even with comedies. They examined the motivational pull of TV comedies in a laboratory study in which participants were randomly assigned to watch one of two comedy shows or one of two drama shows and then report on experiences of both eudaimonic and hedonic satisfaction. The researchers compared the pattern of effects between the genres in predicting sustained engagement outcomes (i.e., intrinsic viewing motivation and willingness to recommend the show to others; see Figure 47.1).

The results showed that, indeed, funny and happy hedonic themes predicted relatedness with characters and greater enjoyment of comedies (but not dramas). Of interest, and consistent with SDT-based hypotheses, eudaimonic themes strongly predicted relatedness with characters and intrinsic viewing motivation for *both* dramas and comedies. In other words, eudaimonic themes were just as important for sustained engagement with comedies as they were for dramas, supporting that idea that eudaimonic experiences represent global drivers of engagement across different kinds of media content. While this applied work is just beginning, it is early evidence that just as basic needs are fundamental drivers of interactive engagement of video games, they are also fundamental drivers of engagement with passive media when need fulfillment is activated through eudaimonic themes.

We turn now to a deeper discussion on this core point: the role of basic needs in evoking a sense of meaning and engagement in entertainment media of all forms.

## The Experience of Meaning in Entertainment Media: The Role of Basic Psychological Needs

We have taken a look at research showing that eudaimonic themes predict sustained engagement via the experience of relatedness with characters in both dramatic and comedic content (Adachi et al., 2018; Adachi & Ryan, 2021). Through what other pathways might
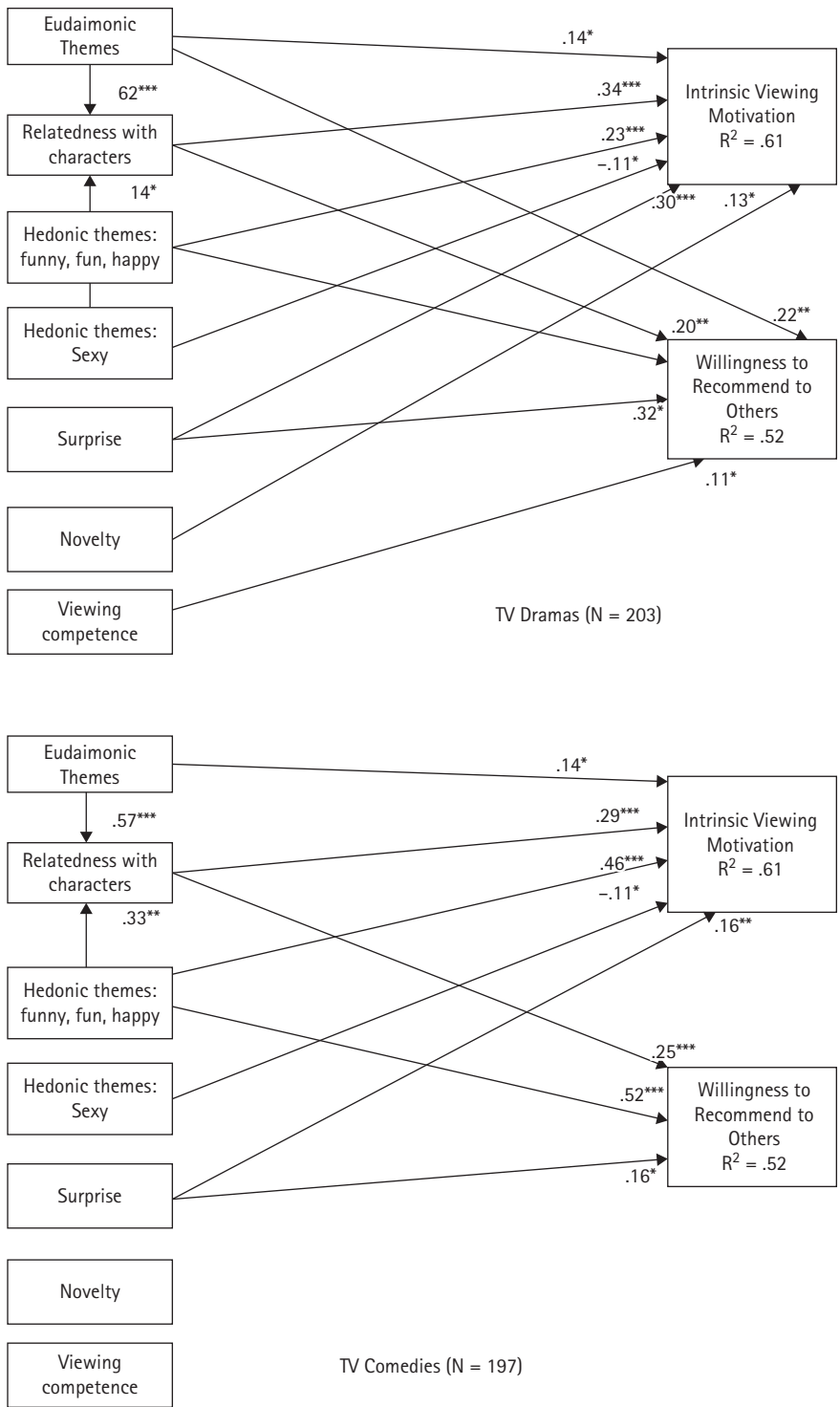
**Figure 47.1** AMES path models comparing the pattern of effects for TV dramas versus comedies

*Note*: *p < .05; **p < .01; ***p < .001.
*Source*: Adachi and Ryan, 2021

basic psychological needs for relatedness—as well as competence and autonomy—accrue to a more fulfilling experience with entertainment media and explain deeper engagement?

Viewing competence, defined as the viewer's ability to understand and follow the plot of a show, did emerge as a significant predictor of sustained engagement in some of our initial research (Adachi et al., 2018). However, it appears that this experience simply represents "table stakes" for viewing a show rather than being a vehicle for need fulfillment from its content. More simply put, people are less likely to watch things they don't understand.

Autonomy fulfillment is a more complicated matter. On one hand, films and TV shows do not offer opportunities for the audience to make choices or actively participate in a way that will impact the content. We simply have the choice to watch or not to watch. However, just as we have explored how experiences of relatedness can be evoked by content involving fictitious characters, we likewise suggest that viewers may experience autonomy feelings from common themes in entertainment, such as acting in accordance with one's values (often heroically), moving from states of low motivational quality (i.e., extrinsic, introjected, amotivating) to more autonomous functioning and fulfillment, or resolving conflicts in oneself between intrinsic and extrinsic pursuits (Rigby & Ryan, 2017).

Rigby and Ryan (2017) argue that themes related to autonomous functioning are commonly portrayed in entertainment as characters face internal conflicts, such as when intrinsic aspirations for family, benevolence, and personal growth are pitted against extrinsic aspirations of wealth, status, and power. In Act 1 of these stories, we are introduced to the characters, their relationships, and the conflict to come. Act 2 involves the crisis, in which the protagonist makes poor choices or has a moral failing that breaks relationships and brings the central theme to a climax. As the viewer rides into the emotional abyss with the characters, Act 3 dawns to offer redemption as the protagonist rights the wrongs done and emerges stronger and more confident by virtue of having internalized and integrated a clear sense of "what really matters," having overcome the external pressure and control of extrinsic pursuits in favor of what is innately good.

In essence, this narrative cadence—one that is common to both dramas and comedies—acts out a fundamental human challenge articulated by SDT: how to function autonomously, motivated by one's values and true self, even while living in a world abundant with controls and pressures (Ryan, Deci et al. 2006). Simply put, SDT offers a promising psychological model for the universal and enduring appeal of these narratives: we resonate with narratives in which the protagonist struggles to live autonomously because they reflect an existential challenge that is both universal and deeply personal given the fundamental nature of our basic needs. Indeed, understanding a narrative arc through the lens of basic needs—such as the conflict and subsequent resolution of relatedness, autonomy, and/or competence (e.g., overcoming challenges, achieving personal growth)—shows promise as a framework for media theory and engaging storytelling in multiple forms. In support of this argument, we offer brief examples of the application

of these ideas to popular entertainment media in the three forms we have reviewed: TV dramas, TV comedies, and video games.

### The Protagonist's Internal Conflict between Eudaimonia and Extrinsic Pursuits in the TV Drama Breaking Bad

The protagonist in *Breaking Bad*, Walter White, is a brilliant chemist who missed out on a life-changing opportunity to co-own a successful scientific research company. Working instead as a high school chemistry teacher, he struggles to convey his intrinsic passion for chemistry to a roomful of disinterested teenagers. At home, he faces the common middle-age issues of a teenage son striving for his own autonomy and a wife who is mired in the day-to-day grind of modern life managing the household and trying to make ends meet.

Into this malaise enters a more immediate existential crisis: Walter is diagnosed with cancer and faces the realization that he lacks the financial resources to pay for treatment and to support his family after he dies. Both Walter and the audience are snapped into a common autonomy theme: life is short. Am I living the life I want? In this case, we can feel the many ways in which Walter feels he has fallen short, not just with respect to his own interests but with respect to more introjected pressures as well (e.g., societal rules about being a good provider). The stage is set for the fundamental conflict of the entire series, pitting extrinsic and intrinsic forces within Walter against one another.

Through a chance meeting with a former student turned drug dealer named Jesse, Walter is presented with a unique opportunity to use his chemical expertise to produce methamphetamine to fund his cancer treatments. Walter discovers his skills in chemistry allow him to create a product of such purity it is unparalleled on the market, providing an avenue to both riches and mastery (competence fulfillment) in the area of his most intrinsic interest: chemistry.

As he dives further into the drug enterprise, Walter is pulled by the extrinsic aspirations of power, wealth, and status as a meth kingpin. But not these things alone. His new profession unlocks opportunities for creative expression of his chemistry expertise that previously have been thwarted in his lawful—but dull—high school job. Time and again, when faced with violent challenges to his power by those far stronger, Walter deploys chemical machinations that thwart his foes and increase his position and wealth. The stark contrast between the density of competence and autonomy need fulfillment that Walter experiences as he produces grade A product and climbs to the top of the meth enterprise is sharply contrasted with the constant need frustrations he endured as an overlooked middle-aged high school teacher, creating a believable motive for his drive to continue the criminal enterprise.

What breaks, however, are his relationships with his family. The lies and power grabs that are so necessary for ascent as a drug kingpin drive tension and alienation

between Walter and his family. While the narrative he tells himself—and ultimately his wife—is that he is "doing it all for them," the audience sees Walter's growing isolation as his Faustian bargain ripens: as he attains criminal power and wealth, he is losing his family.

The series culminates with Walter striving for some resolution. As his life spirals out of control, he reflects authentically on why he has descended into such antisocial depths. In a final conversation with his wife, he stops the false narrative that he is doing it all for his family and instead admits in a moment of honest vulnerability, "I did it . . . for me. I was good at it. I was . . . alive." The open authenticity of Walter realizing that—despite the costs—it was the feelings of mastery and empowerment that motivated his criminal life is powerful. While ultimately maladaptive and misguided, the underlying motivations and eudaimonic conflicts feel authentic and enable the audience to feel sympathetic to the character, despite his antisocial behavior: we too know what it is like to struggle for autonomy and growth. We too know what it is like to make selfish choices and feel the pain in our relationships as a result.

In the end, as Walter chooses to sacrifice himself for the good of those he cares about, there is the chance for satisfying closure: he pays the price for his life of crime, but does so in a redemptive act. Walter's sacrifice enables his partner, Jesse, to escape his life of crime and Walter's fate. Jesse, a young man, has been pursuing his own redemptive arc. The series ends with the audience hoping he succeeds in living a more authentic and fulfilling life, but as with each of us, that remains an open question as the curtain falls.

### A Main Character's Struggle to Overcome the Control of Wealth and Status in the TV Comedy Schitt's Creek

The TV comedy *Schitt's Creek* features the Roses, a snobbish family who lose their fortune. Destitute and shunned by high society, they are forced to move into a cheap motel in a small, backwater town called Schitt's Creek, which they had purchased years before as a joke. The mayor of Schitt's Creek and his wife, Roland and Jocelyn, are an eccentric yet benevolent couple, and they befriend and support the Roses, despite the Roses' contempt, creating many successful comedic moments as cultures clash.

Throughout the first two seasons of the show, the Roses desperately seek to escape their meager new lifestyle and get back to their former wealth and social status. In the language of SDT, they are obsessed with extrinsic aspirations of wealth and introjected concerns about their social standing. This provides significant comedic grist, but with a limited runway: how long can the audience feel a sense of connection in such a cloud of self-absorption?

Here again, the show deepens the connection to the characters through eudaimonic themes, specifically themes of relatedness. The Roses finally see an opportunity to regain their status by feigning continued wealth and success at a dinner with members of their

old social circle. To the Roses' horror—and to great comedic effect—the mayor of Schitt's Creek and his wife happen to be eating at the same restaurant and enthusiastically invite themselves to join the table, oblivious to the Roses' scheme. Throughout the dinner, the Roses' wealthy friends complain about the food, demean Roland and Jocelyn, and disparage the town of Schitt's Creek. At first, the Roses laugh along, despite the pain and humiliation for Roland and Jocelyn, so desperate are they to be accepted back by their old friends.

But a moment of awareness then occurs. Johnny Rose chooses to cast aside his pursuit of wealth and status and to stand up for the people he realizes truly care about his family. He accuses his old friends of being superficial and abandoning the Roses during their time of need. He then expresses appreciation to Roland and Jocelyn for being true friends and proudly declares that Schitt's Creek, the place he once looked down on, is now his home. In short, he courageously makes choices for community, relatedness, and an authentic life, demonstrating personal growth toward intrinsic aspirations and functioning in accordance with his true self.

### The Protagonist's Journey for Intrinsic Fulfillment Ending in the Ultimate Sacrifice in the Video Game Red Dead Redemption

Although the empirical literature on video games has focused primarily on the basic need satisfactions that players are afforded through play, many games also contain complex narratives, including themes of personal volition and struggles to find an internal compass (Rigby & Ryan, 2011). In Red Dead Redemption, the protagonist, John Marston, is a former outlaw who has given up his extrinsic aspirations of wealth and power to pursue intrinsic aspirations of raising a family and living in peace. Throughout the game, John is forced by the Bureau of Investigation to eliminate his old gang members in order to earn his freedom. After completing his duties for the Bureau, John finally begins a peaceful life with his wife and son on a quiet ranch. One day, John and his family see horses approaching, and John realizes that he has been double-crossed by the Bureau and that they have come to kill him. John heroically battles the soldiers and maneuvers his family from their house down to their barn. With the army closing in on the barn, John kisses his family good-bye and helps them escape on horseback through the back of the barn. Knowing that the Bureau is after him, John slowly walks to the front of the barn and steps through the doors to face a barrage of bullets from the army, sacrificing himself for the safety of his loved ones. The culmination of his journey from extrinsic to intrinsic values, ending in volitional self-sacrifice for his family values, may elicit a powerful sense of autonomy for the player.

Taken together, these examples from three different forms of entertainment media suggest that narratives conveying challenges to autonomous functioning and struggles to find one's true self may create resonant feelings of autonomy for the viewer or player and, in turn, foster the desire to continue viewing or playing.

## Directions for Future Research

We have reviewed significant research showing that SDT's basic needs and eudaimonic themes provide a compelling explanatory framework for sustained engagement across both passive and interactive forms of entertainment media. We've focused much of the latter part of the chapter illustrating how SDT might be used to deconstruct the experiences of traditional narrative forms in which the audience is passive. Several specific questions intrigue us with respect to this domain.

First, all narrative in entertainment, both dramatic and comedic, involves some form of tension. Our discussion of several specific narratives, drawn from multiple forms of entertainment media, illustrates how future research might delineate (and validate) specific patterns of conflict and resolution in narrative using elements from the SDT framework. Might SDT represent a structural model for story creation by describing clear building blocks of dramatic tension—such as intrinsic versus extrinsic aspirations or need frustration versus fulfillment— that can inspire and support the writing process? Might patterns of tension or prominence of certain basic needs in the narrative formula help explain the appeal of certain genres of entertainment, beyond the areas of TV dramas and comedies discussed here?

Of particular interest is whether relatedness specifically will emerge as the keystone for dramatic tension and resolution. Certainly this feels true in each of the examples given, which were chosen based on their critical and popular success, not specifically for relatedness themes. It is intriguing that relatedness seems uniformly central across disparate narrative content: failures of relatedness are both central to creating the narrative tension and at the heart of the characters' redemption at the end. Whether and where other patterns of failure and redemption might occur with equal emotional impact and meaning—perhaps involving autonomy or mastery in a central role—remains to be explored.

We are also interested in further refinement of the process model for meaningful entertainment. Building from the notion that narrative challenges to integration and resolution of conflict between intrinsic and extrinsic pursuits can foster feelings of autonomy, empirical research is needed to test how autonomy experiences may mediate the association between eudaimonic themes in entertainment media and sustained engagement. Consistent with SDT, we believe that feelings of autonomy, for example, may play an important explanatory role alongside relatedness with characters.

A further area of interest and potential value is in the execution of storytelling. We have all experienced shows or films that structurally have all the elements we have enjoyed elsewhere but that fall flat when we watch them. Something isn't authentic enough, or deep enough, or believable enough, for us to engage. SDT-based frameworks might provide a model for better ensuring this authenticity in storytelling by highlighting the importance of basic needs and giving storytellers tools for building believable characters and genuine tension that will resonate with the audiences that also share these needs.

Another aspect of entertainment media that is both fascinating and largely unexplored is the concept of *novelty.* (See Bagheri & Milyavskaya, 2020 for an investigation of

novelty as a candidate psychological need.) Initial research using the AMES model showed that experiences of surprise and novelty within TV shows were consistent predictors of sustained engagement, but the dynamics here need to be unpacked. Perhaps character arcs and story dynamics are less impactful to the audience's experience of autonomy and meaning if the viewer can clearly see them coming, because the opportunity for discovery and integration of something new is diminished. In other words, perhaps we as the audience want to grow through a story's novelty and surprise rather than just watch a tale of someone else's predictable journey. Indeed, perhaps labeling traditional storytelling media such as TV and film as "passive" belies a rich and dynamic set of experiences in which the audience feels participatory.

Extending the initial research work using TV shows to other forms of entertainment media, such as film, will also be important. How might the AMES model predict whether viewers finish watching a film versus stopping partway through? What SDT factors might influence engaging with multiple sequels of a film or predict films that are perennially rewatchable? Even in the interactive domain of video games, similar research is needed to investigate how narratives integrate with more active forms of need satisfaction to increase engagement, motivation, and the experience of fun. For example, there may be an interaction between game dynamics and narratives, such that players are more volitionally engaged in taking actions, conquering challenges, and exploring opportunities when there is a strong story using eudaimonic themes to give such actions both context and meaning. Structurally, such stories may also provide the necessary scaffolding and support to help the player integrate their experiences over the tens (or sometimes hundreds) of hours of play that modern games can provide.

*Practical Implications*

Beyond these interesting theoretical questions, the SDT-based research on the motivational pull of entertainment media has practical significance in several areas. First, we have noted how the Player Experience of Need Satisfaction model has already provided significant value to video game designers seeking to build more fulfilling and fun experiences for players. We've also reviewed how this same model has informed our understanding of where and when gaming is a healthy and happy experience, and when it can be dysregulated. We believe that developing SDT-based models, such as AMES, to understand a wider range of entertainment media can help traditional storytellers build compelling and meaningful experiences (e.g., Uysal & Yildirim, 2016). We also believe it will continue to assist in understanding the dynamics of both healthy and dysregulated media use, helping self-regulation and informing the public discussion of dysregulated media use.

Finally, while the focus of this chapter has been on entertainment media, research unpacking the experiences and satisfactions behind engaging narratives and user experiences may have important implications for areas outside of entertainment, such as

education and training. Educators and trainers have long understood that storytelling is a vehicle for engagement. But a more detailed focus on how the elements of story activate meaning and engage basic needs may unlock further opportunities to integrate stories in a way that enhances learning and intrinsically satisfies both learner and teacher. Overall, the work reviewed in this chapter suggests that although entertainment media often provides hedonic pleasures, thrills, humor, and fun, it is the meaningful content of need satisfactions that matters and creates the bedrock of sustained engagement.

## References

Adachi, P. J., Hodson, G., Willoughby, T., Blank, C., & Ha, A. (2016). From outgroups to allied forces: Effect of intergroup cooperation in violent and nonviolent video games on boosting favorable outgroup attitudes. *Journal of Experimental Psychology: General, 145*, 259–265. doi:10.1037/xge0000145

Adachi, P. J. C., & Ryan, R. M. (2021). *The motivational pull of television comedies: Why meaning matters*. Unpublished manuscript. Immersyve, Inc.

Adachi, P. J. C., Ryan, R. M., Frye, J., McClurg, D., & Rigby, C. S. (2018). "I can't wait for the next episode!" Investigating the motivational pull of television dramas through the lens of self-determination theory. *Motivation Science, 4*, 78–94. doi:10.1037/mot0000063

Adachi, P. J. C., & Willoughby, T. (2017). The link between playing video games and positive youth outcomes. *Child Development Perspectives, 22*, 202–206. doi:10.1111/cdep.12232

Bagheri, L., & Milyavskaya, M. (2020). Novelty-variety as a candidate basic psychological need: New evidence across three studies. *Motivation & Emotion, 44*, 32–35. https://doi.org/10.1007/s11031-019-09807-4

Bailey, E. J., & Ivory, J. D. (2016). The moods meaningful media create: Effects of hedonic and eudaimonic television clips on viewers' affective states and subsequent program selection. *Psychology of Popular Media Culture*. Advance online publication. http://dx.doi.org/10.1037/ppm0000122

DFC Intelligence. (2021). Global video game consumer segmentation. Retrieved from https://www.dfcint.com/product/video-game-consumer-segmentation-2/

Entertainment Software Association (ESA). (2020). Essential facts about the video game industry. Retrieved from https://www.theesa.com/resource/2020-essential-facts/

Ferguson, C. J. (2013) Violent video games and the Supreme Court: Lessons for the scientific community in the wake of *Brown v. Entertainment Merchants Association. American Psychologist, 68*, 57–74. doi:10.1037/a0030597

Fortnite. (2020). Retrieved from https://twitter.com/FortniteGame/status/1258079550321446912

Huta, V. (2017). An overview of hedonic and eudaimonic well-being concepts. In L. Reinecke & M. B. Oliver (Eds.), *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects* (pp. 14–33). Routledge.

Huta, V., & Ryan, R. M. (2010). Pursuing pleasure or virtue: The differential and overlapping well-being benefits of hedonic and eudaimonic motives. *Journal of Happiness Studies, 11*, 735–762. http://dx.doi.org/10.1007/s10902-009-9171-4

Johnson, B. (2006). The writing's on the wall—computer games rot the brain. *The Telegraph*, December 28. https://www.telegraph.co.uk/comment/personal-view/3635699/The-writing-is-on-the-wall-computer-games-rot-the-brain.html

Kim, D. D. E. (2020). The search for pleasure and meaning on TV, captured in-app: Eudaimonia and hedonism effects on TV consumption as self-reported via mobile app. *Journal of Broadcasting & Electronic Media*, *64*, 693–713 https://doi.org/10.1080/08838151.2020.1849702

Masur, P. K., Ziegele, M., Quiring, O., & Reinecke, L. (2014). The interplay of intrinsic need satisfaction and Facebook specific motives in explaining addictive behavior on Facebook. *Computers in Human Behavior, 39*, 376–386. doi:10.1016/j.chb.2014.05.047

Nielsen. (2020). The Nielsen total audience report. Retrieved from https://www.nielsen.com/us/en/insights/report/2020/the-nielsen-total-audience-report-august-2020/

Oliver, M. B., & Raney, A. A. (2011). Entertainment as pleasurable and meaningful: Identifying hedonic and eudaimonic motivations for entertainment consumption. *Journal of Communication, 61*, 984–1004. http://dx.doi.org/10.1111/j.1460-2466.2011.01585.x

Peng, W., Lin, J.-H., Pfeiffer, K. A., & Winn, B. (2012). Need satisfaction supportive game features as motivational determinants: An experimental study of a self-determination theory guided exergame. *Media Psychology, 15*, 175–196. http://dx.doi.org/10.1080/1521369.2012.673850

Przybylski, A. K., Deci, E. L., Rigby, C. S., & Ryan, R. M. (2014). Competence-impeding electronic games and players' aggressive feelings, thoughts, and behaviors. *Journal of Personality and Social Psychology, 106*, 441–457. http://dx.doi.org/10.1037/a0034820

Przybylski, A. K., Rigby, C. S., & Ryan, R. M. (2010). A motivational model of video game engagement. *Review of General Psychology*, *14*(2), 154–166. https://doi.org/10.1037/a0019440

Przybylski, A. K., Ryan, R. M., & Rigby, C. S. (2009). The motivating role of violence in video games. *Personality and Social Psychology Bulletin*, *35*(2), 243–259. https://doi.org/10.1177/0146167208327216

Przybylski, A. K., & Weinstein, N. (2019). Investigating the motivational and psychosocial dynamics of dysregulated gaming: Evidence from a preregistered cohort study. *Clinical Psychological Science, 7*, 1257–1265. https://doi.org/10.1177/2167702619859341

Przybylski, A. K., Weinstein, N., Ryan, R. M., & Rigby, C. S. (2009). Having to versus wanting to play: Background and consequences of harmonious versus obsessive engagement in video games. *CyberPsychology & Behavior*, *12*(5), 485–492. https://doi.org/10.1089/cpb.2009.0083

Reer, F. & Kramer, N. C. (2018). Psychological need satisfaction and well-being in first-person shooter clans: Investigating underlying factors. *Computers in Human Behavior, 84*, 383–391. https://doi.org/10.1016/j.chb.2018.03.010

Reer, F., & Kramer, N. C. (2020). A self-determination theory-based laboratory experiment on social aspects of playing multiplayer first-person shooter games. *Entertainment Computing, 34*, 2–10. https://doi.org/10.1016/j.entcom.2020.100353

Rigby, C. S. (2004). *Player motivational analysis: A model for applied research into the motivational dynamics of virtual worlds*. Presentation to the Motivation Research Group, University of Rochester, Rochester, NY.

Rigby, C. S. (2014). Gamification and Motivation. In S. P. Walz & S. Deterding (Eds.), *The gameful world* (pp. 113–138). MIT Press Books.

Rigby, C. S., & Przybylski, A. K. (2009). Virtual worlds and the learner hero: How today's video games can inform tomorrow's digital learning environments. *Theory and Research in Education, 7*, 214–223. https://doi.org/10.1177/1477878509104326

Rigby, C. S., & Ryan, R. M. (2007). NA. *Gamasutra*. https://www.gamasutra.com/view/feature/130155/rethinking_carrots_a_new_method_.php

Rigby, C. S., & Ryan, R. M. (2011). *Glued to games: How video games draw us in and hold us spellbound*. Praeger.

Rigby, C. S., & Ryan, R. M. (2017). Time well spent? Motivation for entertainment media and its eudaimonic aspects through the lens of self-determination theory. In L. Reinecke & M. B. Oliver (Eds.), *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects* (pp. 34–48). Routledge/Taylor & Francis. doi:10.4324/9781315714752.ch3

Ryan, R. M., Curren, R. R., & Deci, E. L. (2013). What humans need: Flourishing in Aristotelian philosophy and self-determination theory. In A. S. Waterman (Ed.), *The best within us: Positive psychology perspectives on eudaimonia* (pp. 57–75). American Psychological Association. http://dx.doi.org/10.1037/14092-004

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Plenum Press.

Ryan, R. M., Deci, E. L., Grolnick, W. S., & La Guardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti (Ed.), *Developmental psychopathology: Theory and methods* (pp. 795–849). Wiley.

Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies*, *9*, 139–170. http://dx.doi.org/10.1007/s10902-006-9023-4

Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, *30*, 344–360. http://dx.doi.org/10.1007/s11031-006-9051-8

Tamborini, R., Bowman, N. D., Eden, A., Grizzard, M., & Organ, A. (2010). Defining media enjoyment as the satisfaction of intrinsic needs. *Journal of Communication, 60*, 758–777. http://dx.doi.org/10.1111/j.1460-2466.2010.01513.x

Tamborini, R., Grizzard, M., David Bowman, N., Reinecke, L., Lewis, R. J., & Eden, A. (2011). Media enjoyment as need satisfaction: The contribution of hedonic and nonhedonic needs. *Journal of Communication, 61*, 1025–1042. http://dx.doi.org/10.1111/j.1460-2466.2011.01593.x

Uysal, A., & Yildirim, I. G. (2016). Self-determination theory in digital games. In B. Bostan (Ed.), *Gamer psychology and behavior* (pp. 123–135). Springer International. https://doi.org/10.1007/978-3-319-29904-4_8

Vorderer, P. (2011). What's next? Remarks on the current vitalization of entertainment theory. *Journal of Media Psychology, Methods, and Applications, 23*, 60–63. http://dx.doi.org/10.1027/1864-1105/a000034

Vorderer, P., & Reinecke, L. (2015). From mood to meaning: The changing model of the user in entertainment research. *Communication Theory, 25*, 447–453. http://dx.doi.org/10.1111/comt.12082

# Self-Determination Theory and Technology Design

Dorian Peters *and* Rafael A. Calvo

### Abstract

This chapter reviews the breadth of work applying self-determination theory (SDT) to digital technology with a focus on how it informs design. SDT is especially well-suited and actionable within the technology design context. The chapter reviews advancements within specific domains, highlighting fields that have been productive with respect to SDT in technology, including games, health, and education. It then shifts to work that applies SDT to user experience and technology design across domains, including the METUX model, and it describes efforts to provide practitioners with SDT-based tools that bridge academic theory to design practice. The chapter concludes by identifying gaps and opportunities for future work. The aim is to pull together the disparate work across domains that has constituted SDT for technology research and provide a coherent foundation for building on this work synergistically into the future.

**Key Words:** human-computer interaction, self-determination theory, interaction design, user experience, design for well-being, well-being-supportive design, METUX model

Technology design has always lived in symbiosis with psychological theory, from the cognitive models that shaped (and were shaped by) early computation to the broad mix of humanist and sociological models that inform digital design today. A focus on task completion and efficiency in the 1980s expanded to include "usability" in the 1990s, both of which drew on experimental methods centered on cognition and perception. In the 2000s, we began to consider the sociocultural context as technology advanced into the wearable and embodied. The focus turned to human experience, especially pleasurable experience, but also emergence and meaning-making (Hassenzahl, 2010). This new era of "user experience" put the human, rather than the computer, center stage in a way that honored the subjective (Norman, 1993), and researchers began to draw on ethnography (Suchman, 1987), phenomenology (Dourish, 2001), and emotion psychology (Picard, 2000) to better understand user experience. These moves—from simple technical efficiency to social context to emergent experience—are often characterized as the first three waves in human-computer interaction (HCI).

As technologies have become ubiquitous and increasingly automated, we find ourselves amid an explosion of interest in the psychological impact of technology design. This pivot leads in two directions: those interested in leveraging this impact (e.g., via motivational design and behaviour change) and those concerned by it (e.g., by manipulation, attention-hijacking, addiction). It is now increasingly acknowledged that humans have a right to digital experiences that support, rather than hinder, their goals, values, and psychological needs. Therefore, concern over the psychological influence of technology aligns with a larger scrutiny over the ethics of technology, fueled by rapid advancements in artificial intelligence (AI).

In what we see as a new wave in HCI, a turn toward ethical or "responsible" and "well-being-supportive" design represents the emerging paradigm. In this new world, technologists are (at least partly) accountable for the real-world impact of technologies, whether or not intentional. Addressing this, new frameworks for ethical design practices are being introduced (Peters, Vold et al., 2020). These often build on the well-established biomedical ethics framework (Beauchamp and Childress., 2001; e.g., Cave et al., 2021), the four pillars of which are (1) support well-being, (2) do no harm, (3) support human autonomy, and (4) support justice—*well-being* and *autonomy* being central to self-determination theory (SDT).

We propose that SDT is an ideal theoretical partner for this new wave, owing to its dual role as a psychological theory of motivation and well-being and for its operationalization of autonomy. In particular, SDT's basic psychological needs theory and organismic integration theory have already been fruitfully applied across a range of technology domains. SDT can also help us understand why established best practices in HCI actually work. Thus, SDT can provide a new explanatory and predictive lens for understanding why existing HCI constructs matter, and for providing empirical approaches to gathering evidence for how to design systems that are more psychologically beneficial.

Furthermore, SDT can be effectively combined (and often is) with other theories and epistemological frameworks, which is essential for a field as interdisciplinary as HCI. In fact, it is through such interdisciplinary channels that SDT was first introduced to the technology space. Specifically, it was health and education (two domains that had leveraged SDT long before computers) that first demonstrated how SDT could be usefully applied to technology design (e.g., for understanding user behavior, rationalizing design decisions, and evaluating outcomes).

More recently, work that seeks to apply SDT to technology design per se, agnostic to domain, has emerged. In 2018, Peters, Calvo, and Ryan introduced the first overarching model integrating SDT into technology user experience. The model Motivation, Engagement, and Thriving in User Experience, or METUX, combines SDT theory and measures within a granular framework of technology experience that allows parallel (sometimes contradicting) need satisfactions and frustrations to be accounted for at different levels. Translation from theory to practice has been taken even further through the

development of design tools intended to equip technology makers with actionable guidance that bridges SDT theory to technology practice (Peters & Ahmadpour, 2020; Peters, Ahmadpour, & Calvo 2020).

In this chapter, we elaborate on the ideas summarized above and review the breadth of work applying SDT to digital technology, with a focus on how it informs design. First, we argue that SDT is especially well-suited and actionable within the technology design context. Then we review advancements within specific domains, highlighting fields that have been productive with respect to SDT in HCI, including games, health, and education. We then shift to work that applies SDT to user experience and technology design across domains and describe efforts to provide practitioners with tools to bridge academic knowledge to practice. We conclude by identifying gaps and opportunities for future work. Our aim is to pull together the disparate work across domains that has constituted SDT for technology research and provide a coherent foundation for building on this work synergistically into the future.

## SDT and Technology—A Natural Fit?

Technology designers have relied on SDT constructs for over 30 years, albeit without always knowing them as such and without the benefit of a unifying theoretical framework. Basic psychological needs, in particular *autonomy* and *competence*, are salient across industry standard guidelines, including the 10 Usability Heuristics (Nielsen, 1994) and 8 Golden Rules of Interface Design (Shneiderman & Plaisant, 2010), both of which include guidelines for autonomy support (i.e., "user control" and "freedom") and competence (i.e., "help and documentation," "prevent errors," "reduce short-term memory load"). More recently, work in AI seeks ways to support human autonomy in the face of encroaching machine autonomy (Calvo et al., 2020; Shneiderman, 2020), and the need for ways to tease apart genuine relatedness from empty connection has come to the fore within research on social media (Burke, Marlow, & Lento, 2010; Karapanos, Teixeira, & Gouveia, 2016; Lin, 2016; Sheldon, Abad, & Hinsch, 2011).

As such, there is an intuitiveness and natural alignment between SDT constructs and well-established approaches to technology design. SDT can help HCI researchers to better understand, articulate, and make predictions about concepts that are already understood as critical within their field and provide theory to explain top-level observations. But this alignment is not the only advantage of using SDT as a psychological theory for HCI. In this section we argue that SDT is uniquely well-suited as a foundational theory for technology applications for a number of reasons (Peters, Ahmadpour et al., 2020; Peters et al., 2018), including that SDT is scientific, rigorously evidence-based, measurable, practical/translational, universal, complementary, granular, and safe for design.

1. **Scientific**: SDT is described as a scientific theory in that it "involves empirically testable propositions that generalise across varied contexts and which

serve to explain and predict the impact of certain events on motivation and wellbeing" (Tyack & Mekler, 2020, pp. 2). Thus, SDT aligns favorably with traditions of experimental research within HCI.

2. **Rigorously evidence-based**: Because design entails psychological impact, to avoid inadvertent harm any psychological theories employed must be grounded in rigorous research and in ways that allow specific claims to be traced back to sources. Few psychological theories have accrued as robust an evidence base as SDT has over the past 30+ years, including research and applications in many increasingly digital domains, such as education, health, and the workplace (Ryan & Deci, 2017).

3. **Measurable:** Technology research and practice rely on standard measures so that designs can be compared and improved upon. SDT provides validated instruments that can be integrated into this process (see Center for Self-Determination Theory, n.d. for a list of measures).

4. **Practical/translational**: SDT has been described as practical in that it "points to how features of contexts . . . facilitate or undermine motivation" (Ryan & Deci, 2017; pp. 4), and this practicality extends to the contextual in that it considers "proximal social contexts . . . as well as more pervasive cultural, political, and economic conditions in terms of their adequacy in supporting versus impairing human thriving" (Ryan & Deci, 2017, pp. 4). In other words, it is a "translational science" (Ryan & Deci, 2018) and can be used to identify specific actionable design strategies and factors that improve experience.

5. **Universal**: Any theory to be applied to the technology design process universally must make a justifiable claim to universality itself. SDT posits that psychological needs are universally human, and research demonstrating this across cultures and developmental stages provides evidence for this claim (e.g. Chen et al., 2015; Mackenzie, Karaoylas, & Starzyk, 2018; Ryan & Deci, 2017; Véronneau, Koestner, & Abela, 2005). While need fulfillment may manifest differently across age groups and cultures, the underlying fundamental needs for autonomy, competence, and relatedness appear to be consistent mediators of wellness for all.

6. **Complementary**: With each new wave, HCI has added new methods and theories to its toolbox. Therefore, it is important for a field so interdisciplinary that SDT can be effectively combined with other theories and epistemological frameworks (Tyack & Mekler, 2020; e.g., Deterding, 2016; Nikou & Economides, 2017; Racero et al., 2020).

7. **Granular:** Unlike other theories of well-being that focus on measuring well-being at the life level, SDT constructs can be measured at various resolutions, including at the granular level of a software interface, at the level

of behavior (e.g., exercise), or at the broad level of life overall (Peters et al., 2018; Ryan & Deci, 2017). This versatility allows SDT to be valuable for improving *all* technologies, including those that don't cause measurable change at a life level. We believe this is also critical to teasing apart the multifaceted and granular effects of technology use on human experience (Peters et al., 2018).

8. **Safe for design**: SDT's basic needs provide mediators for positive experience that are safe targets for design. This is because it is difficult, if not impossible, to "overdo" them inadvertently. For example, with regard to autonomy, one cannot have too much volition—feel "too willing" to act—or endorse something too much. Likewise, one cannot feel too competent (as in "I wish I were less competent at this"). While an experience can be too easy, this is reflected in a lack of competence satisfaction in SDT. Finally, one cannot feel too much genuine relatedness (even if one can get too much social stimulation). This point is in contrast to alternative psychological needs and motivators proposed elsewhere for use in design, such as stimulation and popularity (Hassenzahl et al., 2015), self-awareness and engagement (Calvo & Peters, 2014), and material gain and lust (Desmet & Pohlmeyer, 2017), which require much greater care and discernment when used as targets for design.

This final point also relates to the claim that SDT is safer as an overarching framework for well-being-supportive design. We have argued that, while positive emotion is a critical area of research in HCI, it should not, by itself, constitute design for well-being (Peters, Ahmadpour et al., 2020). Instead, any theoretical framework employed for well-being-supportive design should have as its goal optimal or positive *functioning* rather than *positive emotion* per se. Some well-being researchers describe this as the difference between "feeling good" and "functioning well," pointing to evidence that one can score high on measures of positive affect but low on positive functioning and mental health. This distinction acknowledges the importance of design for negative emotional contexts and resilience and the risks of relying on design for pleasure as a pathway to well-being. As a eudaimonic theory that views experiences of pleasure as *signs* of wellness (via need satisfaction) rather than as ends in themselves, SDT provides such a framework for supporting well-being longer term.

We see the relations between HCI and SDT to be symbiotic and mutually beneficial. HCI research and the data collected via technology use can contribute insights, greater clarity, new experimental methods, and new evidence to SDT research in psychology and other domains. As one example, SDT frameworks developed for HCI have already been appropriated for philosophical inquiry (Burr, Taddeo, & Floridi, 2019; Calvo et al., 2020).

## Domain-Specific Research in Technology

The Association for Computing Machinery's Digital Library is the most comprehensive database of HCI research and stores over 2 million publications on computing from as far back as 1908. A simple search for the term "self-determination theory" delivered just under 1,000 results at the time of writing. The earliest, from 2005, describes work in motivation for online learning and team collaboration. In the following 15 years, work gradually expanded to include everything from health behavior change and brand engagement to game aesthetics and social robots.

HCI literature also reveals that there is no agreed-upon way to apply SDT to the technology design process; it is used as a framework for data analysis (Jansen, Van Mechelen, & Slegers, 2017; Peters et al., 2017), a stimulus for design ideation (Peters & Ahmadpour, 2020), a basis for design recommendations (Cheng, Vansteenkiste, M., Beyers et al, 2021; Peters, 2022; Villalobos-Zúñiga & Cherubini, 2020; Yang & Aurisicchio, 2021), and a source for measures (e.g., Leung & Matanda, 2013; Nikou & Economides, 2017).

Among the most active technology domains over the past decade and a half have been education, health, and gaming. Of course, SDT was already actively applied in health and education before the proliferation of technology revolutionized these domains, so the carryover is understandable. Gaming represents a unique area, as it is defined by intrinsic motivation, so it is equally unsurprising that the leading theory of motivation would play a role in its advancement (Rigby & Ryan, 2011). Below we summarize work in each of these areas, closing with a brief overview of work in other domains.

### Digital Health

SDT has a long history within health research, from research on patient need satisfaction and healthy behavior change, to elder care, medical education, and mental illness (see reviews in Ntoumanis et al., 2020; Ryan & Deci, 2017). Domain-specific SDT measures in this space include the Health Care Climate Questionnaire (Williams et al., 1996), the Treatment Self-Regulation Questionnaire (Williams et al., 1996), and, more recently, the Virtual Care Climate Questionnaire (Smit et al., 2017), all of which have been leveraged within various digital health contexts (for a summary, see Center for Self-Determination Theory, n.d.). Herein we briefly review examples of work in digital health in terms of their broad objectives, their approaches to applying SDT, and the technology types involved.

Digital health studies have drawn on SDT to improve outcomes for a wide range of health-related goals, including to support behavior change (Coumans et al., 2020; Haque, Kangas, & Jämsä, 2020), improve outcomes of rehabilitation (Cuthbert, Turkay, & Brown, 2019; Hurley et al., 2019; King et al., 2012), improve healthy lifestyles (Bomfim & Wallace, 2018; Lerch, Steinemann, & Opwis, 2018; Saksono et al., 2020), and improve mental health (Lederman et al., 2019; Pretorius et al., 2020; Schlosser et al., 2016).

The approaches researchers have taken to applying SDT in digital health are as varied as the objectives, and include using SDT constructs to frame data analysis (e.g., Choi,

Noh, & Park, 2014; Jansen et al., 2017; Peters et al., 2017), explain observations (e.g., Eilert, Hassenzahl, & Buhr, 2020), assess motivation quality (e.g., Coa & Patrick, 2016), inform design decisions (e.g., Coumans et al., 2020; Lederman et al., 2019), evaluate interventions and design strategies (e.g., Cuthbert et al., 2019; Hurley et al., 2019; Smit et al., 2019), and provide a theoretical frame for design recommendations (e.g., Cheek et al., 2015; Saksono et al., 2020). For example, Lehtonen et al. (2019) sought to increase physical exercise by designing a novel dual-trampoline game system to provide greater competence satisfaction through exaggerated jump height using SDT as a framework for both design and evaluation.

Digital health objectives are met through a surprising diversity of technological forms. For example, SDT has been applied to mobile technology interventions, including for smoking cessation, fitness, and mental health (e.g., Choi et al., 2014; Kerner & Goodyear, 2017; Peters et al., 2017) and health games (e.g., Cheek et al., 2015; Kayali et al., 2018; McEwan et al., 2020; Tece Bayrak & Wünsche, 2021), including exergames (e.g., Ijaz et al., 2020; Lehtonen et al., 2019; Peng et al., 2012; Putnam et al., 2017; Song et al., 2013), and sometimes using VR (e.g., Cuthbert et al., 2019; Ijaz et al., 2020; Peng et al., 2012). Research on wearable devices has benefited from SDT (e.g., Ahmadpour & Cochrane, 2018; Asimakopoulos, Asimakopoulos, & Spillers, 2017), and it has also been harnessed to inform dialogue style and need satisfaction of conversational agents (Yang & Aurisicchio, 2021). For example, Jansen et al. (2017) used SDT to devise design strategies for a need-supportive digital health coach, and Block et al. (2016) applied it to the design and evaluation of a virtual clinician intended to support health behavior change and maintenance.

Despite much success in SDT for digital health, difficulties persist with respect to distinguishing those features and techniques that contribute to need satisfaction (Gillison et al., 2019; Villalobos-Zúñiga & Cherubini, 2020), indicating that future work aiming to disentangle these would be highly beneficial.

### Gaming

Digital games research has been uniquely influential to the advancement of SDT in the technology sphere (see Tyack & Mekler, 2020). SDT has been applied to an array of purposes in this space: evaluating player experience (Ryan, Rigby, & Przybylski, 2006), theorizing gameplay (Deterding, 2016), and generating better AI characters (Guckelsberger et al., 2017). In addition to elucidating how intrinsic motivation plays a role in the success of games, SDT has contributed a shared vocabulary and standard measures for evaluating player enjoyment and engagement. Most notably, the Player Experience of Need Satisfaction scale (Ryan et al., 2006) was the first validated measure created for applying SDT to games, and it remains the most widely used in HCI games research, together with the Intrinsic Motivation Inventory (Tyack & Mekler, 2020).

Other instruments are the Gaming Motivation Scale, which measures the six regulatory styles proposed by organismic integration theory (Lafrenière et al., 2012) and the Player Experience Inventory, which combines SDT with other theoretical models in a measure tailored to provide insights for developers. The recent development of the Ubisoft Perceived Experience Questionnaire (Azadvar & Canossa, 2018) provides evidence for continued active interest in SDT within the commercial game industry.

Beyond its use for improving and evaluating specific games, SDT has been used for better understanding the experience of gameplay generally. Deterding (2016) employed SDT as a theoretical framework for teasing apart the motivational impacts of context on game play with resulting implications for design. Seaborn and Fels (2015) found that SDT was the primary theoretical framework employed in gamification research (the application of game features to nongame contexts) and that it is often used to critique the approach (Deterding, 2016). Relatedly, Deterding (2015) identified basic need satisfaction (referring to SDT's needs) as one of six requirements for "gameful design."

Despite the important influence that SDT has had on digital games, there are some areas identified for improvement. In their review, Tyack and Mekler (2020) note a sometimes shallow engagement with the theory within HCI games research, as well as misrepresentation of SDT constructs (e.g., conflation of extrinsic motivation with external regulation). They also identify an inconsistent use of scales, leading to difficulty in cross-study comparisons. This aligns with Deterding's (2015, pp. 308) critique of gamification research: "SDT is chiefly received through popularized representations (most notably Pink, 2009) leading to partially erroneous representations. It is also variously mixed with other models into new, idiosyncratic, untested models of motivation." While there is work to be done on improving the rigor of SDT application to digital games research, this has not detracted from its ongoing position as a leading theoretical framework in this domain.

### Educational Technology

Research at the intersection of education and digital technology runs the gamut from casual learning apps and gamified corporate training to massively open online courses (MOOCs). SDT has been incorporated across the spectrum, and we touch on some examples below. Specifically, we look at how SDT has been used to (1) predict learning outcomes, (2) understand intention to study, and (3) increase motivation to engage with online learning.

Studies have continued to demonstrate mediating connections between SDT constructs and learning outcomes. For example, Hsu, Wang, and Levesque-Bristol (2019) surveyed 300 online learners and found that basic need satisfaction enhanced self-regulated motivation and increased achievement of course objectives. Wang et al. (2019) used an adapted version of the Basic Psychological Needs Scale, showing that it mediated learning outcomes in an online learning context. Roca and Gagné (2008) developed a

model to predict intention to *continue* online learning which combines the Technology Acceptance Model (Lee, Kozar, & Larsen, 2003) with SDT and shows that psychological needs affect the model's constructs of perceived usefulness, playfulness, and ease of use, which in turn predict continuance intention. As reviewed by Johnson, Stewart, and Bachman (2015), early studies found that intrinsically motivated online students demonstrate deeper understanding of the course material, exhibit a sustained interest in tasks, value independent learning, and have lower attrition rates, while autonomous, online, extrinsically motivated students report engagement with the material, improved performance, higher-quality learning, and persistence. More recently, Nikou and Economides (2017) and Shroff and Keyes (2017) found that intention to use mobile learning platforms was predicted by need satisfaction.

A third group of studies has applied SDT to enhancing motivation and engagement with different forms of digital learning. This is sometimes (but not always) pursued as part of a *gamification* approach (Hartnett, 2016). For example, Jeno et al. (2018) showed in an online learning context that biology students' motivation to learn species identification could be enhanced by improving competence and autonomy.

Relatedly, despite the popularity of MOOCs, they suffer from notoriously high attrition rates, which makes engagement research important to this area. Lan and Hew (2020) showed that SDT predicted completion of a MOOC. Most recently, Chiu (2021) applied SDT to understand engagement with online schooling during the COVID-19 pandemic. Results from over 1,000 students in lockdown suggested that digital support strategies can satisfy psychological needs, that all three basic needs were predictors of engagement, and that relatedness support was particularly important.

Our understanding of engagement in online learning, and of learning more broadly, can be facilitated by digital approaches to data collection. While most quantitative motivation and engagement research focuses on survey samples collected at one point (or very few points) in time, new digital technologies allow for intensive, real-time data collection. The growing area of learning analytics studies these large-scale digital traces to shed light on learning processes and behavioral patterns. For example, Martin et al. (2015, 2020) used mobile technology to collect motivation and engagement data three times a day, every school day, across four school weeks. The multilevel modeling showed substantial within-day variability, but very little between days or weeks. Motivation and engagement of students over time, combined with multilevel analysis, enabled deeper understanding of intra-individual variation in motivation and engagement.

Educators were early to apply SDT in the technology space, and research has not slowed down. As technology continues to transform learning, while increasing the need for lifelong learning, a better understanding of how psychological needs can be met within these new environments remains critical to efficacy and positive outcomes.

*Other Areas*

Application of SDT to technology goes well beyond the three domains described above. A review of all fields is beyond the scope of this chapter, but the following examples provide a sense of the diversity of this work. SDT has been applied to work on chatbots (Nguyen & Sidorova, 2018; Yang & Aurisicchio, 2021), whole-body interaction (Ford et al., 2012), augmented reality accessories (Kauhondamwa et al., 2018), retail self-service machines (Leung & Matanda, 2013), internet banking (Rahi & Abd. Ghani, 2019), crowdsourcing (Zhao & Zhu, 2014), online shopping (Gao et al., 2018), and virtual sport (Tsai et al., 2021). It has also been applied to technology-related topics such as crowdwork (Naderi et al., 2014; Posch et al., 2019; Toyoda, Lucas, & Gratch, 2020), robotics tournaments (Huang, 2017), and gender balance in computer science (Mishkin, 2019).

## Research in Technology Design: The METUX Model

Most early work incorporating SDT into HCI research combined it with other theories. For example, Hassenzhal (2015) proposed a definition of user experience rooted in "the fulfillment of psychological needs." For these needs, Hassenzhal et al. (2015) cited Sheldon et al.'s (2001) list of psychological "needs," which includes SDT's needs, among others, and later proposed seven needs: SDT's three along with popularity, stimulation, security, and meaning.

Zhang (2008) drew loosely on SDT and other theories to propose a set of broad design principles for supporting motivation. Calvo and Peters (2014) proposed SDT's basic needs as three among several research-based well-being determinants that could be targeted to improve well-being in user experience. In the same year, Szalma (2014), working in human factors and ergonomics, proposed SDT-based principles for design of computer interfaces.

A significant step toward systematizing and operationalizing SDT research and practice within HCI came with the introduction of the METUX model (Peters et al., 2018), which incorporates evaluation measures and a granular framework for supporting motivation and well-being through design. A philosophical review on digital well-being (Burr et al., 2019, pp. 2325) described METUX as "the most comprehensive framework for evaluating digital well-being to date." METUX consists of theory and measures situated across a framework of six "spheres of technology experience."

*The METUX Spheres of Technology Experience*

The spheres of technology experience framework distinguishes six resolutions at which a technology can impact psychological needs: adoption, interface, task, behavior, life, and society (see Figure 48.1).

In brief, the *adoption* sphere captures the extent to which the decision to begin using a technology is autonomously motivated. The *interface* sphere refers to how interaction with a user interface (controls, navigation, etc.) affects psychological needs. *Task* focuses on how a technology supports needs as the user engages in a task that is enabled by the
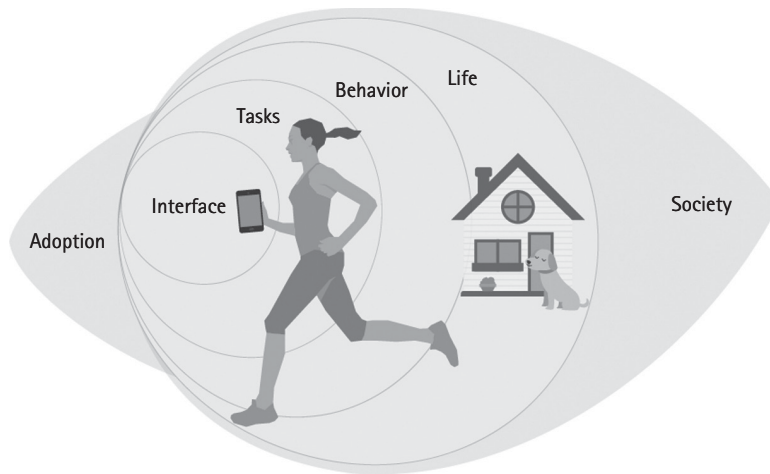
**Figure 48.1** The spheres of technology experience. This depiction (which includes all six spheres) improves on the original introduced in Peters, Calvo, & Ryan, 2018.

*Source*: Peters, Vold et al., 2020

technology (e.g., a fitness app might impact needs through the task of step counting). The *behavior* sphere captures need satisfaction in relation to an overarching behavior that the technology supports (e.g., a fitness app might increase a user's sense of competence in relation to the behavior of running). The *life* sphere captures psychological need satisfaction beyond immediate use (e.g., a fully driverless car might significantly improve autonomy in life for someone with visual impairment). In contrast, a gambling app might support autonomy within an interface and task sphere but interfere with autonomy at life level by contributing to debt or addiction. Finally, the *society* sphere addresses wider effects on psychological needs within broader society. This sphere goes beyond the user experience and includes impacts such as the loss of livelihood that could result from driverless cars or technologies that harm the planet by promoting irresponsible consumerism.

As may be evident, a key purpose of the spheres is to tease apart parallel, and sometimes conflicting, impacts of a technology on wellbeing (Peters et al., 2018). This feature of the framework—that it helps bring greater resolution to the multilayered reality of digital experience—has also influenced its use within the context of ethical AI inquiry (Calvo et al., 2020; Peters, Vold et al., 2020). In any given project, designers may choose to focus on one or more spheres depending on the scope of the project goals.

Examples of early work implementing METUX for understanding and improving technology experience are already emerging. In health, Wannheden et al. (2021) used METUX to conduct a qualitative analysis of need satisfaction within the chronic care technology context. Naqshbandi et al. (2020) used the model to improve motivation for online volunteering. Dostert and Müller (2020) applied it to motivational design for the industrial workplace. Jeno, Diseth, and Grytnes (2021) applied it to higher education.

DORIAN PETERS AND RAFAEL A. CALVO

## SDT as a Basis for Well-Being-Supportive Design

While most domain-specific work in SDT for technology has focused on its value as a theory of *motivation* (e.g., in games and learning), work on METUX has explicitly placed emphasis on SDT's value as a theory of *well-being*. This has occurred amid a growing interest in design for well-being within HCI research over the past decade. Peters and Ahmadpour (2020) provide a brief overview of this HCI research and argue that SDT is most suited to well-being-supportive design for many of the reasons mentioned earlier.

Moreover, SDT's basic psychological needs can provide a minimum common requirement for work in well-being-supportive design based on the claim that in order for a technology to support psychological well-being, it should, at minimum, do no harm to psychological needs. Moreover, other well-being design methods (e.g., Hassenzahl et al., 2013; Klapperich, Laschke, & Hassenzahl, 2018; Wiese, Pohlmeyer, & Hekkert, 2020) can be used in combination with this core approach. Where other well-being design methods are used, their impacts can be tested using SDT and METUX measures to ensure support for psychological needs.

## SDT and METUX for Technology Ethics

The normative suggestion that designers *should* ensure their technologies respect psychological needs suggests a crossover with technology ethics. Philosophers and designers have come together to propose the use of SDT as a practical approach to moving from principles to practice within the evolving area of ethical AI (Morley and Floridi, 2019). In the philosophy literature, METUX has also been identified as a valuable framework for exploring the ethics of digital well-being (Burr, et.al, 2019), and Calvo et al. (2020) used SDT's autonomy construct and METUX as a framework for ethical inquiry into the impacts of AI. Peters, Vold, et Al. (2020) propose a "responsible design process" in which ethical impact analysis is combined with well-being-supportive design (using METUX).

The value SDT holds for ethical design work centers on its position as a translational science (Ryan & Deci, 2018) which can help to operationalize both autonomy and well-being. Thus, it bridges a gap between high-level theory (in both psychology and philosophy) and real-world practice (by providing theoretically based granular measures and frameworks), and it does this for two constructs that are central to high-level ethical technology frameworks (autonomy and well-being). This operationalizing feature has allowed SDT, as compared to other theories, to be more readily translated into tools for design practice.

## From Theory to Practice

SDT can impact digital experience only if it is translated for use in design practice, yet movement from theory to practice is seldom easy. As Deterding (2015, pp. 295) explains:

> Although psychology provides ready constructs for theorizing and measuring motivation and enjoyment, it is also highly generic and analytic: It says little about potential specifics of

interactive systems, nor does it easily translate into guidance on how to design motivating, enjoyable interactive systems in "messy" real-world settings.

Nevertheless, translations of theory to practice do exist and come in various forms. Below we describe three approaches to translational knowledge: measures, design guidelines, and design tools.

### Measures for Evaluation

The most straightforward method for bridging SDT research to design practice is by using SDT measures for evaluating designs. Designers already use evaluation instruments for measuring usability and acceptability, and we previously discussed a number of domain-specific measures (e.g., Player Experience of Need Satisfaction and Treatment Self-Regulation Questionnaire). We now turn to technology-specific but domain-agnostic measures.

Some make use of existing, broadly applicable SDT measures such as the Intrinsic Motivation Inventory (e.g., Coa & Patrick, 2016) to assess designs. However, as general SDT measures don't attend specifically to the technological context, Bruhlmann et al. (2018) introduced the User Motivation Inventory, a multidimensional measure of technology-specific motivation rooted in SDT's taxonomy of motivational regulations.

A number of technology-specific measures were developed for each of the more fine-grained spheres of technology experience that form part of the METUX model. The measures proposed include a combination of existing instruments (i.e., Basic Psychological Needs Satisfaction for the life level) and novel scales. Preliminary validation of the novel scales is described in Peters et al. (2018). A more complete validation and refinement process for the scales (which responds to early findings, e.g., by Jeno, Diseth & Grytnes 2021) is underway.

### Design Guidelines

While measures provide empirical methods of evaluation, they do little to provide guidance on how to design effectively in the first place. Ideally, every domain and subdomain would have a set of context-specific design strategies proven to support need satisfaction within that space. Indeed, a handful of researchers have contributed to this kind of application-specific design advice (e.g., van Roy and Zaman, 2017 for gamification in education; Yang and Aurisicchio, 2021 for conversational agents; Villalobos-Zúñiga and Cherubini, 2020 for app design features).

Yet research has also highlighted that context-specific design guidance can be difficult to tease apart. Gillison et al. (2019) conducted a meta-analysis to identify strategies for health behavior change technologies from an SDT perspective. Their goal was to "contribute towards a . . . standardised set of styles and techniques that could be reliably taught

and understood by people working to promote health behaviours" (pp. 126) similar to that which exists for motivational interviewing. Their review of 74 intervention studies demonstrated the difficulty in effectively drilling down to the level of design strategy in a reliable way. Because there was so little consistency in how studies were conducted, there was insufficient comparability by which to determine patterns of effectiveness. Studies varied widely with respect to intensity (e.g., one day vs. 12 months), application area (e.g., overall lifestyle change for weight loss vs. tooth brushing), and study design (e.g., experimental lab-based studies vs. group meetings). They also pointed to the further confounding fact that different techniques (e.g., goal setting) could be delivered in either a controlling or an autonomy-supportive way and, therefore, comparing efficacy against a technique itself may be misleading. Nevertheless, results did show that the "techniques in current use have the potential to bring about changes in the theoretical mediators of health behaviour change." (pp. 127)

Where detailed context-specific design advice may be impractical to isolate, a more promising alternative can be found at the relatively higher level provided by design heuristics and principles. For example, Szalma (2014) translated SDT concepts into high-level principles for supporting motivation, which they hoped would help provide a basis for the development of more practical recommendations for design.

Sometimes described as "rules of thumb," heuristics are midlevel in granularity (between broad principles and context-specific strategies) and apply across application areas but are specific enough to be actionable with relative ease. Most famously within HCI, Nielsen's (1995) 10 Usability Heuristics have been relied upon by practicing designers for more than two decades. More recently, the 18 Guidelines for Human-AI Interaction (Amershi et al., 2019) provide heuristic-level guidance for advanced technology interaction.

Most recently, based on a review of the SDT literature, Peters (2022) derived 15 broadly applicable SDT-based heuristics for well-being-supportive design, along with 30 more context-specific design strategies to exemplify each heuristic. The heuristics capture patterns in characteristics of need-supportive environments that have emerged across domains and apply them to the technology context. The goal is to provide theoretically driven and research-based actionable guidance to designers on how to support psychological well-being through design.

### Design Tools

One popular way of translating research into practice within HCI is via *design tools* (Peters, Loke, & Ahmadpour, 2020). These often tangible and analogue artifacts come in many forms, including card decks, templates, posters, wearables, games, and other formats that allow knowledge to be incorporated into active and collaborative design activities. Examples of work consolidating theoretical SDT knowledge into forms for practice include the Wellbeing Supportive Design Workshop, a concise, digitally delivered training workshop on applying

**Figure 48.2** Sample cards from the Wellbeing Design Card Deck designed to translate SDT research into design knowledge for technology practice

*Source*: Peters, Ahmadpour, & Calvo, 2020

SDT and METUX to technology design that provides necessary foundations in SDT concepts presented through real-world technology examples (Peters & Ahmadpour, 2020, Peters, 2022). The workshop also employs another SDT-based design tool: the Wellbeing Design Card Deck. These cards provide concise educational content (e.g., definitions of needs and METUX spheres), together with related ideation prompts (e.g., "How might we provide opportunities for people to connect, collaborate or contribute?") and heuristics. The card format provides a reconfigurable reference tool that can be incorporated into the design process in various ways (see Figure 48.2; Peters, Ahmadpour et al., 2020, Peters 2022).

## Limitations

One difficulty in synthesizing work on SDT is the incredible breadth of venues that publish it. While HCI research can generally rely on searches of key databases, SDT work that intersects with technology can turn up in journals on psychology, business, economics, sport, nursing, education, and many more. Moreover, some of these studies don't even make explicit reference to SDT but apply SDT-based measures. This makes conducting a traditional scoping review impractical. Even within comparatively narrow constraints, this has only very rarely been done (e.g., with Tyack and Mekler's [2020] excellent review of the digital games field). Therefore, in this chapter, we have opted for a narrative rather than formal review process to provide a sense of the pathways taken by SDT work in technology but without claiming to be comprehensive. Inevitably, some valuable work is not included. This exclusion should not be interpreted as intentional but simply as an acknowledgment of the formidable scope of work being done within the nearly boundless reach of both SDT and technology.

## Conclusion and Future Work

SDT stands to have an increasingly profound influence on the future of technology, and specifically on making this technology more effective and well-being-supportive. We hope future work at the intersection of SDT and technology will not only continue to bridge the theory-to-practice gap (both broadly and within specific domains) but also empirically test the efficacy of such progress. For example, we hope to see existing measures, heuristics, strategies, and frameworks such as METUX applied to different stages of the design process and then tested against end-user need satisfaction across spheres. This will help provide stronger real-world evidence for various methods we can use to operationalize need satisfaction and ultimately improve well-being through technology design.

By advancing SDT technology research, we contribute to the development of more responsible, ethical, and beneficial technologies and toward a desirable future in which all digital experience respects psychological needs.[1]

## References

Ahmadpour, N., & Cochrane, K. A. (2018). From information to reflection: Design strategies for personal informatics. *2017 IEEE Life Sciences Conference, LSC 2017*, January, 103–106.

Amershi, S., Weld, D., Vorvoreanu, M., Fourney, A., Nushi, B., Collisson, P., Suh, J., Iqbal, S., Bennett, P. N., Inkpen, K., Teevan, J., Kikin-Gil, R., & Horvitz, E. (2019). Guidelines for human-AI interaction. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, paper 3, 1–13, May 4–9, 2019, Glasgow, Scotland, UK.

Asimakopoulos, S., Asimakopoulos, G., & Spillers, F. (2017). Motivation and user engagement in fitness tracking: Heuristics for mobile healthcare wearables. *Informatics*, *4*(1), 5.

Azadvar, A., & Canossa, A. (2018). UPEQ: Ubisoft Perceived Experience Questionnaire: A self-determination evaluation tool for video games. In *Proceedings of the 13th International Conference on the Foundations of Digital Games* (pp. 1–7). Association for Computing Machinery. https://doi.org/10.1145/3235765.3235780

Beauchamp, T. L., & Childress, J. F. (2001). *Principles of biomedical ethics*. Oxford University Press.

Block, R., Niemiec, C., Rigby, S., & Williams, G. (2016). Virtual clinician need support, health-behaviour change, and its maintenance. *Journal of Clinical Lipidology*, *10*(3), 667.

Bomfim, M. C. C., & Wallace, J. R. (2018). Pirate Bri's grocery adventure: Teaching food literacy through shopping. In *Extended abstracts of the 2018 CHI Conference on Human Factors in Computing Systems* (pp. 1–6). Association for Computing Machinery. https://doi.org/10.1145/3170427.3188496

Brühlmann, F., Vollenwyder, B., Opwis, K., & Mekler, E. D. (2018, April). Measuring the "why" of interaction: Development and validation of the user motivation inventory (umi). In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (pp. 1–13).

Burke, M., Marlow, C., & Lento, T. (2010). Social network activity and social well-being. *Proceedings of the 28th International Conference on Human Factors in Computing Systems*, 1909–1912. https://doi.org/10.1145/1753326.1753613

Burr, C., Taddeo, M., & Floridi, L. (2019). The ethics of digital well-being: A thematic review. *SSRN Electronic Journal*, *2017*, 1–35.

Calvo, R. A., & Peters, D. (2014). *Positive computing: Technology for wellbeing and human potential*. MIT Press.

Calvo, R. A., Peters, D., Vold, K., & Ryan, R. M. (2020). Supporting human autonomy in AI systems: A framework for ethical enquiry. In C. Burr & L. Floridi (Eds.), *Ethics of digital wellbeing: A multidisciplinary approach* (pp. 31–54). Springer.

---

[1] We wish to thank Ryan Burnell for identifying applications of METUX which are described herein and for kindly providing feedback on the chapter. We also wish to thank Richard Ryan for inspiring the work and for providing helpful feedback.

Cave, S., Whittlestone, J., Nyrup, R., Calvo, R. A., & others. (2021). Using AI ethically to tackle covid-19. *BMJ*, *372, n364*. doi:10.1136/bmj.n364

Center for Self-Determination Theory. (n.d.). *Metrics & methods: Questionnaires*. Retrieved February 14, 2021, from https://selfdeterminationtheory.org/questionnaires/

Cheek, C., Fleming, T., Lucassen, M. F., Bridgman, H., Stasiak, K., Shepherd, M., & Orpin, P. (2015). Integrating health behaviour theory and design elements in serious games. *JMIR Mental Health*, *2*(2), e11.

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, *39*(2), 216–236.

Chiu, T. K. (2021). Applying the self-determination theory (SDT) to explain student engagement in online learning during the COVID-19 pandemic. *Journal of Research on Technology in Education*, 54:sup1, S14-S30. https://doi.org/10.1080/15391523.2021.1891998

Choi, J., Noh, G.-Y., & Park, D.-J. (2014). Smoking cessation apps for smartphones: Content analysis with the self-determination theory. *Journal of Medical Internet Research*, *16*(2), e44.

Coa, K., & Patrick, H. (2016). Baseline motivation type as a predictor of dropout in a healthy eating text messaging program. *JMIR MHealth and UHealth*, *4*(3), e114. https://doi.org/10.2196/mhealth.5992

Coumans, J. M. J., Bolman, C. A. W., Friederichs, S. A. H., Oenema, A., & Lechner, L. (2020). Development and testing of a personalized web-based diet and physical activity intervention based on motivational interviewing and the self-determination theory: Protocol for the MyLifestyleCoach randomized controlled trial. *JMIR Research Protocols*, *9*(2), e14491.

Cuthbert, R., Turkay, S., & Brown, R. (2019). The effects of customisation on player experiences and motivation in a virtual reality game. *Proceedings of the 31st Australian Conference on Human-Computer-Interaction*, 221–232. OZCHI'19, December 2–5, 2019, Fremantle, WA, Australia https://doi.org/10.1145/3369457.3369475

Desmet, P. M. A., & Pohlmeyer, A. E. (2017). *Design for happiness deck*. Delft University of Technology.

Deterding, S. (2015). The lens of intrinsic skill atoms: A method for gameful design. *Human-Computer Interaction*, *30*(3–4), 294–335.

Deterding, S. (2016). Contextual autonomy support in video game play: A grounded theory. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 3931–3943. CHI'16, May 07–12, 2016, San Jose, CA, USA. https://doi.org/10.1145/2858036.2858395

Dostert, J., & Müller, R. (2020). Motivational assistance system design for industrial production: From motivation theories to design strategies. *Cognition, Technology & Work, 23*(3), 507–535.

Dourish, P. (2001). *Where the action is: The foundations of embodied interaction*. MIT Press.

Eilert, R., Hassenzahl, M., & Buhr, M. (2020). The osteoarthritis-journey: Patients' development of long-term motivation. *Companion Publication of the 2020 ACM Designing Interactive Systems Conference*, July 2020, 111–116. https://doi.org/10.1145/3393914.3395854

Ford, M., Wyeth, P., & Johnson, D. (2012, November). Self-determination theory as applied to the design of a software learning system using whole-body controls. In *Proceedings of the 24th Australian computer-human interaction conference* (pp. 146–149).

Gao, W., Liu, Y., Liu, Z., & Li, J. (2018). How does presence influence purchase intention in online shopping markets? An explanation based on self-determination theory. *Behaviour & Information Technology*, *37*(8), 786–799.

Gillison, F. B., Rouse, P., Standage, M., Sebire, S. J., & Ryan, R. M. (2019). A meta-analysis of techniques to promote motivation for health behaviour change from a self-determination theory perspective. *Health Psychology Review*, *13*(1), 110–130.

Guckelsberger, C., Salge, C., Gow, J., & Cairns, P. (2017). Predicting player experience without the player: An exploratory study. *Proceedings of the Annual Symposium on Computer-Human Interaction in Play*, October, 305–315. https://doi.org/10.1145/3116595.3116631

Haque, M. S., Kangas, M., & Jämsä, T. (2020). A persuasive mHealth behavioural change intervention for promoting physical activity in the workplace: Feasibility randomized controlled trial. *JMIR Formative Research*, *4*(5), e15083.

Hartnett, M. (2016). The importance of motivation in online learning. Chapter in *Motivation in online education*, (pp. 5–32). Springer. https://doi.org/10.1007/978-981-10-0700-2_2

Hassenzahl, M. (2010). Experience design: Technology for all the right reasons. *Synthesis Lectures on Human-Centered Informatics*, *3*(1), 1–95.

Hassenzahl, M., Eckoldt, K., Diefenbach, S., Laschke, M., Lenz, E., & Kim, J. (2013). Designing moments of meaning and pleasure: Experience design and happiness. *International Journal of Design*, *7*(3), 21–31.

Hassenzahl, M., Wiklund-Engblom, A., Bengs, A., Hägglund, S., & Diefenbach, S. (2015). Experience-oriented and product-oriented evaluation: Psychological need fulfillment, positive affect, and product perception. *International Journal of Human-Computer Interaction*, *31*(8), 530–544.

Hsu, H.-C. K., Wang, C. V., & Levesque-Bristol, C. (2019). Reexamining the impact of self-determination theory on learning outcomes in the online learning environment. *Education and Information Technologies*, *24*(3), 2159–2174.

Huang, L. (2017, March). Qualitative analysis of the application of self-determination theory in robotics tournaments. In *Proceedings of the Companion of the 2017 ACM/IEEE International Conference on Human-Robot Interaction* (pp. 135–136).

Hurley, D. A., Keogh, A., Ardle, D. M., Hall, A. M., Richmond, H., Guerin, S., Magdalinski, T., & Matthews, J. (2019). Evaluation of an e-learning training program to support implementation of a group-based, theory-driven, self-management intervention for osteoarthritis and low-back pain: Pre-post study. *Journal of Medical Internet Research*, *21*(3), e11123.

Ijaz, K., Ahmadpour, N., Wang, Y., & Calvo, R. A. (2020). Player experience of needs satisfaction (PENS) in an immersive virtual reality exercise platform describes motivation and enjoyment. *International Journal of Human-Computer Interaction*, *36*(13), 1195–1204. https://doi.org/10.1080/10447318.2020.1726107.

Jansen, A., Van Mechelen, M., & Slegers, K. (2017). Personas and behavioural theories: A case study using self-determination theory to construct overweight personas. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (pp. 2127–2136). Association for Computing Machinery. https://doi.org/10.1145/3025453.3026003

Jeno, L. M., Adachi, P. J. C., Grytnes, J.-A., Vandvik, V., & Deci, E. L. (2018). The effects of m-learning on motivation, achievement and well-being: A self-determination theory approach. *British Journal of Educational Technology*, *50*(2), 669–683.

Jeno, L. M., Diseth, Å., & Grytnes, J. A. (2021). Testing the METUX model in higher education: Interface and task need-satisfaction predict engagement, learning, and well-being. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.631564

Johnson, R., Stewart, C., & Bachman, C. (2015). What drives students to complete online courses? What drives faculty to teach online? Validating a measure of motivation orientation in university students and faculty. *Interactive Learning Environments*, *23*(4), 528–543.

Karapanos, E., Teixeira, P., & Gouveia, R. (2016). Need fulfillment and experiences on social media: A case on Facebook and WhatsApp. *Computers in Human Behaviour*, *55*, 888–897.

Kauhondamwa, M., Winschiers-Theophilus, H., Kapembe, S., Costa, H., Guxab, J., Kamati, I., & Afrikaner, H. (2018, December). Co-creating personal augmented reality accessories to enhance social well-being of urban San youth. In *Proceedings of the Second African Conference for Human Computer Interaction: Thriving Communities* (pp. 1–10).

Kayali, F., Luckner, N., Purgathofer, P., Spiel, K., & Fitzpatrick, G. (2018). Design considerations towards long-term engagement in games for health. *Proceedings of the 13th International Conference on the Foundations of Digital Games*, August, 1–8. https://doi.org/10.1145/3235765.3235789

Kerner, C., & Goodyear, V. A. (2017). The motivational impact of wearable healthy lifestyle technologies: A self-determination perspective on Fitbits with adolescents. *American Journal of Health Education*, *48*(5), 287–297.

King, M., Hijmans, J. M., Sampson, M., Satherley, J., & Hale, L. (2012). Home-based stroke rehabilitation using computer gaming. *New Zealand Journal of Physiotherapy*, *40*(3), 128–135.

Klapperich, H., Laschke, M., & Hassenzahl, M. (2018). The positive practice canvas. *Proceedings of the 10th Nordic Conference on Human-Computer Interaction*, September, 74–81.

Lafrenière, M. A. K., Verner-Filion, J., & Vallerand, R. J. (2012). Development and validation of the Gaming Motivation Scale (GAMS). *Personality and individual differences*, *53*(7), 827–831.

Lan, M., & Hew, K. F. (2020). Examining learning engagement in MOOCs: A self-determination theoretical perspective using mixed method. *International Journal of Educational Technology in Higher Education*, *17*(1), 1–24.

Lederman, R., Gleeson, J., Wadley, G., D'alfonso, S., Rice, S., Santesteban-Echarri, O., & Alvarez-Jimenez, M. (2019). Support for carers of young people with mental illness: Design and trial of a technology-mediated therapy. *ACM Transactions on Computer-Human Interaction*, *26*(1), 4:1–4:33.

Lee, Y., Kozar, K. A., & Larsen, K. R. (2003). The technology acceptance model: Past, present, and future. *Communications of the Association for Information Systems*, *12*(1), 50.

Lehtonen, L., Kaos, M. D., Kajastila, R., Holsti, L., Karsisto, J., Pekkola, S., Vähämäki, J., Vapaakallio, L., & Hämäläinen, P. (2019). Movement empowerment in a multiplayer mixed-reality trampoline game. *Proceedings of the Annual Symposium on Computer-Human Interaction in Play*, October, 19–29. https://doi.org/10.1145/3311350.3347181

Lerch, V. R., Steinemann, S. T., & Opwis, K. (2018). Understanding fitness app usage over time: Moving beyond the need for competence. *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*, Paper No.: LBW065. 1–6. https://doi.org/10.1145/3170427.3188608

Leung, L. S. K., & Matanda, M. J. (2013). The impact of basic human needs on the use of retailing self-service technologies: A study of self-determination theory. *Journal of Retailing and Consumer Services*, *20*(6), 549–559.

Lin, J.-H. (2016). Need for relatedness: A self-determination approach to examining attachment styles, Facebook use, and psychological well-being. *Asian Journal of Communication*, *26*(2), 153–173.

Mackenzie, C. S., Karaoylas, E. C., & Starzyk, K. B. (2018). Lifespan differences in a self determination theory model of eudaimonia: A cross-sectional survey of younger, middle-aged, and older adults. *Journal of Happiness Studies*, *19*(8), 2465–2487.

Martin, A. J., Papworth, B., Ginns, P., Malmberg, L. E., Collie, R. J., & Calvo, R. A. (2015). Real-time motivation and engagement during a month at school: Every moment of every day for every student matters. *Learning and Individual Differences*, *38*, 26–35.

Martin, A. J., Mansour, M., & Malmberg, L. E. (2020). What factors influence students' real-time motivation and engagement? An experience sampling study of high school students using mobile technology. *Educational Psychology*, *40*(9), 1113–1135.

McEwan, M., Phillips, C., Wyeth, P., & Johnson, D. (2020). Puppy island: Theory-driven design of a serious game for young children with cystic fibrosis. *Proceedings of the Interaction Design and Children Conference*, June, 532–540.

Mishkin, A. (2019). Applying self-determination theory towards motivating young women in computer science. *Proceedings of the 50th ACM Technical Symposium on Computer Science Education*, February, 1025–1031. https://dl.acm.org/doi/10.1145/3287324.3287389

Morley, J., & Floridi, L. (2019). Enabling digital health companionship is better than empowerment. *The Lancet Digital Health*, *1*(4), e155–e156.

Naderi, B., Wechsung, I., Polzehl, T., & Möller, S. (2014). Development and validation of extrinsic motivation scale for crowdsourcing micro-task platforms. *Proceedings of the 2014 International ACM Workshop on Crowdsourcing for Multimedia*, November, 31–36. Development and validation of extrinsic motivation scale for crowdsourcing micro-task platforms

Naqshbandi, K. Z., Liu, C., Taylor, S., Lim, R., Ahmadpour, N., & Calvo, R. (2020). "I am most grateful": Using gratitude to improve the sense of relatedness and motivation for online volunteerism. *International Journal of Human-Computer Interaction*, *36*(14), 1325–1341.

Nguyen, Q. N., & Sidorova, A. (2018). Understanding user interactions with a chatbot: A self-determination theory approach. *AMCIS 2018 Proceedings 3*. https://aisel.aisnet.org/amcis2018/HCI/Presentations/3

Nielsen, J. (1994). Enhancing the explanatory power of usability heuristics. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, April Vol 1. 152–158.

Nielsen, J. (1995). *10 heuristics for user interface design*. Jakob Nielsen's Alertbox. http://www.nngroup.com/articles/ten-usability-heuristics/

Niko, S. A., & Economides, A. A. (2017). Mobile-based assessment: Integrating acceptance and motivational factors into a combined model of self-determination theory and technology acceptance. *Computers in Human Behaviour*, *68*, 83–95.

Norman, D. (1993). *Things that make us smart: Defending human attributes in the age of the machine*. Addison-Wesley.

Ntoumanis, N., Ng, J. Y. Y., Prestwich, A., Quested, E., Hancox, J. E., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Lonsdale, C., & Williams, G. C. (2020). A meta-analysis of self-determination

theory-informed intervention studies in the health domain: Effects on motivation, health behaviour, physical, and psychological health. *Health Psychology Review*. 15(2), 214–244.

Peng, W., Lin, J.-H., Pfeiffer, K. A., & Winn, B. (2012). Need satisfaction supportive game features as motivational determinants: An experimental study of a self-determination theory guided exergame. *Media Psychology*, *15*(2), 175–196.

Peters, D. (2022). Wellbeing supportive design—research-based guidelines for supporting psychological wellbeing in user experience. *International Journal of Human–Computer Interaction*, 1–13. https://doi.org/10.1080/10447318.2022.2089812

Peters, D., & Ahmadpour, N. (2020). Digital wellbeing through design—Evaluation of a professional development workshop on wellbeing-supportive design. *Proceedings of the 32nd Australian Computer-Human Interaction Conference*. OzCHI 2020, https://doi.org/10.1145/3441000.3441008.

Peters, D., Ahmadpour, N., & Calvo, R. A. (2020). Tools for wellbeing-supportive design: Features, characteristics, and prototypes. *Multimodal Technologies and Interaction*, *4*(3), 40.

Peters, D., Calvo, R. A., & Ryan, R. M. (2018). Designing for motivation, engagement and wellbeing in digital experience. *Frontiers in Psychology*, *9*(May), 797, 1–15.

Peters, D., Davis, S., Calvo, R. A., Sawyer, S. M., Smith, L., & Foster, J. M. (2017). Young people's preferences for an asthma self-management app highlight psychological needs: A participatory study. *Journal of Medical Internet Research*, *19*(4), e113.

Peters, D., Loke, L., & Ahmadpour, N. (2020). Toolkits, cards and games—A review of analogue tools for collaborative ideation. *CoDesign*. 17:4, 410–434, https://doi.org/10.1080/15710882.2020.1715444

Peters, D., Vold, K., Robinson, D., Calvo, & R.A. (2020). Responsible AI: Two frameworks for ethical design practice. *IEEE Transactions on Technology and Society*, *1*(1), 34–47.

Picard, R. W. (2000). *Affective computing*. MIT Press.

Pink, D. (2009). Drive: The surprising truth about what motivates us. New York, NY: Riverhead.

Posch, L., Bleier, A., Lechner, C. M., Danner, D., Flöck, F., & Strohmaier, M. (2019). Measuring motivations of crowdworkers: The Multidimensional Crowdworker Motivation Scale. *ACM Transactions on Social Computing*, *2*(2), 8:1–8:34.

Pretorius, C., McCashin, D., Kavanagh, N., & Coyle, D. (2020). Searching for mental health: A mixed-methods study of young people's online help-seeking. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 1–13.

Putnam, C., Lin, A., Subramanian, V., Anderson, D. C., Christian, E., Swaminathan, B., Yalla, S., Cotter, W., Ciccone, D., & Cheng, J. (2017). Effects of commercial exergames on motivation in brain injury therapy. In B. Schouten, et al. (Eds.), *Extended abstracts publication of the Annual Symposium on Computer-Human Interaction in Play* (pp. 47–59). Association for Computing Machinery. https://dl.acm.org/doi/10.1145/3130859.3131431

Racero, F. J., Bueno, S., & Gallego, M. D. (2020). Predicting students' behavioral intention to use open source software: A combined view of the technology acceptance model and self-determination theory. *Applied Sciences*, *10*(8), 2711.

Rahi, S., & Abd. Ghani, M. (2019). Integration of expectation confirmation theory and self-determination theory in internet banking continuance intention. *Journal of Science and Technology Policy Management*, *10*(3), 533–550.

Rigby, S., & Ryan, R. M. (2011). *Glued to games: How video games draw us in and hold us spellbound: How video games draw us in and hold us spellbound*. AbC-CLIo.

Roca, J. C., & Gagné, M. (2008). Understanding e-learning continuance intention in the workplace: A self-determination theory perspective. *Computers in Human Behaviour*, *24*(4), 1585–1604.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., & Deci, E. L. (2018). Supporting autonomy, competence, and relatedness: The coaching process from a self-determination theory perspective. In S. English, J. M. Sabatine, & P. Brownell (Eds.), *Professional coaching*. (pp. 231–245) Springer.

Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, *30*(4), 347–363.

Saksono, H., Castaneda-Sceppa, C., Hoffman, J., Morris, V., Seif El-Nasr, M., & Parker, A. G. (2020). Storywell: Designing for family fitness app motivation by using social rewards and reflection. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, April, 1–13. https://dl.acm.org/doi/10.1145/3313831.3376686

Schlosser, D., Campellone, T., Kim, D., Truong, B., Vergani, S., Ward, C., & Vinogradov, S. (2016). Feasibility of PRIME: A cognitive neuroscience-informed mobile app intervention to enhance motivated behaviour and improve quality of life in recent onset schizophrenia. *JMIR Research Protocols*, *5*(2), e5450.

Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*, *74*, 14–31.

Sheldon, K. M., Abad, N., & Hinsch, C. (2011). A two-process view of Facebook use and relatedness need-satisfaction: Disconnection drives use, and connection rewards it. *Journal of Personality and Social Psychology*, *100*(4), 766–775.

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology*, *80*(2), 325–339.

Shneiderman, B. (2020). Design lessons from AI's two grand goals: Human emulation and useful applications. *IEEE Transactions on Technology and Society*, *1*(2), 73–82.

Shneiderman, B., & Plaisant, C. (2010). *Designing the user interface: Strategies for effective human-computer interaction*. Pearson Education India.

Shroff, R. H., & Keyes, C. J. (2017). A proposed framework to understand the intrinsic motivation factors on university students' behavioral intention to use a mobile application for learning. *Journal of Information Technology Education. Research*, *16*, 143.

Smit, E. S., Dima, A. L., Immerzeel, S. A. M., van den Putte, B., & Williams, G. C. (2017). The Virtual Care Climate Questionnaire: Development and validation of a questionnaire measuring perceived support for autonomy in a virtual care setting. *Journal of Medical Internet Research*, *19*(5), e155.

Smit, E. S., Zeidler, C., Resnicow, K., & de Vries, H. (2019). Identifying the most autonomy-supportive message frame in digital health communication: A 2x2 between-subjects experiment. *Journal of Medical Internet Research*, *21*(10), e14074.

Song, H., Kim, J., Tenzek, K. E., & Lee, K. M. (2013). The effects of competition and competitiveness upon intrinsic motivation in exergames. *Computers in Human Behaviour*, *29*(4), 1702–1708.

Suchman, L. A. (1987). *Plans and situated actions: The problem of human-machine communication*. Cambridge University Press.

Szalma, J. L. (2014). On the application of motivation theory to human factors/ergonomics: Motivational design principles for human-technology interaction. *Human Factors*, *56*(8), 1453–1471.

Tece Bayrak, A., & Wünsche, B. (2021). Player motivation in therapy games for Parkinson's disease: A scoping review: Understanding meaningful play, self-determination and flow. *2021 Australasian Computer Science Week Multiconference*, Stranger, N, Woodford B, Winikoff M. et al. 1–10. Dunedin New Zealand February 1 - 5, 2021,

Toyoda, Y., Lucas, G., & Gratch, J. (2020). The effects of autonomy and task meaning in algorithmic management of crowdwork. In *Proc. of the 19th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2020), B. An, N. Yorke-Smith, A. El Fallah Seghrouchni, G. Sukthankar (eds.), May 9–13, 2020, Auckland, New Zealand.* (pp. 1404–1412).

Tsai, T.-H., Chang, Y.-S., Chang, H.-T., & Lin, Y.-W. (2021). Running on a social exercise platform: Applying self-determination theory to increase motivation to participate in a sporting event. *Computers in Human Behaviour*, *114*, 106523.

Tyack, A., & Mekler, E. D. (2020). Self-determination theory in HCI games research: Current uses and open questions. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, paper 594, 1–22, Association for Computing Machinery: NY.

van Roy, R., & Zaman, B. (2017). Why gamification fails in education and how to make it successful: Introducing nine gamification heuristics based on self-determination theory. In M. Ma & A. Oikonomou (Eds.), *Serious games and edutainment applications* (Vol. 2, pp. 485–509). Springer International.

Véronneau, M. H., Koestner, R. F., & Abela, J. R. Z. (2005). Intrinsic need satisfaction and well-being in children and adolescents: An application of the self-determination theory. *Journal of Social and Clinical Psychology*. *24*(2) (Mar 2005), 280–292.

Villalobos-Zúñiga, G., & Cherubini, M. (2020). Apps that motivate: A taxonomy of app features based on self-determination theory. *International Journal of Human Computer Studies*, *140* (December), 102449.

Wang, C., Hsu, H.-C. K., Bonem, E. M., Moss, J. D., Yu, S., Nelson, D. B., & Levesque-Bristol, C. (2019). Need satisfaction and need dissatisfaction: A comparative study of online and face-to-face learning contexts. *Computers in Human Behaviour*, *95*, 114–125.

Wannheden, C., Stenfors, T., Stenling, A., & von Thiele Schwarz, U. (2021). Satisfied or frustrated? A qualitative analysis of need satisfying and need frustrating experiences of engaging with digital health technology in chronic care. *Frontiers in Public Health*, *8*, 197. https://doi.org/10.3389/fpubh.2020.623773

Wiese, L., Pohlmeyer, A. E., & Hekkert, P. (2020). Design for sustained wellbeing through positive activities—A multi-stage framework. *Multimodal Technologies and Interaction*, *4*(4), 71.

Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology*, *70*(1), 115–126.

Yang, X., & Aurisicchio, M. (2021). Designing conversational agents: A self-determination theory approach. *In CHI Conference on Human Factors in Computing Systems (CHI '21)* (16 pp), May 08–13, 2021, Yokohama, Japan. ACM, New York, NY, USA. https://doi.org/10.1145/3411764.3445445.

Zhang, P. (2008). Toward a positive design theory: Principles for designing motivating information and communication technology. *Advances in Appreciative Inquiry*. *2*, 45–74.

Zhao, Y. C., & Zhu, Q. (2014). Effects of extrinsic and intrinsic motivation on participation in crowdsourcing contest: A perspective of self-determination theory. *Online Information Review*.

# Flourishing in Digital Environments: The Case for Self-Determination Theory as a Beneficial Framework for Individuals, Industry, and Society

C. Scott Rigby

## Abstract

Interactive media has taken a central role in modern life, with billions of hours spent each day viewing content, playing games, communicating in social media, and engaging with myriad digital apps throughout both work and leisure time. Given this prevalence, reasonable debates have emerged about the impact of interactive media on well-being—both of individuals and of society—and how these needs for well-being can be reconciled with the commercial interests of companies building interactive media. In this chapter self-determination theory (SDT) is reviewed as a promising model for understanding the experiential dynamics of interactive media and their effects on well-being, providing guidance to individual users and interactive media designers alike. SDT is viewed as a framework to reconcile well-being concerns and economic interests, providing practical tools and a moral structure to the benefit of both individuals and industry. As such, SDT can be deployed in multiple modalities, including as a guiding framework for design of interactive digital environments; as a technology itself, integrating scalable measurement of need fulfillment and support into interactive products and services; and as a set of quantifiable moral constructs that can guide regulatory policies and practice.

**Key Words:** self-determination theory, autonomy, digital technologies, gamification, interactive media, user experience

Yesterday alone, people in the United States spent 1 billion hours on a mobile device. Such is the motivational pull interactive media has attained in our lives since the smartphone was launched only 15 years ago. In fact, most of the universe of interactive media applications that now consume hours of our time each day—Facebook, YouTube, Twitter, Instagram, TikTok, Netflix—simply didn't exist a mere generation ago.

This remarkably fast ascent to prominence in people's daily lives has resulted in concerns about screen time and its potential ills. Reminiscent of similar controversies that television evoked 50 years ago, screen time has been cited as bad for children (Madigan et al., 2019), bad for sleep (Hale & Guan, 2015), bad for our mental and emotional

health and, indeed, our overall well-being (Twenge & Campbell, 2018). Technologists themselves seem to have bought into this narrative, giving us reports each week on how much time we've spent looking at screens, with the implicit message that "less is good, more is bad." From this perspective, interactive media is like that bag of chips that calls to us from the pantry: a guilty pleasure to be indulged sparingly given its lack of any real nutritional value.

How unfortunate we have developed such a contentious relationship with interactive media given that, in principle, it holds so much promise. Surely being able to ask aloud "What's the weather like tomorrow?" or "What year did the Visigoths sack Rome?" and hear back instant and accurate answers from our technology would have completely amazed us just a few years ago, as would our ability to be in such deep contact with people, information, and resources from a device small enough to carry in our pocket. I imagine our past selves might eagerly discuss how today's interactive technology could be used to nourish us, both individually and collectively. Put in the language of self-determination theory (SDT), we could easily tell tales of the need fulfillment and intrinsic engagement that such interactive media could—and would—facilitate.

Indeed, alongside understandable handwringing about the perils of screen time, the benefits of interactive media are also manifest. During a recent global pandemic, we used interactive media to work collaboratively at a distance, to see and laugh together with loved ones, and to empower learning and entertainment even while schools and theaters were shuttered. The sudden need for interactive technologies to stay connected while staying safe prompted a reconsideration of screen time and its relations with well-being (Magis-Weinberg et al., 2021). It is likely that whatever concerns we may have personally about screens, each of us could recount how interactive media has genuinely fulfilled and benefited us personally in the last week alone.

So here we are, deeply embracing the use of interactive media as a staple of daily modern life, but morally conflicted about its use. Legitimate concerns about the negative impact of interactive media must somehow be reconciled with significant evidence of its potential for benefit. As important, we need roadmaps that will assist developers in building digital worlds supportive of both human well-being and success in the commercial marketplace. Otherwise, such models are unlikely to be adopted by interactive media companies in real-world practice.

I write this chapter from two vantage points. The first is having participated in traditional research on the relations between SDT, interactive media, and well-being to advance basic science knowledge in this area. In addition, I professionally apply SDT to products, services, and organizational cultures in commercial settings, working directly with companies to improve customer experiences and the financial success of their interactive media offerings. In my experience from both perspectives, I see evidence that SDT has great promise for shaping a reconciliation of both commercial and consumer well-being goals. Because SDT articulates specific and measurable components of well-being

alongside models of how our environments support (or thwart) them, it is a framework for understanding how interactive media can nourish (or harm) each of us individually, and our society collectively (Peters, Calvo, & Ryan, 2018). In addition, because SDT pinpoints how elements of interactive media can be designed for need fulfillment and deeper engagement, it is compelling as an applied model for success in the marketplace. In short, SDT is an integrative model that can address both the commercial goals of designers that focus on customer engagement and simultaneously the well-being needs of their customers.

In support of this thesis, I will reference peer-reviewed evidence alongside references to successful commercial applications. The latter are often proprietary in nature (and thus not published) but nonetheless represent promising early evidence that SDT can be applied to interactive media for commercial benefit alongside support for individual well-being.

## Framing Interactive Media as an Environment

A fundamental focus of SDT is how one's environment either facilitates or thwarts one's basic psychological needs for autonomy, competence, and relatedness. SDT research has demonstrated that most of the environments of daily life—including work, education, leisure, sports, and home—are not implicitly good or bad for well-being and flourishing. Rather, the valence of each—at least with respect to well-being—is a function of how these environments provide support for these basic needs (Ryan & Deci, 2017).

Interactive media can be seen as another kind of environment—albeit one that can be carried with you—having a similar potential for positive or negative impacts depending on how one experiences support for these same basic needs. Framing interactive media such as games, social media, streaming media, and mobile apps as *interactive digital environments* (IDEs) helps avoid reification of screen time as intrinsically negative or positive; just as other environments can be either nurturing or toxic depending on the quality of specific need supports, so too interactive media can either support or thwart well-being.

As such, SDT allows us to reframe the entire discussion about "healthy" screen time: the quality of one's relationship with screens is not a function of how successful one has been in turning them off to experience "real life" but in what kinds of fulfilling experiences and nurturing digital environments one experiences when screens are on, and how well digital experiences are integrated within our lives more generally.

A recent study by Bekalu and colleagues (2019) on the impact of social media on well-being illustrates this point. While much of the literature on the impact of social media has been mixed, with some studies showing negative impacts on well-being (Shakya & Christakis, 2017;) and others showing positive relations (Nabi, Prestin, & So, 2013), Bekalu et al. point out that most studies look primarily at the amount of usage rather than at qualitative elements of the experience of usage. By including measures of integration and emotional regulation around social media use, they showed that the impact of

social media applications was neither a function of the "dose" of exposure, nor implicitly positively or negatively related to well-being. Instead, relations were relative: when social media was experienced as enjoyable and well-integrated as a part of one's daily routine for communication and social interaction, associations with well-being were positive. Conversely, less-integrated emotional connections to social media use showed negative associations to well-being.

Put more directly in the language of SDT: interactive media is an environment in which the experience of basic needs (facilitated or thwarted by environmental factors within the IDE) determines the impact on well-being. Just as it has in many other domains, SDT readily describes both the specific experiences that accrue toward either positive or negative outcomes in IDEs, and the environmental qualities recommended to support basic psychological needs and well-being in these digital environments (Rigby, 2015).

### Density, Immediacy, and Consistency: IDEs and Facilitating Basic Psychological Needs

IDEs have some remarkable advantages as a medium for need support relative to other domains, specifically with regard to the *density*, *immediacy*, and *consistency* with which they can offer need-supportive experiences (Rigby & Ryan, 2011). Indeed, the efficiency with which IDEs can support all three basic psychological needs is a key factor in explaining what makes many kinds of IDEs so deeply engaging and enjoyable (Ryan, Rigby, & Przybylski, 2006; Przybylski et al., 2010).

**Density.** The concept of *density* in need fulfillment refers to how frequently autonomy, competence, and relatedness needs are satisfied in an environment. Well-designed video games, for example, integrate multiple systems that operate simultaneously to support needs, including growth and progression systems (supporting competence and autonomy); choice and customization of one's identity, appearance, and goals (supporting autonomy); and multiple social systems for chat, forming social groups, and cooperative/competitive play (supporting relatedness). Alongside this, the technological nature of IDEs enables dense informational feedback loops on one's status, actions, and outcomes, further increasing awareness of one's skill development (competence) alongside opportunities for further exploration and discovery (supporting autonomy; Rigby & Ryan, 2011).

The potential to densely support need fulfillment is true not only for digital games but for many kinds of IDE experiences. While one walks through an unfamiliar city at dinner time, apps on one's phone can extensively search for nearby restaurants, offering dense and informative reviews of multiple dining options, thus creating a more fertile ground for meaningful and informed choice (supporting competence and autonomy). Social media environments empower customers to curate information feeds and conversations with other people (supporting relatedness) based on topics of personal interest (supporting autonomy), creating a deep reservoir of compelling content and discussion.

**Immediacy**. The interactive content IDEs provides is not only dense; it is fast. In the social media example above, curated content and conversations are available on demand, providing engagement almost instantaneously. In other domains, IDEs leverage the *immediacy* of information to deepen consumer engagement and value. The digital watch on my wrist tells me second by second how well I am maintaining my target pulse rate during a run, showing me in real time how well I am progressing and achieving goals (supporting competence). IDEs focused on communication allow me to share joys and sorrows instantly with family and friends around the world and receive immediate support (supporting relatedness). Millions of "how to" guides and illustrative videos quickly stream step-by-step support for problem-solving and learning on almost any topic (supporting autonomy and competence). Immediacy refers to these kinds of rapid responses to our actions within IDEs, enabling further potential for strong need support through informational and interpersonal connection where and when we desire it.

**Consistency**. IDEs are also highly *consistent* in their responses and feedback. Simply put, technology is not subject to many of the delays and inconsistencies endemic to molecular (aka. real-world) environments filled with humans who can make mistakes, get tired, and vary greatly in how they respond even in interactions with similar circumstances. IDEs, by contrast, interact based on reliable rules that can be learned and trusted to respond in expected ways, each and every time. For example, while traditional classrooms need to closely monitor the burden of student:teacher ratios to ensure teachers can effectively support the number of students under their charge, educational IDEs can scale individualized support to hundreds or thousands of students, with the potential to consistently keep each student at the center of attention even at numbers of great scale (Rigby & Przybylski, 2009).

When these implicit advantages for dense, immediate, and consistent support are meaningfully directed at basic psychological needs, IDEs can be fertile ground for fulfilling experiences. Ryan et al. (2006) published the first research demonstrating that SDT's basic psychological needs explained not only why games were "fun" to players but also that the fulfillment of these needs was a stronger predictor of value and sustained engagement compared to simpler models of enjoyment. Ongoing research continues to confirm that among all the myriad elements of games that may contribute to making them "fun," it is the experience of autonomy, competence, and relatedness need satisfactions that substantially explains their enjoyment (Tamborini et al., 2010).

Subsequent research has demonstrated the value of a basic psychological need framework as an applied science in the design of IDEs across a wide range of games. SDT-based experiments have shown the ability to manipulate game features to increase or decrease specific psychological needs (e.g., Peng et al., 2012) and have tested game developers' assumptions about how different kinds of game content (such as violence) fulfills, or fails to fulfill, psychological needs (Przybylski, Ryan, & Rigby, 2009). SDT principles have

also assisted directly in the design of games focused on learning and engagement (Ford, Wyeth, & Johnson, 2012).

### Gamification

The ability of video games to powerfully motivate engagement sparked the rise of the gamification movement over the past decade. "Gamification" refers to the application of video game mechanics to nongame contexts to improve performance or other desired outcomes (Deterding et al., 2011). Gamification was initially hailed as a revolutionary approach to solving problems of engagement and outcomes at work, in education, and in healthcare (Werbach & Hunter, 2012; Caponetto, Earp, & Ott, 2014), prompting billions of dollars of investment in gamification solutions and the companies that provided them.

More recently, gamification has struggled. While in 2012, the market research firm Gartner estimated that 80% of companies were considering some form of gamification in their businesses, by 2014 they also projected that 80% of gamification approaches would fail (Nicastro, 2013). Businesses began to wander away from the approach, disillusioned by inconsistent results and perhaps confused as to why trying to make life more like games hadn't been a slam dunk.

SDT provides a lens to understand gamification's struggles, despite its promise. Gamification initially focused on transplanting game features without a strong consideration of their experiential (and motivational) implications or an understanding of where, when, and how such game designs supported the basic psychological needs for autonomy, competence, and relatedness (Rigby, 2015). When gamification bolted game features such as leaderboards and badges onto other areas of life, it failed to consider that these elements can vary in what SDT calls their *functional significance* to the recipient (Reeve, this volume), and thus can have varying impacts on need satisfactions and frustrations. Gamification implementations, for example, might even backfire by creating feelings of control or pressure detrimental to autonomous engagement.

In short, in its early rush to market gamification failed to adequately consider these important issues and the research addressing them. From the SDT perspective, *any* particular game feature or content can be analyzed for its impact on fun and engagement, and these effects will primarily be mediated by psychological needs. Thus what ultimately matters is how well the overall IDE is designed to support autonomy, competence, and relatedness, densely and efficiently (Ryan et al., 2006; Przybylski et al., 2010). This offers a more promising path forward for gamification as it matures as a practice, suggesting that gamification would be best accomplished by a similar focus on these need supports (Sailer et al., 2017).

For this reason, the term "motivational design" has been proposed as a more accurate reflection of gamification's goals and the process for achieving them (Rigby, 2015). Indeed, the term "need fulfillment design" might be more preferable as it simultaneously denotes a user-centered goal (need fulfillment) while also emphasizing the specific experiences that

IDEs must support (autonomy, competence, and relatedness) to meaningfully engage their audience.

Semantics aside, this SDT-focused approach shows promise. Practitioners have been applying principles of SDT to the design and development of IDEs to improve experiences, engagement, and outcomes. In recent years, principles of intrinsic motivation and need fulfillment have been applied to IDEs focused on a diverse range of healthy life goals that also support the business goals of the developers. As one example, by shifting the emphasis in their IDE from actuarial questions to an exploration of intrinsic goals and need fulfillment, one large financial institution was able to increase retirement savings rates by over 400%, supporting both the individual's financial well-being and the retirement company's corporate goals. Similar application of SDT principles have improved IDEs' support for managing chronic illness (Williams et al., 2014) and improving online learning (Chiu, 2021). Through such real-world IDE development and associated research projects, best practices are emerging for facilitating need fulfillment and higher motivational quality in the design and development of IDEs, creating practical guidance in how to use principles of SDT to create meaningful and valued engagement. Indeed, because well-designed IDEs that succeed in providing dense need supports often evidence deep and sustained engagement, there is growing interest in the design of IDEs based on principles of need support and motivational quality.

## Design Principles for Supporting Competence, Autonomy, and Relatedness

### Competence Support in IDEs

One of the most impactful advantages for supporting competence in IDEs is that the underlying technology can dynamically support each individual based upon their specific actions and level of ability, providing detailed feedback and communication through multiple systems that are common elements of IDEs. A brief discussion of user interfaces (UIs) and interactive tutorials illustrates this point.

UIs are a central element of all IDEs, providing feedback and information as one navigates through the environment, engaging in its content and activities. Designing UI systems with a specific focus on competence support results in rich informational feedback that optimally assists in the mastery of tasks and skill growth. Key in a competence-supportive design approach is to ensure that the UI's elements are experienced as instructive rather than evaluative of performance. For example, UI indicators of performance—especially failure—that do not provide information useful for learning are avoided, as is overcrowding of the UI with indicators that can distract, confuse, or overwhelm success at tasks. Instead, UI elements that provide efficient informational feedback are prioritized.

Interactive tutorials and early experiences can likewise be designed to engage new users by focusing on incremental levels of competence within the IDE. Initial support

focuses on learning that the *schema* of the IDE—the general structure, goals, and rules for successfully taking action in the digital environment—gives the user the basic knowledge of "how the world works" in the IDE, establishing a basis for taking effective action. Building on this foundation, competence-supportive designs then focus on ensuring the user achieves basic *efficacy* in the core activities available to them: can they successfully take actions and achieve results and experiences as intended, or is there a struggle? Finally, a competence-supportive approach provides pathways for the ongoing development of *skill and expertise*, enabling not only efficacy but growth and mastery.

### Autonomy Support in IDEs

The ability to provide rich informational feedback not only empowers competence support in IDEs but autonomy support as well. Applied research in SDT has illuminated IDE structures that support autonomy, including affordance of choice (Peng et al., 2012) and mechanics for discovery and goal setting that increase interest and personal value in activities.

Autonomy-supportive approaches to designing IDEs largely succeed by integrating multiple systems, facilitating fulfillment of autonomy by presenting a network of possibilities to each individual. The user can then construct the experience that most interests them, creating a "personal narrative" within the IDE that reflects their values and goals. Examples of such systems include:

- *Goal-setting mechanics* such as "quest" systems in games or setting healthy activity targets in a wellness application that provide meaningful choices based on personal interests.
- *Identity creation tools* that empower users to customize their identity and how their avatar or representation in the IDE looks, sounds, and acts.
- *Exploration and discovery* design structures that present content in an open, nonlinear format, enabling users to choose their own direction. Discovery mechanics implicitly reward exploration with meaningful and unexpected surprises, such as uncovering new (and preferably novel) content or further expanding opportunities.

Across all systems such as these, IDEs can further facilitate autonomy by communicating or *telegraphing* the opportunities available for users, both now and in the future, as they grow and deepen engagement in the IDE. Such telegraphing can be achieved in multiple ways, such as communicating how the user will "unlock" new abilities to interact with others in a social IDE as they become more experienced, showing them a detailed map of all the content they can explore in a streaming media IDE, or displaying for them

a "skill tree" in a video game showing how they can choose to develop their character over the next 10, 20, even 100 hours of play.

*Relatedness Support in IDEs*

IDEs can optimally facilitate experiences of belonging and connection (relatedness) primarily through design features that foster collaboration and mutual support. Here again, video games provide a powerful example: constructing game objectives that require collaboration helps every individual feel that they contribute meaningfully to the success of the team (e.g., Adachi et al., 2016). This experience is enhanced in IDEs in which choices about one's identity or "character" in the IDE also involve obtaining skills and abilities that deliberately complement the skills of other character types, improving the benefits of collaboration and the importance of each person's role to others on the team (Rigby & Ryan, 2011).

When considering the social features of IDEs, a relatedness-supportive approach focuses not merely on indiscriminate communication and information sharing but on features designed to catalyze a feeling that "I matter" to others and that "they matter" to me. For example, relatedness-supportive designs might elaborate on a traditional chat system by adding features that facilitate or emphasize sending encouragement and help to others. Similarly, features for information sharing might be further developed to include a mentorship system in which more experienced users form relationships with others for deeper knowledge sharing and more personalized opportunities for growth.

## The Dark Side of Interactive Media through the Lens of SDT

To this point I have reviewed the potential of IDEs to strongly support basic needs and made the case that SDT can be a meaningful design framework to promote well-being through engagement with digital worlds. But the fact that digital environments have strong potential to support human flourishing doesn't mean they are doing so. Are well-being and need fulfillment goals being pursued by the companies that create IDEs? Or do commercial or other interests of the IDE developer take priority, to the detriment of well-being?

Unfortunately, there is substantial reason to doubt that most IDEs are focused on individual well-being. In fact, evidence indicates many of today's leading IDEs are built to achieve the corporate goals of those who build them rather than support the well-being needs of those who use them. Certainly, companies monetize their technology using traditional media models such as monthly subscription fees and advertising. But the interactive nature of today's digital environments—and their increasing centrality in our lives—allows organizations to exploit customers in more profoundly controlling ways that are both less apparent and more injurious to autonomous functioning and well-being.

As one example, the same qualities of IDEs we have noted as potentiators for need fulfillment—immediacy, density, and consistency—are frequently leveraged to control the attention and behavior of customers inhabiting IDEs. Specifically, companies have

determined that they can maximize their economic benefit by densely pushing a constant stream of content designed to keep us looking at our screens as long as possible by any means necessary, regardless of its benefit to the audience's well-being (Haidt & Rose-Stockwell, 2019). As we continue to watch, companies continuously track and keep detailed records of what we are doing so they can learn how to exert control more effectively on our attention. They also sell our information to other companies, who similarly engage in efforts to control and exploit.

Zuboff (2015) coined the term "surveillance capitalism" to describe this economic reality of interactive media. A small handful of technology companies—the "Big Tech" companies that currently control the most popular IDEs—have optimized how they elicit inputs from users, collect behavioral and demographic data, and calculate responses to maximize revenue with little regard for the needs or well-being of the billions of individual users who provide this value. Indeed, as Zuboff points out, these companies go to great lengths to obscure the ways in which they are exploiting customers, thwarting individual autonomy through policies and end-user agreements that are designed to pettifog. Thus, while we may perceive that our apps, social media, and other IDEs are tools we use autonomously for our personal benefit, there is compelling evidence that companies construct these IDEs to heteronomously influence our experiences and behaviors to maximize corporate interests. As one former executive at a leading company put it, "How much time can we get you to spend? How much of your life can we get you to give to us?" (Orlowski, 2020).

Such heteronomy is not limited to economic considerations alone. Evidence also points to political organizations leveraging the efficient capacity of IDEs to surveil and interact with individuals to influence beliefs through false information and emotional manipulation. A recent study found that organizations with a history of putting out false and misleading information were four times as successful at getting people to engage with their content as more trustworthy news sources, regardless of the specific political orientation of the information (Dwoskin, 2021). By focusing on creating provocative content and closely monitoring which versions of content were most successful at drawing people in, these companies were able to leverage the immediacy and density of information provided by IDEs as a tool for manipulation rather than support. And because such practices are profitable to the IDE companies themselves, little is done to stop this manipulation by misinformation (McNamee, 2019).

This is a grave and growing problem. We have outlined the powerful capacity of interactive media to personalize content and engage us through immediate, dense, and consistent need fulfillment. But we also must recognize when these capacities are used by IDEs to control and manipulate in exploitative ways.

Given that the fundamental issues at play at a societal level center on dynamics of autonomous functioning versus control, it is a controversy squarely in SDT's wheelhouse. How, then, can SDT be employed to better ensure that IDEs will be designed

and operated to benefit human well-being and flourishing going forward? Can there be a realistic check on the heteronomous forces—capitalistic, political, and otherwise—that currently drive the design of IDEs toward more exploitative ends?

## SDT as the Framework for a Technological "Social Contract"

As Zuboff (2019) notes, the tensions between industry agendas and individual well-being in this digital age are not novel. Indeed, the rise of technology often creates an imbalance that must evolve into a working relationship that considers the goals of both sides. During the Industrial Era, for example, a small number of industrialists exploited physical labor to the great detriment of workers, until the reassertion of human well-being led to social and legal structures such as organized labor, child welfare laws, and regulation of working conditions. While both sides continue to advocate for their particular interests to this day, a social contract has been established in which frameworks and societal structures to manage and arbitrate the relationship are generally well understood.

In the digital universe, however, Zuboff points out that the dynamics between industry and individual are currently too abstract and obscured to be understood. While one could readily observe exploitative work conditions in a shoe factory in the 19th century, we have no transparency—or even experiential reference—for how data about us is collected and exploited in the 21st.

Educating and building such awareness is a formidable challenge. And yet it may not be the most daunting one. Even as our awareness of what is happening matures, society lacks a framework to negotiate between the priorities of those creating digital environments and the well-being of individuals who inhabit them. A common language that addresses both perspectives is needed to create an acceptable social contract that eliminates the current state of exploitation and hegemony.

SDT provides critical components for such a framework. I have reviewed how SDT has validated clear experiential factors that accrue to the benefit of individual well-being, alongside some early examples of how those factors can also align with commercial success, through motivational design principles focused on basic need support. In addition to these benefits, SDT also represents a practical foundation for building a social contract that will credibly earn trust, motivate a collaborative (vs. confrontational) effort, and aid in effective implementation and regulation.

### SDT as a Mutually Beneficial Foundation for Both Industry and Individual Well-Being

SDT is fundamentally concerned with human well-being and how environments support or thwart it. A fundamental tenet is that external pressures and controls result in more fragile and shallow motivation and suppressed well-being. By contrast, more durable motivation and robust well-being occur in the absence of such pressures and in the presence of support for the basic psychological needs of autonomy, competence, and relatedness. Substantial evidence has validated this model of human functioning and the

interaction between well-being and the experience of environments in which one finds oneself. In short, SDT is well-established as a framework for human flourishing (Ryan & Deci, 2017) and as such offers substantial advocacy for the rights and well-being of individuals within IDEs.

This alone, however, does not recommend SDT as a framework for a digital social contract because support for one side of an issue rarely resolves it. Many advocates for human health and well-being have little regard or utility for interactive media and have been a major voice in the disparagement of IDEs and screen time. Such polemics generally don't resolve conflict, but instead motivate each side to dig into an entrenched position around its interests and goals.

To become a foundation for mutual agreement between individuals and industry, SDT must do more than demonstrate that it is a guiding framework for individual well-being. That part is well-established. The harder task is to demonstrate SDT also supports the goals of the interactive media industry as a framework for commercial success, particularly given that data on commercial success is proprietary by nature and rarely published or independently validated.

Nonetheless, I have shared some examples of commercial benefits from consultative and research work done directly with IDE companies demonstrating that SDT is achieving success as a "user experience" model that can help IDEs achieve commercial goals. More broadly, professional training and commercial publications focused on design of IDEs are increasingly referencing SDT and advocating that principles of need support and motivational quality be considered as supportive of commercial goals, such as engagement and behavior change (Uysal & Yildirim, 2016).

In short, the interactive media industry shows signs that it recognizes the potential of concepts such as intrinsic motivation and basic need support as beneficial to many of the business goals of their digital environments. By framing interactive media as an environmental domain, we see early evidence that SDT can replicate the benefits it has provided organizations in other domains, such as education, work, and health: building environments that facilitate and support basic needs leads to a host of positive outcomes for individuals and for organizational goals as well.

Here is a central point: using the lens of SDT can help transform the traditional dialectic between individual well-being and industry success. Focusing on individual well-being is not a "sunk cost" or a trade-off against industry's bottom line, nor does the industry need to manipulate or control "human capital" to achieve its goals. Instead, those developing IDEs can succeed commercially by embracing human flourishing, for the simple reason that customers ultimately value products and services that *authentically* put their needs first. By "authentically" I mean that companies greatly benefit by genuinely embracing customer needs as their priority. Conversely, they cannot succeed simply by paying lip service to need support or viewing need support as merely a strategy to maximize profits. Such approaches would simply be another form of manipulation or

control. When approaches are inevitably unmasked as such, customer trust and loyalty would quickly deflate.

## Putting SDT into the Machine

As a quantifiable science, SDT aligns with the data-driven nature of digital environments. Indeed, while "technology" colloquially implies electronic gizmos or feats of physical engineering, it is more broadly understood as the "application of scientific knowledge or understanding for practical purposes" (per *Merriam-Webster's Dictionary*). Alongside our consideration of the relations *between* digital technology and SDT constructs, we can also view SDT *as* a technology—a social science technology—that can be deployed as a "user experience system" within an IDE itself. Assessments of need fulfillment, need support, motivational quality, and other constructs can be readily integrated into the programming of digital environments as a tool to evaluate their performance and impact (see also Peters et al., 2018). These metrics can also become part of the environments themselves, helping to determine how IDEs interact with customers, display content, and customize experiences.

To illustrate this point, consider a common goal of commercial IDEs: the *personalization* of content and experiences. Simply put, personalization means that the experience within the IDE—such as what content is seen, the aesthetics of the experience, and what options and choices are provided—are customized to each individual. Personalization is a central goal of most interactive media development efforts and regularly identified as a critical feature for commercial success (Boudet et al., 2019).

Substantial investment is being made in interactive technology to understand the needs, interests, and emotional states of users to better personalize their experience and deepen the connection between the interactive media company and its customers. For example, Amazon, currently one of the world's largest companies and a leader in interactive media, has filed patents that enable their voice-activated digital assistants to detect mood and illness by listening for signs such as nasal congestion. In a similar vein, other companies are working on novel methods for understanding the psychological states of customers, such as reading facial expressions and deciphering emotion via connected digital cameras.

Now consider how SDT provides a more practical and effective model for such personalization that is decidedly less surreptitious. Instead of taking a "best guess" at customer needs and motivational states by silently observing behaviors, brief SDT-based assessments measuring experiences such as basic needs and motivational quality would provide greater precision in measuring these commercially important experiences. Consequently, the capacity for interactive media to meaningfully respond to and personalize the experience for each customer—presenting content, communications, and choices that support need fulfillment—more powerfully deepens satisfaction with the IDE. Here we see an important commercial goal being practically (and scalably)

achieved using experiences and "business rules" that are simultaneously aligned with each customer's well-being.

Consider also the vast and growing market of IDEs that have business goals centered in facilitating and sustaining motivation and behavior change. IDEs committed to improving health and wellness, for example, have a fundamental business need for customers to not only sporadically engage but to *consistently* engage with content and services to achieve health goals and internalize lifestyle changes that require persistence to be effective. SDT provides a practical technology that the developers of health-focused IDEs can use to listen to motivational states and dynamically respond with personalized messages, coaching, and content that meets each customer "where they are." This, in turn, can meaningfully assist in the process of internalizing healthy values and behaviors. Specifically, SDT's organismic integration theory (Pelletier & Rocchi, this volume) delineates different types of motivational states along a continuum of motivational quality, each of which can be quantified, interpreted, and used to customize meaningful response and improve health outcomes, alongside business outcomes such as customer satisfaction, retention, and healthcare cost reduction. Here again is a practical approach with mutual benefit: the individual's well-being and motivation are improved *simultaneous to* the business goals.

## SDT as a Framework for Addressing Moral and Regulatory Goals

Despite its bona fides in providing meaningful, practical, and scalable benefits to both industry and individuals, still more is required of an SDT framework if it hopes to contribute meaningfully to a new social contract between interactive media and its audience. A consideration of social media, the dominant form of interactive media in everyday use, readily illustrates this point.

Facebook, the leading social media IDE, reports 1.8 billion users on its platform daily, which is roughly 25% of the world's total population. This daily usage is also persistent across the day: in the United States, customers access Facebook an average of eight times daily, spending almost five hours each week in the Facebook IDE. Simply put, no single IDE currently commands more time in the lives of human beings than Facebook.

Because of this dominance, Facebook is among a small handful of Big Tech companies on the front lines of the moral war between the well-being of individuals and corporate interests. We're learning the vast extent to which—without our meaningful consent—they collect data about each of us personally and closely monitor our movements through both the digital and the physical world (Curran, 2018). As important, clear evidence is emerging that Facebook and other large interactive media companies are aware of the negative impact their practices can have on well-being but are nonetheless continuing policies that put profits over people (*Wall Street Journal*, 2021). As outrage over the rights and autonomy of individuals builds, these Big Tech companies are digging in to protect their practices.

Here, then, we have a fertile field for negotiating a new kind of social contract between individual and industry—one for which SDT is particularly well-suited. This is because the current conflict is unlike more well-worn skirmishes over the ill effects of screen time (Zuckerman & Zuckerman, 1985) or the negative impacts of some flavors of media content (Johnson, 1996; Ferguson, 2015). A new social contract needs to consider deep issues of autonomy and privacy fundamental to human well-being and whether we—individually and collectively—will actively champion principles of self-determination in the development of IDEs or continue to allow institutional hegemony.

So far, I have discussed two important qualities that recommend SDT as a framework for a social contract between individual well-being and the interactive media industry. Evidence supports that SDT principles can be applied to the *mutual benefit* of both individual well-being and the business goals of IDEs, and SDT is itself a technology that can be *practically* integrated and deployed in real-world IDEs to achieve benefits at scale. To this I would argue for two additional qualities that further strengthen the case for SDT as a framework for healthy relations between individuals and interactive media: SDT is an ethical framework for building greater *moral trust* in interactive media, as well as a system for *auditing adherence* to principles agreed upon in the social contract.

### SDT as a Foundation for Moral Trust in IDEs

SDT focuses specifically on the important question of what constitutes a "good life" and how environments facilitate it. Important in the theory is the Aristotelian concept of *eudaimonia*, which refers to a state of human flourishing or "living well." In contrast to a pursuit of momentary pleasures (hedonic pursuits), eudaimonia describes living in a way that is congruent with one's "best self" through actions that reflect meaningful values (Ryan & Martela, 2016). Importantly, SDT puts forth a specific environmental model for the facilitation of eudaimonic living, focusing "on the idea that the affordance of opportunities for autonomy, competence, and relatedness satisfactions are the conditions that foster a good life—a life capable of true flourishing" (Ryan & Deci, 2017, p. 613). In other words, the same basic psychological needs that I've discussed as mutually beneficial (to both individuals and many IDE business goals) and technologically practical (quantifiable and scalable) also form a foundation for *moral trust* between individuals and industry, describing how IDEs can be designed to push beyond mere hedonic fulfillments to more substantially facilitate "living well."

Indeed, as industry confronts growing rebellion against its current hegemony, it needs a framework that the public will trust to authentically support their autonomy and well-being going forward. Because of SDT's long-established commitment to human flourishing, it is precisely what is needed: a trustworthy moral framework that can readily guide interactive media development and business practices for the genuine good of all.

Recent government hearings and regulatory actions demonstrate that this need for organizations to establish a moral trust with the public is rising quickly as demand grows for more regulation and accountability (McKinnon et al., 2021). In response, the biggest

technology companies have put forth their own well-being initiatives, arguing for self-regulation (e.g., Google, n.d.). But it is doubtful such industry-created frameworks will ever garner sufficient trust given they are implicitly subject to accusations of bias and ulterior motives. Indeed, during these first rounds of negotiation for a new social contract, there is already significant skepticism that self-regulation by technology companies can be accepted (Wheeler, 2021).

By contrast, SDT offers a scientifically validated framework that is verifiably independent from the interactive media industry. Indeed, SDT has not only maintained a commitment to rigorous validation of its principles by the scientific community; its long history also predates the rise of interactive media—and the emergence of the commercial internet itself—by several decades. As such, SDT is a credible, independent, and critical framework that stands ready to address the pressing need for improved moral trust in interactive media, and technology more generally.

I've reviewed how central elements of SDT—notably fulfillment and support of basic psychological needs and facilitation of high motivational quality—can improve important business outcomes such as engagement, satisfaction, and behavior change. This alone is a compelling argument for industry adoption of SDT. But because SDT also enables industry to address issues of moral trust more clearly in its products and practices, SDT offers the interactive media industry additional practical benefits. Consider the ascendant regulatory challenges for interactive media companies. As government and other agencies put in place protections for individuals and evaluate how to curtail infringements to individual rights and well-being, industry can either fight a defensive war to preserve its past practices or become a credible collaborator in the creation of the new social contract that is underway.

SDT can provide a guiding framework for companies that opt to collaborate. By delineating quantifiable experiences that have been independently validated to support human well-being, SDT can assist companies to both identify new business practices that address regulatory concerns and develop IDEs that support customer motivation, engagement, and satisfaction. Put differently, both sides of a new social contract can be served. And adopting such principles may also help avoid the costs of oppositional legal and policy battles that could be more stifling to commercial interests.

There is another practical reason for a collaborative approach by the interactive media, one that is arguably even more compelling from a commercial standpoint. Technologists are increasingly hoping to blur the boundaries between IDEs and other environments, making interactive technology a pervasive presence in our daily lives. As just one example, there are already more than 4 billion "digital assistants"—voice-activated devices offering information and services—in use worldwide, a number that is expected to double in the next five years (Statista, 2020). Interactive media companies hope that these devices will sit in every kitchen, hallway, and bedroom, making interactive media part of our moment-to-moment living and conversation.

But as these companies seek to move such technology closer to us, the issue of trust will continue to rise in importance not only to regulators but to customers. Interactive media companies need to authentically earn trust as a business "best practice" if they want to succeed in their plans to get technology into every corner of our homes and lives. Consider that as news emerges about the manipulative practices of Big Tech companies, those most affected have seen their customer base decline (Zara, 2021). This may well reflect an assertion of customer autonomy and a willingness by customers to leave companies and IDEs they see as untrustworthy and controlling. This, in turn, potentially jeopardizes the future plans—and bottom lines—of interactive media companies that do not genuinely consider the principle of autonomy support in their business practices.

### SDT as a System for Audit and Adherence

As a final consideration of SDT as a framework for interactive media and a new social contract to guide its beneficial development, I draw again on the fact that SDT can be quantifiably and practically applied. Here, however, I highlight a different use for such practical application: to *audit adherence* to the standards the social contract embodies. Indeed, every contract needs some mechanism to monitor compliance and a pathway for redress. By including quantifiable assessments of how IDEs are supporting (and/or thwarting) the basic psychological needs of their audience, all parties (companies, individuals, and regulators) will have the data tools necessary to evaluate adherence to standards. This will help sustain moral trust, even as interactive media continues to innovate and evolve. Some examples:

- Interactive media companies can integrate clear metrics into their offerings to both monitor the evolution of existing products and evaluate the creation of new products to ensure well-being standards are being met and to guide development toward more beneficial designs.
- Regulators can use quantifiable SDT metrics to build a clear set of well-being standards—transparent to industry and consumers alike—that can function much like other consumer safety standards for products and services.
- Individuals can make conscious choices for engagement based on well-being (e.g., need support/fulfillment) ratings of IDEs, as well as potentially receiving direct feedback from the IDE itself showing how engagement relates to their personal well-being.

## Conclusion and Closing Considerations

We have substantial work ahead to establish a new social contract that better assures the business practices of interactive media companies authentically support autonomous functioning and human flourishing. That said, by applying SDT it is possible to simultaneously support the interests of both human and corporate well-being. Its bona fides for

the latter are more recent, and I anticipate will face significant headwinds of skepticism from Big Tech leadership. This is particularly true given capitalistic market pressures that seek to derive profit from customers through any means possible, as quickly as possible.

Embracing a longer view of commercial success, companies must be willing to relinquish traditional "command and control" approaches that erode consumer (and regulatory) trust, and instead embrace practices that support the basic needs of the customers on which their business ultimately depends. The beginnings of this are already evident in traditional commercial rhetoric promoting "customer first" thinking. More concretely, it lives in bottom-line numbers that show the value of customer loyalty and commitment. Our basic human need for autonomy highlights how such loyalty is put at serious risk when policies of control and manipulation come to light. Corporate hegemony over customers is a limited proposition; it tries to hide in the shadows for as long as possible, but usually pays a price once discovered.

Herein I have outlined a different path forward, one in which companies can embrace a moral good for their customers while simultaneously supporting their own commercial interests. It is true that this success may take a different shape. But given the threat of customer and regulatory backlash, negotiating a new social contract now is arguably the best path forward—not only for individual well-being but for commercial success over the long run.

Notwithstanding the work ahead for industry, it is also worth noting that the burden for healthy development of interactive media does not fall to companies and regulators alone. For both our own well-being and that of the others around us, each of us has a responsibility to remain mindful of how we personally engage IDEs and integrate interactive media into our lives.

Here again, SDT can be of significant help. Each of us can consider how our use of interactive media impacts our well-being and relationships across our life. We can be discerning in what interactive media products we use and in which IDEs we choose to spend our time based on how genuinely they support our needs and truly put us first. In some cases, this may lead us into deeper screen time in IDEs that are authentically fulfilling. Conversely, such consideration will also lead us away from interactive media that feels unsupportive. In the end, we have both the power to realize the potential of interactive media to contribute to a flourishing life and the responsibility to choose IDEs that are likewise committed to our well-being.

## References

Adachi, P. J., Hodson, G., Willoughby, T., Blank, C., & Ha, A. (2016). From outgroups to allied forces: Effect of intergroup cooperation in violent and nonviolent video games on boosting favorable outgroup attitudes. *Journal of Experimental Psychology: General, 145*, 259–265. doi:10.1037/xge0000145

Bekalu, M. A., McCloud, R. F., & Viswanath, K. (2019). Association of social media use with social well-being, positive mental health, and self-rated health: Disentangling routine use from emotional connection to use. *Health Education & Behavior, 46*(2 suppl), 69S–80S. https://doi.org/10.1177/1090198119863768

Boudet, J., Gregg, B., Rathje, K., Stein, E., & Vollhardt, K. (2019). *The future of personalization—and how to get ready for it.* McKinsey & Company, June 18. https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/the-future-of-personalization-and-how-to-get-ready-for-it

Caponetto, I., Earp, J., & Ott, M. (2014). C. Busch (Ed.). Gamification and education: A literature review. In *8th European Conference on Games Based Learning* (pp. 50–57). ECGBL.

Chiu, T. K. F. (2021). Applying the self-determination theory (SDT) to explain student engagement in online learning during the COVID-19 pandemic. *Journal of Research on Technology in Education*, *54*(sup1), S14–S30. https://doi.org/10.1080/15391523.2021.1891998

Curran, D. (2018). Are you ready? Here is all the data Facebook and Google have on you. *The Guardian*, March 30. https://www.theguardian.com/commentisfree/2018/mar/28/all-the-data-facebook-google-has-on-you-privacy

Deterding, Sebastian & Khaled, Rilla & Nacke, Lennart & Dixon, Dan. (2011). *Gamification: Toward a definition.* 12-15.

Google. (n.d.). *Digital wellbeing through technology.* Google Digital Wellbeing. Retrieved 2021, from https://wellbeing.google/

Dwoskin, E. (2021). Misinformation on Facebook got six times more clicks than factual news during the 2020 election, study says. *Washington Post*, September 4. https://www.washingtonpost.com/technology/2021/09/03/facebook-misinformation-nyu-study/

Ferguson, C. J. (2015). Do Angry Birds make for angry children? A meta-analysis of video game influences on children's and adolescents' aggression, mental health, prosocial behavior, and academic performance. *Perspectives on Psychological Science*, *10*(5), 646–666. https://doi.org/10.1177/1745691615592234

Ford, M., Wyeth, P., & Johnson, D. (2012). Self-determination theory as applied to the design of a software learning system using whole-body controls. In *V. Farrell, G. Farrell, C. Chua, W. Huang, R. Vasa, & C. Woodward* (Eds.). Association for Computing Machinery. https://doi.org/10.1145/2414536.2414562

Google. (n.d.). *Digital wellbeing through technology.* Google Digital Wellbeing. Retrieved 2021, from https://wellbeing.google/

Haidt, J., & Rose-Stockwell, T. (2019). Social media is warping democracy. *The Atlantic*, December. https://www.theatlantic.com/magazine/archive/2019/12/social-media-democracy/600763/

Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: A systematic literature review. *Sleep Medicine Reviews*, *21*, 50–58. https://doi.org/10.1016/j.smrv.2014.07.007

Johnson, M. O. (1996). Television violence and its effect on children. *Journal of Pediatric Nursing*, *11*(2), 94–99. https://doi.org/10.1016/s0882-5963(96)80066-2

Madigan, S., Browne, D., Racine, N., Mori, C., & Tough, S. (2019). Association between screen time and children's performance on a developmental screening test. *JAMA Pediatrics*, *173*(3), 244–250. https://doi.org/10.1001/jamapediatrics.2018.5056

Magis-Weinberg, L., Gys, C. L., Berger, E. L., Domoff, S. E., & Dahl, R. E. (2021). Positive and negative online experiences and loneliness in Peruvian adolescents during the COVID-19 lockdown. *Journal of Research on Adolescence*, *31*(3), 717–733. https://doi.org/10.1111/jora.12666

McKinnon, J. D., Wells, G., Horwitz, J., & Mickle, T. (2021). Tech hearing live updates: Google, Facebook and Twitter CEOs testify on misinformation. *Wall Street Journal*, March 25. https://www.wsj.com/livecoverage/tech-misinformation-hearing-facebook-twitter-google

McNamee, R. (2019). *Zucked.* HarperCollins.

Nabi, R. L., Prestin, A., & So, J. (2013). Facebook friends with (health) benefits? Exploring social network site use and perceptions of social support, stress, and well-being. *Cyberpsychology, Behavior, and Social Networking*, *16*(10), 721–727. https://doi.org/10.1089/cyber.2012.0521

Nicastro, D. (2013). Gartner sticks to its failing gamification prediction. *CMSWire*, December 13. https://www.cmswire.com/cms/social-business/gartner-sticks-to-its-failing-gamification-prediction-023464.php

Orlowski, J. (director). (2020). *The Social Dilemma* [Documentary]. Netflix Originals.

Peng, W., Lin, J. H., Pfeiffer, K. A., & Winn, B. (2012). Need satisfaction supportive game features as motivational determinants: An experimental study of a self-determination theory guided exergame. *Media Psychology*, *15*(2), 175–196. https://doi.org/10.1080/15213269.2012.673850

Peters, D., Calvo, R. A., & Ryan, R. M. (2018). Designing for motivation, engagement and wellbeing in digital experience. *Frontiers in Psychology*, *9*, 797. https://doi.org/10.3389/fpsyg.2018.00797

Przybylski, A. K., Ryan, R. M., & Rigby, C. S. (2009). The motivating role of violence in video games. *Personality and Social Psychology Bulletin*, *35*(2), 243–259. https://doi.org/10.1177/0146167208327216

Przybylski, A. K., Rigby, C. S., & Ryan, R. M. (2010). A Motivational Model of Video Game Engagement. *Review of General Psychology*, *14*(2), 154–166. https://doi.org/10.1037/a0019440

Rigby, C. S., & Przybylski, A. K. (2009). Virtual worlds and the learner hero. *Theory and Research in Education*, *7*(2), 214–223. https://doi.org/10.1177/1477878509104326

Rigby, S., & Ryan, R. (2011). *Glued to games: How video games draw us in and hold us spellbound*. New Directions in Media. Praeger.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., & Martela, F. (2016). Eudaimonia as a way of living: Connecting Aristotle with self-determination theory. *Handbook of Eudaimonic Well-Being*, 109–122. https://doi.org/10.1007/978-3-319-42445-3_7

Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, *30*(4), 344–360. https://doi.org/10.1007/s11031-006-9051-8

Sailer, M., Hense, J. U., Mayr, S. K., & Mandl, H. (2017). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in Human Behavior*, *69*, 371–380. https://doi.org/10.1016/j.chb.2016.12.033

Shakya, H. B., & Christakis, N. A. (2017). Association of Facebook use with compromised well-being: A longitudinal study. *American Journal of Epidemiology*, *185*(3), 203–211. https://doi.org/10.1093/aje/kww189

Statista. (2020). Number of digital voice assistants in use worldwide 2019–2024. April. https://www.statista.com/statistics/973815/worldwide-digital-voice-assistant-in-use/

Tamborini, R., Bowman, N. D., Eden, A., Grizzard, M., & Organ, A. (2010). Defining media enjoyment as the satisfaction of intrinsic needs. *Journal of Communication*, *60*(4), 758–777. https://doi.org/10.1111/j.1460-2466.2010.01513.x

Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. *Preventive Medicine Reports*, *12*, 271–283. https://doi.org/10.1016/j.pmedr.2018.10.003

Uysal, A., & Yildirim, I. G. (2016). Self-Determination Theory in Digital Games. *Gamer Psychology and Behavior*, 123–135. https://doi.org/10.1007/978-3-319-29904-4_8

*Wall Street Journal*. (2021). The Facebook files, a Podcast series. October 3. https://www.wsj.com/articles/the-facebook-files-a-podcast-series-11631744702?mod=searchresults_pos19&page=1

Walz, S. P., & Deterding, S. (2015). *The Gameful World: Approaches, Issues, Applications (The MIT Press)*. Chapter "Gamification and Motivation". The MIT Press.

Werbach, K., & Hunter, D. (2012). *For the win: How game thinking can revolutionize your business*. Wharton School Press.

Wheeler, T. (2021). A focused federal agency is necessary to oversee Big Tech. *Brookings*, February 10. https://www.brookings.edu/research/a-focused-federal-agency-is-necessary-to-oversee-big-tech/

Williams, G. C., Niemiec, C. P., Elliot, A. J., LaGuardia, J. G., Gorin, A. A., & Rigby, C. S. (2014). Virtual Look AHEAD Program: Initial support for a partly virtualized intensive lifestyle intervention in Type 2 diabetes. *Diabetes Care*, *37*(8), e169–e170. https://doi.org/10.2337/dc14-0831

Zara, C. (2021). Facebook's daily active users decline for a second quarter in the United States and Canada. *Fast Company*, January 27. https://www.fastcompany.com/90598536/facebooks-daily-active-users-decline-for-a-second-quarter-in-the-united-states-and-canada

Zuboff, Shoshana (15 September 2014). "Shoshana Zuboff: A Digital Declaration". *Faz.net*. Frankfurter Allgemeine Zeitung.

Zuboff, Shoshana (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. PublicAffairs.

Zuckerman, D. M., & Zuckerman, B. S. (1985). Television's impact on children. *Pediatrics*, *75*(2), 233–240.

# The Self in Society

# Self-Determination Theory in Cross-Cultural Research

Martin F. Lynch

## Abstract

Self-determination theory (SDT) has garnered interest from scholars around the world. That interest has generated a large body of cross-cultural, empirical research and has led to important questions for researchers to consider, both conceptual and methodological. Conceptually, the construct of basic psychological needs provides a focus for SDT's cross-cultural research that is both confirmatory and exploratory. The confirmatory agenda centers on testing the universality of basic needs and whether need satisfaction leads reliably to positive outcomes in countries and cultures around the world. The exploratory agenda involves investigating the possibility that other needs exist that would emerge through deeper inquiries within cultures. This chapter addresses methodological issues relevant to these agenda and suggests several new directions for research, stemming from an understanding of SDT as a critical theory.

**Key Words:** self-determination theory, cross-cultural research, autonomy, basic psychological needs, culture

In April 1999, as a graduate student at the University of Rochester's Warner School of Education, I found myself standing in line waiting to take care of some aspect of financial aid related to my graduate studies. While I was waiting, Richard Ryan happened to walk past. I had recently taken Richard's graduate-level course on theories of psychotherapy, and we started to chat. Out of the blue, he asked if I'd like to come to the self-determination theory (SDT) conference taking place on campus that weekend. Gratified, interested, and excited, I said sure. As easily as that, I found myself a participant in what is now known as the first international conference on SDT. Fewer than 50 scholars, representing 18 universities and four countries—Canada, Germany, Israel, and the United States—gathered to share with each other the research they had been conducting. The common language of communication was English; the common conceptual framework was that of SDT.

Fast forward to November 2003. I was now a graduate student in Rochester's Clinical Psychology program, having switched departments, to a large extent, in order to pursue an opportunity to study with Richard Ryan and Edward Deci. I had traveled to Moscow to participate in the Fourth International Vygotsky Conference, conducted at the Vygotsky

Institute, which was housed at the Russian State University for the Humanities. I found myself walking in a few minutes late on a talk being given in Russian, in which I am conversationally fluent. Within just a few minutes, the speaker began talking about Deci, Ryan, and SDT. I was startled. Although I had been studying with Deci and Ryan for several years, and had found myself a gratuitous participant at the theory's first international conference in 1999, I had not expected that SDT already had an audience in a country as far away as Russia, a country where books and articles by Western authors were still difficult to obtain, and was being discussed in a language so different from English. I certainly did not expect that anyone besides me would be talking about SDT at a conference on Vygotsky. The speaker was Tamara Gordeeva, a professor in the Psychology Department at Moscow State University. Immediately after her talk, I introduced myself to her as a student of Deci and Ryan at the University of Rochester, and she invited me to speak, after the conference, to a group of her students at Moscow State. I happily agreed and attempted to talk to the students in Russian (probably sounding to them like a grade-school child) about my own SDT-related research.

I begin this chapter by recounting these two personal anecdotes for a couple of reasons. First, they demonstrate that SDT has been a topic of both interest and active research among scholars from different countries for many years. Second, they make the point that although English has often been the common language of scholarly exchange in terms of publications and professional gatherings, nonetheless important conversations about SDT, its underlying theory, and the research that supports it, are taking place in many other languages and in dialogue with theories that come from quite different traditions. I make this point at the outset in order to put the scope of the present chapter, on cross-cultural research, into a wider, global context. The present chapter of necessity focuses on research that has been published in English, even while acknowledging the many important contributions being made by scholars who have published in French, German, Spanish, Russian, Korean, and Chinese, to name just a few of the languages in which SDT researchers communicate. Additionally, I point out that, as Vygotsky (1977) argued, cultures, of which language is a primary tool, shape the way we think about and experience the world around us. This suggests that when SDT is being discussed and research using its constructs is being conducted in languages and cultures that differ from each other, there may be important nuances that will be difficult to share, completely and transparently, with scholars from other cultures who work in other languages. This *may* be true even when scholars from non-English-speaking countries are publishing their research in English. (The use of "may" is meant to imply that this is an empirical question.) It is against this backdrop that I attempt to pull together some of what I see as the main threads being woven into the tapestry of SDT by cross-cultural researchers today.

The structure of this chapter is as follows. First, I begin with a brief historical overview of the beginnings of cross-cultural research within SDT and outline several key

claims within SDT that have cross-cultural significance. Following this discussion, I focus on one key aspect of SDT: its emphasis on the role of basic psychological needs in motivation and well-being. I then consider several methodological issues of critical importance to SDT researchers, and conclude by suggesting several directions for future research—in particular, using the construct of basic needs as a critical lens on cultures and societies and looking at marginalized groups within cultures. As noted, the focus of this chapter is on articles published in English, a limitation I must acknowledge upfront. But because researchers from many countries and from many cultures are publishing their research in English, and because cross-cultural studies are in reality often published by multicultural teams, I am hopeful (my prior caveat about language as a tool of culture notwithstanding) that the sampling of topics discussed herein will be broadly representative of topics of interest to the global SDT community. I begin, however, with a brief discussion of why culture matters.

## Why Culture Matters

Context matters. The characteristics of the environment, whether physical or interpersonal, make a difference to the people who live, work, and play within it. Whether one's surroundings are hostile or friendly, supportive or lacking in supports, they meaningfully shape both the subjective nature of one's experience and the possibilities for action. Typically, SDT researchers focus on the more immediate, proximal aspects of people's social context, whether specific relationships or perhaps a broader relational "climate" (e.g., in the classroom or in the workplace) is experienced as need-supportive or need-thwarting. But these micro contexts are themselves embedded in larger, macro contexts, of which culture is a prime example. In fact, consistent with an ecological systems approach (Bronfenbrenner, 2001), one could argue that the more distal context, *culture*, invades and influences the more proximal, immediate contexts pervasively (Ryan et al., 2017), that the norms, values, priorities, prescriptions, and proscriptions of culture thoroughly shape the menu of options available to people as they go about their lives, both developmentally and moment to moment. Yet cultures differ from each other in demonstrable ways; some cultures, for example, are more individualistic, while others are more collectivistic; some are more hierarchical, while others are more egalitarian (see, e.g., Hofstede, 2001; Triandis & Gelfand, 1998). These cultural differences, which take place more distally, necessarily trickle down and influence the proximal, more immediate contexts in which people live their day-to-day lives, creating meaningful, measurable differences in terms of values, constraints, and affordances for the people within them. At the same time, SDT makes claims that certain aspects of human experience are universal, across cultures, despite the differences that arise between cultures. It is for these reasons that SDT researchers have turned their attention to the role of culture.

## Historical Background: Beginnings of Cross-Cultural Research in SDT

As mentioned, 1999 was a turning point in terms of solidifying SDT for an international community of researchers with the convening of the first international conference dedicated to the theory. Subsequent conferences showed continued growth of SDT's international reach: in 2004, 188 participants from 13 countries attended the conference held in Ottawa; in 2007, over 300 people from 23 countries attended the conference held in Toronto; in 2010, 555 participants from 25 countries throughout Europe, North America, the Middle East, Asia and Eurasia, Australia and New Zealand presented their research at the conference, held for the first time outside of North America, in Ghent; the next conference, held in 2013, returned to Rochester and hosted 580 researchers from 38 countries; in 2016, the international SDT conference took place in Victoria, British Columbia, with 450 researchers from 35 countries; and in 2019, the international SDT conference took place for the second time in Europe, this time in Egmond aan Zee, in the Netherlands, with 773 researchers from 43 countries. The exponential growth of these conferences, not only in terms of number of participants but also in terms of the number of countries represented, reflects a corresponding increase in the amount of research being done on SDT and SDT-related themes in countries around the world. In light of SDT's evident global appeal and the dramatic increase in scholarship inspired by SDT, it is important to unpack some of the conceptual issues as well as some of the methodological issues with which SDT's international community of researchers are faced.

### Key Claims of SDT and Early Cross-Cultural Support

For a thorough overview of SDT's cross-cultural claims, the reader is referred to Ryan and Deci's (2017) *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. In this section, I highlight two claims that call attention to key conceptual and methodological issues for cross-cultural researchers. The first is that basic psychological needs are universal, across cultures, and the second is that some cultural norms and values can be more easily internalized than others.

**Claim #1: Basic needs are universal**. The claim that basic needs are universal means just that: all human beings, regardless of culture, ethnicity, race, gender, or other differences, require a certain set of nutriments in order for growth and development to occur in ways that are consistent with organismic processes. These key nutriments, or basic needs, have been selected, through the process of evolution, for their adaptive survival value at the species-wide level (Ryan, Kuhl, & Deci, 1997). Hence, basic needs are universal. Although grounded theoretically, the proposition is an empirically testable one. Typically, it is operationalized in the prediction that need satisfaction will lead to integration and internalization, to internally motivated activity within a given domain or context, and to well-being and other markers of flourishing. Because the claim of universality across cultures has been controversial (see, e.g., Iyengar & DeVoe, 2003; Markus & Kitayama, 2003; Oishi, 2000), it has been important for SDT researchers to test it empirically.

One of the earliest studies of cross-cultural importance within SDT set a precedent for the direction of much of the subsequent research, both conceptually and methodologically. Deci et al. (2001) administered surveys to workers in 10 state-owned industries in Bulgaria, a country which, until 1989, had been a satellite of the Soviet Union. Workers were asked their perceptions of the work climate (whether autonomy-supportive or controlling) using the Work Climate Survey (Deci, Connell, & Ryan, 1989), basic need satisfaction using the Need Satisfaction Scale (Ilardi et al., 1993), motivation for work using the Work Engagement Scale (Baard, Deci, & Ryan, 2004), and psychological well-being using the anxiety subscale of the General Health Survey (Goldberg & Hillier, 1979) and the general self-esteem subscale of the Multidimensional Self-Esteem Inventory (O'Brien & Epstein, 1989). For purposes of comparison, the same measures were administered to workers in a large company in the United States. I call attention to two important methodological points. First, all measures were translated from English into the local language (here, Bulgarian) using the translation/back-translation method, which is considered best practice when conducting cross-cultural research in the field of psychology (see Brislin, 1970). With this approach, a scale or measure is translated into a new language by a native speaker who is also fluent in the original language; then a native speaker of the original language, who is also fluent in the other language, makes a translation of the new text back into the original language. The two original-language versions are compared, and any discrepancies are discussed and resolved. The aim of this approach is to obtain a translation that conveys the same psychological meaning to readers as was conveyed to readers in the original version of the instrument. The second methodological point, and also consistent with best practices in psychological research, is that Deci and colleagues (2001) subjected all study measures to a test of invariance using structural equation modeling procedures, following guidelines established by Bollen (1989) and Little (1997). These tests provide psychometric evidence that participants from different groups are understanding the constructs similarly. Importantly, the Bulgarian workers reported higher levels of need satisfaction in the workplace than did their counterparts in the United States, but in both cultural groups, perceived need support from management predicted need satisfaction, which in turn predicted work motivation and well-being. The authors took these findings to support SDT's claim that the basic needs are indeed universal, that is, that they are functionally relevant to important outcomes, even in groups that differ demonstrably along cultural lines.

Other early cross-cultural studies in SDT followed a similar approach of translating existing measures (typically, from English) into another language, most often using the translation/back-translation approach, and some of them went the extra step of ensuring measurement invariance using a technique such as means and covariance structures analyses (Little, 1997) prior to hypothesis testing. Examples of these more methodologically rigorous early studies include Chirkov and Ryan (2001), Chirkov et al. (2003), and Chirkov, Ryan, and Willness (2005). Others have continued to follow this two-step approach

of ensuring linguistic comparability as well as measurement invariance (e.g., Lynch, La Guardia, & Ryan, 2009), but over time it has become less common for researchers to report having tested measurement invariance as subsequent studies make use of existing translations of scales that have previously been psychometrically verified.

**Claim #2: Some cultural norms and values can be more easily internalized than others.** A second claim within SDT that has particular relevance for the question of cross-cultural research has to do with the process of internalization. The theory argues that values, norms, and beliefs can be internalized with varying degrees of autonomy. This of course applies not only to values and norms provided by the family and one's immediate social environment but also to those deriving from the wider culture. So the first aspect of SDT's claim here has to do with the relative autonomy with which these values and norms are internalized: to the degree that I act on them, I can do so under a felt sense of external pressure, or because I feel internally pressured to do so (I "ought" to), or because I personally value and willingly embrace them. These distinctions in quality of internalization, of course, reflect points along SDT's continuum of motivation. This first aspect of the claim, namely that SDT's model of internalization applies across cultures, is relatively noncontroversial. It appears that across the globe people's motivation can be described using SDT's taxonomy.

The second part of this claim, however, is considerably more debated: that certain cultural *contents* are more easily internalized than others. The implication is that certain cultural dimensions may be more suitable for supporting basic needs, which, again, SDT suggests are selected for through evolutionary processes at the species-wide level (Ryan et al., 1997; Martela & Sheldon, 2019; Vansteenkiste, Ryan, & Soenens, 2020). Accordingly, the argument can be made that cultures or cultural dimensions that more readily support these basic needs would be seen as more consistent or more compatible with human nature. It is this claim—regarding the existence of a human nature, with which cultural norms might be more or less consistent—that is controversial.

In an early study, Chirkov et al. (2003) utilized Triandis and Gelfand's (1998) model, which combines the individualism/collectivism distinction (reflecting emphasis on the individual or on the group, respectively) with horizontal and vertical dimensions (reflecting, respectively, an emphasis on egalitarian vs. hierarchical relations among members of society) to locate cultural norms as horizontal collectivist, vertical collectivist, horizontal individualist, or vertical individualist. Chirkov and colleagues (2003) recruited participants from four countries—Russia, Turkey, South Korea, and the United States—who were expected to differ from each other along these dimensions. Measures were translated into the local language using the translation/back-translation method, and measurement invariance was tested using the approach described by Little (1997). They found differences between countries along the cultural dimensions that were in line with Triandis and Gelfand's (1998) model. As predicted by SDT, in all four countries the degree to which cultural practices were enacted autonomously was associated with greater well-being, and

this association was not moderated by cultural orientation. Importantly, they also found that horizontal practices were more readily internalized than were vertical practices across cultural groups, which suggested to the authors that vertical or hierarchical practices might be less compatible with a human nature that strives toward autonomy and autonomous self-expression. Subsequent studies have confirmed the association between more autonomous internalization of various cultural dimensions and well-being across different cultural groups (e.g., Downie et al., 2004; Sheldon et al., 2004; Rudy et al., 2007).

This brief historical overview calls attention to an issue that is both conceptually and practically important. When conducting survey research in another culture, it is, of course, essential that survey instruments be presented to participants in their own, local language. Although on the one hand this states the obvious, on the other hand, it is not unheard of for instruments to be administered in English, on the assumption that "many people speak English in that country" or perhaps "participants will self-select on the basis of how well they speak or understand English." This, clearly, ignores the close connection between thought and language (Vygotsky, 1977).

Practically speaking, researchers have had much work to do in order to translate and validate SDT scales and measures in other languages. Here I report the results of an informal survey of the SDT listserv, which I conducted in January 2021, requesting information about which SDT-related scales had been translated into other languages and whether the translation/back-translation approach had been employed during the process of translation. The SDT listserv is maintained by the Center for Self-Determination Theory as a vehicle for SDT researchers around the world to communicate with each other. For the construct of basic needs, which, again, is one of SDT's central, organizing constructs, two of the most widely used scales are Ilardi et al.'s (1993) Basic Psychological Needs Scale (BPNS) and Chen et al.'s (2015) Basic Need Satisfaction and Frustration Scale (BNSFS). Responses to my polling of the SDT listserv indicated that the BPNS has been translated into Norwegian (Jeno et al., 2017), Mexican (Zamarripa et al., 2017), Serbian (Mladenovic & Cizmic, 2017), Greek (Vlachopoulos & Michailidou, 2006), and Russian (Lynch, 2004; Osin et al., 2015). Poll responses similarly indicated that the BNSFS has been translated into Dutch, Chinese, Spanish, Portuguese, Japanese, German, Italian, Turkish, Hebrew, French, Serbian, Polish, Estonian, and Persian (see Van der Kaap-Deeder et al., 2020) as well as Finnish (Martela & Riekki, 2018). In virtually all cases, the translation/back-translation approach was used when translating the scale. The list of translations is not exhaustive, however, and new translations, into new languages, continue to be made, not only to measure basic needs but to measure many other constructs central to SDT, such as aspirations, climate, quality of motivation, and internalization.

At this point, I return to the notion of basic psychological needs as a central organizing construct in SDT, but with a focus on how this central construct sets an agenda for current and future cross-cultural research.

**Basic Needs and SDT's Cross-Cultural Research Agenda**

The historical development of the construct of basic psychological needs, and its role within SDT, have been well described elsewhere (see, e.g., Deci & Ryan, 2000; Ryan & Deci, 2017; Vansteenkiste, Niemiec, & Soenens, 2010; Vansteenkiste et al., 2020). Key to the current chapter is the definition of a need within SDT and the criteria used by SDT to characterize a need, because these have implications for cross-cultural research.

*Basic Needs in SDT: Definitional Criteria*

In brief, a need is a nutriment that is essential for the living, human organism, such that, when satisfied, the organism flourishes and experiences well-being, but when frustrated the organism experiences decrements to its well-being, including pathological outcomes when the deprivation is sufficiently severe or prolonged. Thus, a need is conceptually and functionally distinct from a want, preference, or desire. To underscore this point, Vansteenkiste et al. (2020) outlined five basic or central criteria and an additional four associated criteria that must be satisfied in order for something to be considered a basic need. The central criteria are (1) *psychological* (basic needs pertain to a human being's psychological, as distinct from physiological, functioning); (2) *essential* (growth, well-being, and adjustment result from the need's satisfaction, whereas ill-being and even psychopathology result from the need's frustration); (3) *inherent* (basic needs emerged through evolutionary processes and hence serve an adaptive purpose for the species and for the individual); (4) *distinct* (basic needs are conceptually and operationally distinguishable from each other); and (5) *universal* (the impact of basic need satisfaction or frustration, in terms of thriving and well-being, is similar for all individuals, even when taking into account important differences in terms of culture, socioeconomic status, personality, and so on). Note that criterion (5) is essentially a logical extension of criterion (3): basic needs are universal precisely because they were selected for through evolutionary processes at the species-wide level.

The additional four associated criteria of a basic need, identified by Vansteenkiste et al. (2020), are (6) *pervasive* (the impact of need satisfaction and frustration should be evident at multiple levels, including affective, cognitive, and behavioral); (7) *content-specific* (satisfaction and frustration manifest in specific behaviors and are "well-represented in natural language" [p. 4]); (8) *directional* (the human being orients the self toward need-satisfying experiences and takes corrective action in need-frustrating circumstances); and (9) *explanatory* (the basic need provides an account for how variations in social context lead to distinguishable outcomes in terms of well-being).

Both deductively, deriving from SDT's theoretical conception of the human person, and inductively, based on empirical findings, three human experiences to date have been identified as satisfying these nine criteria and are therefore considered within SDT to qualify as basic needs: autonomy, competence, and relatedness. Yet SDT does not a priori limit the set of basic needs to three; it has been, and remains, open to the inclusion of

new candidate needs, provided that the criteria outlined above are satisfied (Ryan & Deci, 2017; Vansteenkiste et al., 2020).

These definitional considerations set an agenda for cross-cultural research within SDT that is both confirmatory and exploratory. First, the agenda is confirmatory, in the sense that SDT researchers have taken up the challenge of testing the claim that basic needs are universal, as specified in the criteria above. Indeed, this claim is an empirically testable one. If a central characteristic of a basic need is that its satisfaction leads to flourishing and well-being while its frustration leads to progressively worse decrements to those outcomes, including pathological outcomes, then if a need is universal, these associations should hold in countries and cultures around the world, even when those countries and cultures differ from each other in nontrivial ways. Again, this prediction is empirically testable, because all of the key variables—need satisfaction, need frustration, well-being, ill-being—can be operationalized and measured, measurement scales can be translated into other languages, and the comparability of their measurement properties can be tested and confirmed, following procedures described elsewhere in this chapter. The point I wish to emphasize here is that evidence for such associations in countries and cultures around the world would provide confirmation of the claim that a need is universal.

The agenda for SDT researchers is, however, also exploratory. What I mean here specifically pertains to the number of needs that might exist. If it is true that there is no a priori reason to limit the set of basic needs to three, then that means that a new need or needs could be identified, either deductively or inductively. Indeed, several candidate needs have been proposed and tested by SDT researchers: novelty (González-Cutre et al., 2020), novelty-variety (Bagheri & Milyavskaya, 2020), beneficence (Martela & Ryan, 2020), and morality (Prentice, Jayawickreme, & Fleeson, 2020). Researchers have provided some initial evidence in support of these candidate needs, but thus far the evidence is not sufficient to warrant inclusion of any of them in SDT's definitive list of basic needs. Importantly, the studies mentioned here have not been exploratory in quite the sense that I intend: first, because each of them derived the candidate need on a priori grounds and, second, because they then tested the candidate need nomothetically. In contrast, to my mind, proceeding in a truly exploratory mode would mean to approach the question of basic needs idiographically, using qualitative methods, in countries and cultures that are quite disparate. I will elaborate on this agenda later, but here I point out that thus far, work in this direction has been limited. Further, I note that this approach, while exploratory in nature, can also serve a confirmatory purpose: the idiographic exploration of needs and need candidates in another culture could well confirm one or more of the "canonical" needs already recognized within SDT. Such idiographic evidence, it seems to me, would add ecological credibility to the claim of universality.

Before elaborating on this exploratory agenda, however, I turn first to discussion of the confirmatory agenda in SDT's cross-cultural research.

*Basic Needs as Universal, across Cultures: The Confirmatory Evidence*

It is probably fair to say that much of the initial impetus for cross-cultural research within the SDT community stemmed from criterion (5), regarding the universality of basic needs. This is the case, first, because it is a strong claim and one that lends itself to empirical testing. For that reason alone, researchers would tend to gravitate toward it, in the same sense that mountaineers climb a mountain because it is there. Beyond that, however, it has historically been a controversial claim; the idea that a "need" could be relevant even in a culture that does not explicitly value that need seems incompatible with the idea that cultures matter (Iyengar & DeVoe, 2003; Markus & Kitayama, 2003; Oishi, 2000). It seems, on its surface, to trivialize culture. I will have more to say on that, but for now I simply point out that culture does matter to SDT researchers. Of the three canonical needs thus far identified within SDT, none has galvanized as much attention, from critics and supporters alike, as has the need for autonomy. Two recent studies provide powerful examples of how SDT researchers have approached the task of testing the universality of this particular basic need.

Yu, Levesque-Bristol, and Maeda (2018) set out to test the prediction that the need for autonomy matters across cultures by conducting a meta-analysis of studies that had examined the association between autonomy, as defined within SDT, and subjective well-being, typically assessed as a combination of high positive affect, low negative affect, and high satisfaction with life. Again, as specified by definitional criterion (2), a need is that which is essential for growth, well-being, and adjustment, and, according to criterion (5), these associations should hold across countries and cultures. Specifically, for purposes of the meta-analysis, "culture" was operationalized by these authors as country membership, with samples coming either from the United States or from one of several East Asian countries. Based on prior research (e.g., Hofstede, 2001; Triandis & Gelfand, 1998), the United States was considered to represent a typical individualistic culture, whereas the East Asian countries were considered to represent typical collectivistic cultures. An exhaustive search of the literature identified 36 studies, published between 2006 and 2016, that met inclusion criteria. Notably, the authors searched not only the English-language literature but also the literature published in Chinese, Korean, and Japanese. This effort was laudable, given my earlier remarks about languages of publication. Nevertheless, of the identified studies, only four were published in another language (Chinese), and the rest were published in English; the resulting publications represented East Asian samples from Mainland China, Hong Kong, Taiwan, and Japan. Of the 36 studies, 14 of them tested associations between autonomy and subjective well-being in East Asian countries, and 22 tested associations in the United States. The total sample size was 12,906.

The results of the meta-analysis found, first, that autonomy was indeed significantly correlated with subjective well-being ($r = .46$, $k = 36$, $p < .01$). Because they also found significant variation in the effect sizes reported in the studies, the authors tested for

moderation by location, that is, group membership (either U.S. or East Asian). However, they failed to find any significant difference in the effect size of the association in the two locations, suggesting that satisfaction of the need for autonomy was comparably important in both the East Asian and U.S. populations. Yu and colleagues (2018, p. 1877) concluded that their results "lend further support to the claim in SDT that autonomy is a universal human need, as it consistently plays a role in determining the optimal functioning of human beings."

A second illustrative study on which I would like to focus attention was conducted by Nalipay, King, and Cai (2020). In this study, the role of all three of SDT's basic needs was considered, and the focus was on perceptions of contextual support for the basic needs. The outcome being studied was not well-being, as such, but achievement. Whereas Yu et al. (2018) conducted a meta-analysis of published, single-sample studies, Nalipay and colleagues (2020, p. 68), drawing upon the Program for International Student Assessment (PISA), used "nationally representative data from 11 contexts representing a wide range of Western and Eastern societies." Their sample included 59,513 students from Western Anglo cultures (Australia, Canada, New Zealand, United Kingdom, and United States), and 32,812 students from Eastern Confucian Asian cultures (Hong Kong, Japan, Macao, Shanghai, South Korea, and Taipei). The researchers drew on items in the PISA questionnaire to reflect students' perceptions of teacher support for the basic needs of relatedness (five items), autonomy (four items), and competence (six items). Reading achievement scores were used to operationalize achievement. Importantly, the authors used multigroup confirmatory factor analysis to provide an initial test of the invariance across cultures of the measurement model for the three basic needs. Results of this test supported the metric invariance of the basic needs items, suggesting that "students across cultures [Western, and Eastern] have similar understanding of contexts that support relatedness, autonomy, and competence" (p. 69). To test the associations between basic need support and achievement, the authors then employed multigroup structural equation modeling, with three latent variables representing the three needs and achievement modeled as an observed indicator. The overall model had acceptable fit, and the pathways from relatedness and autonomy to achievement, both positive, were found to be invariant across Western and Eastern cultures. The path from competence to achievement was also positive in both cultures but was found to be stronger in Western than in Eastern cultures. The authors interpreted these findings as providing overall support for SDT's claim regarding the universality of basic needs, while acknowledging the importance of clarifying the differential role that competence played in this analysis. Specifically, although they pointed out that the direction of the effect for competence was the same in both cultural contexts, the fact that its magnitude was weaker in Eastern societies might represent a ceiling effect, given that prior research has shown that Eastern classrooms tend to provide more structure and support for competence than do classrooms in Western countries (e.g., Jingbo & Elicker, 2005).

Both of these studies provided evidence supporting SDT's claim, reflected in definitional criterion (5), that the basic needs are indeed universal across cultures. They do not stand alone, as many other studies also provide convergent evidence on this point (e.g., Chen et al., 2015; Chirkov et al., 2005; Church et al., 2012; Diener et al., 2010; Lynch et al., 2009; Ryan & Deci, 2017; Sheldon et al., 2001; Tay & Diener, 2011). Importantly, given prior scholarly criticisms regarding the universality of autonomy in particular (Iyengar & DeVoe, 2003; Markus & Kitayama, 2003; Oishi, 2000), such studies, using different samples and different methods, have rather cogently demonstrated the positive links between need satisfaction or the contextual provision of need support and valued outcomes such as subjective well-being and academic achievement, in both Eastern and Western samples. Nevertheless, as Yu and colleagues (2018) and Nalipay and colleagues (2020) acknowledged, the case can be made for future research in this confirmatory tradition to include additional cultural samples, to utilize additional and alternative measures of predictors (i.e., the three needs) and outcomes (well-being, achievement), and to make use of different study designs, such as longitudinal and experience sampling, in order to provide converging evidence regarding the universality of these three, canonically recognized (within SDT) needs.[1]

On that note, I turn now to elaborate on the exploratory agenda that, to my mind, is also implied in the definitional criteria of a basic need but which has been pursued to a far lesser extent.

### Basic Needs as Universal, across Cultures: An Exploratory Perspective

The definitional criteria for a basic need, set forth by Vansteenkiste and colleagues (2020), imply an exploratory agenda for SDT's cross-cultural research. This is based not only on the claim that needs are universal (criterion 5) but also on the logical observation that the provision of criteria serves the purpose of exclusion as well as the purpose of inclusion; the criteria can be used to determine not only what experiences do *not* qualify as needs, but they can also be used to determine what experiences *do* qualify as needs. In other words, the very existence of criteria implies that new candidate needs can be proposed and weighed against the criteria. However, in contrast to the purely nomothetical approach that has typically been used to propose and test new candidate needs, such as those

---

[1] One other point is important to mention here. As noted, the study by Nalipay and colleagues (2020) focused on perceptions of contextual supports for the basic needs, rather than on the satisfaction or frustration of the needs per se. Recent work in SDT has begun to contribute a more refined understanding of cross-cultural differences in contextual need support, taking into account individuals' appraisals of the context as well as the notion of the functional significance of supports for the outcomes that an individual experiences. An important conclusion emerging from this research is that although there do seem to be some cross-cultural differences in the appraisal of contextual need support, there are limits to the degree to which culture affects these appraisals (see, e.g., Marbell-Pierre et al., 2019; Pan, Gauvain, & Schwartz, 2013; Soenens, Vansteenkiste, & Van Petegem, 2015). Ultimately, and as Nalipay and colleagues (2020) found, individuals' subjective perception of contextual need support has been found to be beneficial across cultures.

identified earlier in the chapter (e.g., novelty, beneficence), I suggest that an even stronger test of SDT's claim of universality can be made by adopting an *idiographic* approach, using not quantitative but, more properly speaking, *qualitative* methods, and doing so in cultures that demonstrably differ from each other. Such an approach has the potential to provide an even stronger test of a need candidate's universality precisely because it does not specify, a priori, what the need candidate is, but rather allows the need candidate to emerge spontaneously, so to speak, from within the local culture itself. In this way, any candidate needs thus identified have the added advantage of being ecologically valid. I turn at this point to an elaboration of these ideas, using as an example, for illustrative purposes, work that colleagues and I have being doing in the Republic of Tatarstan, within the Russian Federation (Lynch & Salikhova, 2017; Lynch, Salikhova, & Eremeeva, 2020).

Rather than testing of hypotheses specified on a priori grounds, a qualitative approach typically starts by asking a more open-ended question. Thus, for example, a researcher from the SDT tradition might ask, "What human experience is considered a basic need in another culture?" In order to test such a question, it would seem reasonable to ask people who could be considered to be experts in that culture: experts both with respect to their own membership in that culture and with respect to their professional expertise in a field closely related to human development. That is precisely what Lynch and Salikhova (2017) set out to do.

Working with a sample of professional educators ($N = 195$) drawn from the Republic of Tatarstan,[2] Lynch and Salikhova (2017) asked these local experts to write down, in their own words, their response to the prompt:

> For normal development, the organism needs to satisfy biological needs for food, water, warmth. For the normal development of the person the satisfaction of psychological needs is necessary. Write down what in your view are the three most important needs that are vitally essential for the development of a psychologically healthy person.

This prompt was presented in Russian (the predominant local language), and participant responses were all written in Russian. Lynch and Salikhova used a two-step process to analyze the 444 responses that were produced by the teacher-experts. For the first step, they looked at frequencies of words and concepts, reasoning that ideas that appeared more frequently would be noteworthy. For the second step, they had four raters, working independently, use a modified Q-sort technology to organize participants' responses into

---

[2] In an attempt to confirm the extent to which these experts' beliefs about the basic needs of children could be considered local (as opposed to imported from outside), we asked several questions at the end of the survey packet: whether they had completed any professional training outside the country (89.2% said no), whether they had worked with colleagues from outside the country (80.5% said no), and whether they had ever heard of SDT (80.1% said no). These data were collected under a Fulbright U.S. Scholar award.

categories based on conceptual, linguistic similarity. The raters were native speakers of Russian and were blind to the details of the study.

The first step of the analysis identified the most frequently occurring words or concepts, in descending order, as communication (42), love (39), understanding (21), family (15), respect (11), care (10), attention (8), and support (8). At the second step of the analysis, independent raters sorted through participant responses and grouped them into thematic categories; the labels that raters gave to the categories with the highest number of participant responses (each label created by a different rater) were "favorable family" (19 responses), "family well-being" (23 responses), "family" (14 responses), and "family" (42 responses). Lynch and Salikhova (2017) interpreted these findings as indicating that this group of local experts considered *relationships* to be essential for the healthy development and psychological well-being of children in their culture; notably, this finding was consistent whether responses were analyzed in terms of frequency counts of words or concepts, or whether they were categorized by independent raters based on linguistic and conceptual similarities. Indeed, this finding is also consistent with one of the three basic needs that has been identified within SDT on theoretical and empirical grounds: the need for relatedness.

But it might have been otherwise; it is just as possible that the local experts, when asked for their opinion on the nutriments required for healthy development and psychological well-being, could have supplied a completely different set of responses, highlighting something quite different, even unique, from any of the three needs specified within SDT. Were that to happen, the next step in this research agenda would be to develop and validate a measure of the new candidate need, and then to test the new candidate need nomothetically, in this same culture, to confirm that its satisfaction and frustration are indeed linked in predicted directions with outcomes of importance. The final step would be to test the candidate need in *other* cultures to ensure that it meets the criterion of universality. Exploratory mode is followed by confirmatory mode. It seems to me that this approach provides a complementary, and perhaps even stronger, test of SDT's claim for universality of basic needs. Rather than relying solely on traditional approaches of nomothetic hypothesis-testing, starting in exploratory mode allows for the possibility that members of local cultures might themselves, spontaneously, nominate a need already recognized by SDT, thereby increasing our confidence in that need's ecological validity. Of course, they might nominate something not currently recognized as a need in SDT; in that case, candidate and canonical needs can be allowed to compete for variance in well-being and other outcomes, in this and other cultures, in a genuine and rigorous test of SDT's universality claim.

However, it is important to note that there is another aspect of the exploratory agenda that also bears on the notions of universality and ecological validity. Specifically, SDT's claim about the universality of needs does not imply that needs are experienced or expressed in identical ways across cultures (Chen et al., 2015; Vansteenkiste et al.,

2020). Rather, SDT posits that the ways in which people experience and express the basic needs may be quite idiosyncratic, shaped by the local culture. Hence, besides asking the open-ended question "What human experience is considered a basic need in another culture?," a qualitative approach might ask another sort of open-ended question: "What is the experience of a particular need like in another culture?" This is what Lynch and colleagues (2020) did. Specifically, given the controversy surrounding the cross-cultural applicability of autonomy, they asked doctoral students ($N = 115$) at a major university in the Republic of Tatarstan, again construed as local experts, to write three brief essays, in their own words, in response to the following prompts: (1) describe a situation in which you yourself decided to do something at the university and took the initiative in doing so; (2) describe a situation in which you did something at the university not because you wanted to do it but because you *had* to do it; and (3) compare these two situations, noting any similarities and differences. The first prompt was considered the autonomy prompt (because it was designed to elicit, without naming autonomy, the experience of autonomy as it is broadly defined within SDT); the second prompt was considered the nonautonomy prompt (because it was designed to capture more closely what SDT would consider to be an extrinsically motivated activity). As in the previously described study, all prompts and participant-generated responses were in Russian.

After the responses to the prompts had been collected, they were subjected to a content analysis by two native speakers, at the first stage of which key words were identified, and at the second stage of which key emergent themes and categories were identified. The doctoral student local experts wrote about 115 autonomy situations and 115 nonautonomy situations, with respect to their experience at the university. Responses reflected various types of activity (e.g., classroom experiences, research-specific activity, social activity). The content analysis produced by the two independent raters yielded a number of themes or categories, including emotional manifestations, psychological manifestations, volitional efforts, value of the situation for the subject, time factor in the situation, immersion in and passion for the activity, discovery of one's creative potential, attribution of success or failure to internal versus external factors, influence of the situation on one's relationships with other people, remembering or forgetting of material obtained in the situation, influence of the situation on one's self-esteem, and application of the experience in one's life subsequent to the experience. Lynch and colleagues (2020) noted that clear differences emerged in terms of how doctoral students described their autonomy versus nonautonomy experiences in the university, the former typically being described in much more positive terms. In general, this finding would support the SDT perspective that experiences of autonomy provide optimal circumstances for engagement in one's activity and are valued by people in other cultures, even when the experience is not given the label of autonomy as such (a construct which, in itself, may or may not have much currency in the local culture). Beyond those differences in phenomenological descriptions of autonomy versus nonautonomy,

however, Lynch and colleagues pointed out that these local experts identified aspects of the experience of autonomy that do not typically appear in the standard, textbook definitions of that construct. For example, with respect to what raters identified as the *time factor* in participants' responses, these local experts described their experiences of autonomy as reflecting an accelerated perception of time, a higher speed or rate of work, and notably less procrastination. Lynch and colleagues interpreted this as evidence that asking local experts in a different culture to describe what the experience of autonomy is like for them in a real-world context, one that is presumably highly ecologically valid to them, can provide a richer, perhaps even culturally idiosyncratic understanding of that construct.

Taken together, I wish to argue that these two fairly simple studies suggest that an idiographic, and specifically qualitative, approach can provide an important tool in pursuing the exploratory agenda implied by the nine central criteria established for identifying basic needs, consistent with SDT's perspective on the strong definition of a need. That is, a truly rigorous examination of SDT's claim regarding the universality of a basic need should include not only a series of nomothetic tests of various need candidates, specified a priori on theoretical or empirical grounds; it should also be open to exploring idiographically, from the bottom up, the actual perspectives and experiences of local experts—experts both within and from a particular culture, who also possess a relevant professional expertise—and be open to the possibility that new candidate needs might in this way be identified, and that new, culturally relevant and even culture-specific aspects of already accepted needs might emerge. This would be to test the universality claim from two directions: (1) because *basic* needs may not be consciously or explicitly recognized in a given culture, it is possible that new need candidates can be idiographically identified by members of other cultures and subsequently nomothetically confirmed in that culture and in cultures around the world; (2) a qualitative, exploratory approach allows for demonstrable confirmation of SDT's claim that the universality of a need does not imply that the means and modes of need expression or need satisfaction are identical across cultures that differ from each other.

Finally, it seems to me that the radical openness to new discoveries implied by the exploratory agenda I have outlined here can serve as a counterbalance to the criticism sometimes leveled against SDT, that positing the universality of a need suggests, on its surface, that cultural differences do not matter. When researchers ask representatives of a local culture to express their own views, in their own words and in their own language, regarding what is essential for healthy development and well-being *in their culture*, then researchers thereby demonstrate their radical openness to learning from that culture. They also demonstrate that, far from considering culture unimportant, they consider culture of such importance that it must be explored from within rather than merely or exclusively from without. An additional implication is that, ideally, such research should be conducted with at least one representative of that culture on the research team, as a cultural

insider who also has firsthand knowledge both of the cultural forms and values and also of the language in which people of that culture think and communicate.

This gets to the point I raised at the start of the chapter, articulated by Vygotsky (1977): that cultures, of which language is a primary tool, shape the thoughts and experiences that people (including, of course, researchers) have about the world around them. Recognition of this principle should inform our research, in both design and implementation.

## The Construct of Culture: To Measure or Not to Measure?

As noted, there are not only conceptual and theoretical issues for SDT researchers to be exploring cross-culturally; there are also important methodological considerations that need to be addressed. Thus far, I have raised the question of the respective contributions of quantitative versus qualitative methods, as well as the issue of the translation and psychometric validation of existing scales and measures for use in quantitative, nomothetical research. It strikes me that there is at least one additional, methodological issue with which SDT researchers will need to contend: to measure, or not to measure, the construct of culture itself. I have hinted at this issue already, but it bears further explication.

When conducting cross-cultural research, how important is it to measure the construct of culture itself? The issue is this: researchers have often assumed cultural differences, using country membership as a proxy for culture. In general, this assumption may be a reasonable one. Important and presumably reliable cultural patterns have been identified on a country-by-country basis (Triandis, 1995; Triandis & Gelfand, 1998). But considerable within-country variations in culture have also been observed (see, e.g., Oyserman, Coon, & Kemmelmeier, 2002; Vandello & Cohen, 1999), and hence the recommendation of Oyserman and colleagues (2002) actually to *measure* culture bears serious consideration. Within the SDT community, some researchers have indeed measured culture. Chirkov and colleagues (2003; Chirkov & Ryan, 2001), for example, in their research on internalization of cultural norms, utilized the well-validated Triandis and Gelfand (1998) approach, which captures cultural distinctions in individualism/collectivism as well as the horizontal/vertical dimensions. In this research, culture itself was a target variable: it was measured precisely because the researchers wished to test predictions drawn from SDT regarding provisions for basic needs and internalization of cultural norms. There have been fewer instances, it seems, when culture was measured expressly in order to test it as a potential moderator of key effects, for example, of the association between need satisfaction and an outcome like well-being. More typically, country membership has been used as a proxy for culture (see, e.g., Lynch et al., 2009). Thus, for example, Yu and colleagues (2018) and Nalipay and colleagues (2020) did not actually measure culture as such but inferred cultural differences on the basis of country membership. In both cases, of course, the researchers were limited by the fact that they were essentially using existing data sets. But the fact remains that in the samples reported in those two studies, there could be considerable within-country or within-group (Western, East Asian) variability along relevant

cultural dimensions that, because unmeasured, limit our ability to claim unequivocally that the associations tested were unmoderated by culture. Thus, reasonable as the assumption may be (that country membership stands as a proxy for culture), it must be acknowledged as a limitation of much of the existing cross-cultural research, especially in light of evidence of within-country variability (Vandello & Cohen, 1999).

*How* to measure culture, how to operationalize it, is a separate issue. Again, within the field of psychology, well-validated and widely used measures have included the models developed by Triandis and Gelfand (1998) and by Singelis (1994). Taking a slightly different approach, Lynch (2020) recently reported on the development of the Cultural Identity/Cultural Internalization Scale. Study 1 reported on the initial scale development and validation on a U.S. sample ($N$ = 149), while Study 2 provided additional psychometric support in a new U.S. sample ($N$ = 205) as well as a Chinese sample ($N$ = 245). The scale does not attempt to identify particular cultural dimensions (e.g., individualistic vs. collectivistic; vertical vs. horizontal). Rather, it asks the participant to think about their own culture, whatever that might be for them, and uses five items drawn from the acculturation literature to assess the strength of their own cultural identity, for example, the extent to which the person "feels American," identifies as American, lives by or follows an American way of life, and so on. The specific country named would change, of course, depending on the sample being investigated. The scale then asks them to respond to the prompt "To the extent that I live by or follow the American way of life, I do so because . . ." and then provides a set of responses that captures SDT's continuum of motivation, from more extrinsic or external at one end to more internal or autonomous at the other end.

Lynch (2020) found, in samples from the United States and China, that more internal or autonomous motivation for embracing one's ambient culture was associated with greater well-being; in addition, Study 2 found that in samples from the United States and China, greater satisfaction of basic psychological needs for competence, relatedness, and autonomy was associated with greater (i.e., more autonomous) internalization of one's ambient cultural identity. Of relevance for the present chapter, Study 2 also assessed participant scores on Singelis's (1994) measure of independent versus interdependent self-construals. Although this indicator of culture was not tested as a moderator of any of the associations, Lynch (2020) found that, for the U.S. sample, strongly identifying oneself with "American culture" (i.e., scoring high on the cultural identity subscale) was more strongly correlated with interdependent self-construals ($r$ = .22, $p$ < .01) than with independent self-construals ($r$ = −.06, *n.s.*). In the Chinese sample, however, endorsing a strong cultural identity as Chinese was associated both with independent self-construals ($r$ = .23, $p$ < .01) and with interdependent self-construals ($r$ = .34, $p$ < .01). These findings were not expected and, to my mind, again speak to the importance of measuring, rather than assuming, cultural differences, as recommended by Oyserman and colleagues (2002). In general, however, the point I wish to emphasize here is that culture is relevant,

that it can be measured in various ways, and the degree of its internalization, in the sense specified by SDT, seems meaningful.

## New Directions in Cross-Cultural Research within SDT

### Needs as a Critical Focus

Among SDT's central propositions is the idea that basic psychological needs are universal. This implies that needs, defined as the ingredients required by the organism for growth, development, integration, and well-being, are rooted in the very fiber of what it means to be human, presumably selected for through evolutionary processes at a species-wide level (Ryan et al., 1997; Martela & Sheldon, 2019; Vansteenkiste et al., 2020). If this is so, then it follows that SDT supplies the grounds for critiquing social contexts for their ability to provide human beings with these essential nutriments. In other words, SDT is a *critical* theory, as Ryan and Deci (2017) have argued (see also Ryan & Niemiec, 2009). Thus, the agenda for SDT researchers has been both to test, empirically, the proposition that needs are universal, and to apply these findings critically with respect to the social contexts, both micro and macro, in which human beings find themselves.

With respect to culture, this agenda has meant testing whether satisfaction of the basic needs is reliably linked to outcomes like well-being (Yu et al., 2018) and achievement (Nalipay et al., 2020) in countries around the world, and assessing and comparing the degree to which norms and values from various cultures can be internalized (Chirkov & Ryan, 2001; Chirkov et al., 2003). With reports of human rights abuses proliferating in various regions around the world (Human Rights Watch, 2021), it seems particularly timely to recall this implication of SDT's stance on the human person and the human person's basic needs. Some in the SDT community have suggested routinely measuring and reporting satisfaction of the basic psychological needs as a check on how well cultures and societies support their citizens' needs and, by extension, their well-being (e.g., Martela & Sheldon, 2019). Importantly, support for basic needs is something that can be changed; it is malleable, and hence may prove a better target for intervention than factors like socioeconomic status, which may be more difficult to change (Nalipay et al., 2020). Interventions to increase support for people's basic needs can take place at various levels, from an ecological systems perspective (Bronfenbrenner, 2001), from more micro levels such as the family, the classroom, the business or organization, to more macro levels such as the policies and practices of governments and society at large (Yu et al., 2018). Implementing need-supportive structures, practices, and interventions on the regional and national level, however, would be something fairly new and would require both study and the willingness to take on this type of large-scale project. It seems it must require the support of lobbyists, politicians, and governments as well.

*Focus on Diversity within Cultures and Populations with Special Needs or
Minority Status*

Earlier I mentioned empirical work which has pointed out that considerable cultural variation exists within countries (Oyserman et al., 2002; Vandello & Cohen, 1999). This suggests the importance of refraining from treating countries as homogeneous groups, that is, recognizing the presence of cultural diversity even within defined geographical and sociopolitical regions. Recognition of diversity implies acknowledgment not only that groups might differ from each other along important cultural dimensions but also that they might differ in number or size. That is, it is plausible, even likely, that within a given geographical region, there may be a cultural majority group and a cultural minority group, or groups. Indeed, this is demonstrably the case. Thus, an important focus for SDT's cultural research agenda should be to include attending to the needs of *minority* groups, and to those in lesser positions of power, more generally speaking. This is not simply a scientific issue, so that samples can be more representative of the true population (although that of course is also important); there is also an ethical issue at stake.

To date, relatively little SDT research has explicitly considered gender, race, ethnicity, minority status, privilege, or power. Kaeppel, Grenier, and Bjorngaard-Basayne (2020) used SDT and relational cultural theory to explore the role of gender in the workplace (see also Mackenzie, Karaoylas, & Starzyk, 2018). Kloos et al. (2019) studied longitudinal associations between basic need satisfaction and well-being in a gerontological population, specifically nursing home residents. Guo et al. (2021) looked at intrinsic motivation among rural adolescents in China. Adefila et al. (2020) explored the possibilities for developing a culture of autonomy support among students with a disability in higher education settings, and Frielink, Schuengel, and Embregts (2019) have examined the importance of basic needs to people with a mild intellectual disability. Guiffrida and colleagues (2013) tested how race, specifically white status versus nonwhite status, moderated the relation between motivation for college and academic outcomes. Isik and colleagues (2021) reported results of a qualitative study grounded in SDT and intersectionality to explore the experiences of ethnic minority medical students. Gonzalez and colleagues (2014) tested the role of basic needs in mediating the impact of socioeconomic status on physical and mental health. Some of these studies have looked at socioeconomic status broadly speaking, and others have looked at what might be considered special populations. Nevertheless, they represent relatively rare and, in some cases, unique forays into understanding the role of motivation generally, and of need support specifically, in groups that do not fit the parameters of the mainstream culture on which motivational research has traditionally been based and on which it is still, primarily, based. With a nod toward a conceptual paper by Walck (2017) and a study on the role of autonomy support in attitudes toward diversity among police (Al-Khouja et al., 2020), it is reasonable to assert that the SDT community has relatively

recently begun to bring a specifically critical lens with respect to privilege and power to how we think about human motivation.

Usher (2018) puts the challenge rather pointedly: it is particularly problematic to search for universals in human motivation in a sea of whiteness. In other words, to a large extent mainstream motivational research has thus far been based on results obtained from ethnically white populations, reflecting the theoretical and empirical work of predominantly ethnically white researchers. Among the solutions Usher recommended are to "diversify the people who are asking the questions and interpreting the research" (p.137; see also Urdan & Bruchmann, 2018) and to ask participants to share their own experiences, in their own words, from their own perspectives. "Welcoming diverse perspectives—indeed, *seeking and privileging* them—is therefore paramount to inclusivity in motivation research and theory" (Usher, 2018, p. 137). Usher's point is important and well-taken. In response, I point out not only that many studies of SDT have been carried out by nonwhite researchers among nonwhite populations (for some examples, see the list of publications noted in the section on translation of SDT scales into other languages), but, more to the point, that there is a growing emphasis among SDT researchers on employing methodologies that specifically allow the voices of local communities to be heard. As just one example, Craven and colleagues (2016) proposed what they called the reciprocal research partnership model in their work with Indigenous peoples in Australia. This model, which draws heavily both on Indigenous values and on SDT, was jointly developed by a team of Indigenous and non-Indigenous researchers, with the intentional aim of allowing the voices of Indigenous peoples to be heard and prioritized, with respect to their own positive thriving and well-being.

Because SDT does, self-reflectively, view itself as a *critical* theory (Ryan & Deci, 2017; Ryan & Niemiec, 2009; Vansteenkiste et al., 2020), I believe that the theory and its proponents are capable of embracing the challenge presented by Usher (2018). To the extent that race influences a researcher's perspective, whether explicitly or implicitly, certainly its relevance must be acknowledged. Indeed, recognition of the researcher's *positionality* with respect to any of a number of study-relevant dimensions is an important aspect of the qualitative tradition (Charmaz, 2014; Creswell, 2013; Yardley, 2000). Along those lines, I believe that implementing some of the ideas that I have outlined in this chapter, when describing the exploratory agenda for SDT's cross-cultural research, represents one step toward addressing these important concerns. In particular, exploring local cultures from within, treating their members as local experts, asking them to share their own perspectives in their own words and in their own language, including members of the local culture on the research team (both as primary investigators and as naïve raters and coders of the results), and recognizing the researcher's own positionality along study-relevant dimensions—these are steps that can be taken by the SDT community to mitigate both the perception and any reality of cultural bias in our own research.

Members of the SDT community have already been taking steps in this direction (Craven et al., 2016; Lynch & Salikhova, 2017; Lynch et al., 2020; Vansteenkiste et al., 2020; Walck, 2017). But it is important that those steps be intentional and that the questions explored be expanded to look more squarely at the needs of subgroups, minorities, and the marginalized, not only nomothetically but also idiographically. It does little good to look at the round peg if in the end we are still trying to fit it into a square hole. Indeed, SDT's perspective on basic needs and their universality is not a one-size-fits-all approach (Vansteenkiste et al., 2020), but it is important that methodological choices reflect this commitment as SDT researchers pursue both the confirmatory and the exploratory research agendas implied by the definitional criteria of a basic need. At the same time, it is important to bear in mind that postulating that there are universals in human nature is to postulate what we, as a human species, have in common. Without this, without recognition of a human nature that is, at its core, universal, it becomes all too easy to "other" those who differ from ourselves, whether in terms of culture or other dimensions, in ways that might be important but which are ultimately and comparatively superficial. As human history has shown, this process of "othering" all too easily, and all too often, leads to bias and bigotry. SDT provides a cogent and coherent perspective from which to argue, on theoretical as well as empirical grounds, that all people are equal in dignity and that what we have in common is at least as important as what distinguishes us—or what might divide us—from each other.

**Conclusion**

SDT clearly has generated considerable interest among researchers and practitioners in many countries around the world. This interest is reflected both in the number of countries represented at the international conferences dedicated to the theory and in the extensive published literature created by this international body of scholars. Such international interest in itself testifies to the fact that SDT speaks cogently to members of cultures that differ from each other. At the same time, the theory itself makes certain claims, the validity of which warrants cross-cultural investigation.

The present chapter has explored two of those claims: first, that basic psychological needs are universal, and second, that some cultural norms and values can more easily be internalized than others. Indeed, the two claims are connected: SDT makes the argument that norms and values can more easily be internalized precisely when they are consistent with and supportive of human beings' organismic, evolutionarily evolved, fundamental needs. In other words, healthy development, integration of experience, growth, and well-being all depend on processes that are activated when needs for autonomy, relatedness, and competence are supported in the environment and satisfied in the person. After presenting some of the early empirical evidence that SDT researchers have provided in support of these claims, the chapter turned its focus on the twofold research agenda implied in SDT's definition of the basic psychological need construct, two key elements of which

are that basic needs are essential (required for growth, well-being, integration) and that basic needs are universal (shared in common among all human beings, regardless of differences in culture, gender, socioeconomic status, etc.).

The first part of that agenda, I argued, is confirmatory. For the past two decades, SDT researchers have been testing the claim that satisfaction of basic needs is positively associated with valued outcomes such as well-being and achievement by exploring associations among these variables in countries around the world. This program of research substantively began with the work of Deci and colleagues (2001) in their study on basic need satisfaction among Bulgarian and U.S. workers, and has continued in more recent meta-analytic and large-sample, cross-national studies such as those conducted by Yu and colleagues (2018) and Nalipay and colleagues (2020). Although it might reasonably be argued that the evidence presented thus far is convincing, it is also reasonable to acknowledge that new samples, new measures, and new methods will continue to be needed in order to expand upon the theory's confirmatory research agenda. SDT's claims have not been tested in all countries or cultures; measures are in continual need of refinement; new methods and methodologies are always being developed, all of which could provide additional, converging evidence in support of SDT's claims—or, alternatively and importantly, could provide counterevidence to SDT's claims.

Indeed, despite the evidence and arguments that SDT's international community of scholars has provided to date, some have continued to question whether needs really are universal (e.g., Liu & Flick, 2019). I believe that the counterarguments should not be lightly dismissed. Rather, I think they are instructive. Given that the basis of such critiques typically rests on the argument of the importance of culture (e.g., Iyengar & DeVoe, 2003; Markus & Kitayama, 2003; Oishi, 2000), I would suggest that an exploratory approach, grounded in qualitative and idiographic methods, seems best suited to further address those concerns, from the inside, so to speak—by adopting a radically culture-respecting perspective. This is where the exploratory agenda outlined in this chapter can contribute something of great importance to the ongoing conversation about basic needs.

As I argued, SDT's definition of a basic need implies an exploratory research agenda precisely because it suggests that new needs can be offered for consideration, an openness about which SDT has been explicit (Vansteenkiste et al., 2020). This point in itself means that the question about new candidate needs should be put to each new culture in which SDT researchers become interested (and they should, of course, be interested in all cultures). Specifically, it is worth asking local experts what they consider to be the essential nutriments for healthy development, growth, and well-being *in their culture*, *for members of their culture*. The candidate needs proposed by these local experts might, sometimes, confirm one or more of the basic needs that are already recognized within SDT: autonomy, competence, and relatedness. On the other hand, local experts, when asked their opinion, might suggest something other than one of SDT's three canonical needs. In that case, the candidate need or needs can be tested nomothetically to ascertain

whether satisfaction of the need functions as such, that is, whether it indeed leads reliably to outcomes like well-being or academic achievement, or whether frustration of the need leads reliably to decrements in those outcomes. Ideally, these tests of a new candidate need should be conducted in other cultures as well, to test it for the criterion of universality. According to the strict criteria adopted by SDT, a need is a need only if it is demonstrably universal, shared in common by all human beings, on the basis of our common evolutionary heritage.

Continuing to pursue SDT's exploratory research agenda is important not just in the interest of scientific rigor but also for ethical reasons. Because SDT positions itself as a critical theory (Ryan & Deci, 2017; Ryan & Niemiec, 2009), it suggests not only that cultures, societies, governments, and other forms of human organization can be critiqued in terms of their propensity for either supporting or thwarting the satisfaction of their members' basic psychological needs (and, hence, of those human members' growth, development, well-being, and human potential); it also suggests that the theory has *recommendations for intervention* to make to these bodies in the interest of promoting well-being through need-satisfying opportunities and experiences. Although SDT argues that basic needs are universal, it does not claim that basic needs are identical, either in their expression or in their means of satisfaction (Chen et al., 2015; Ryan & Deci, 2017; Vansteenkiste et al., 2020); hence, suggestions for need-satisfying interventions will need to be tailored to the specific circumstances and characteristics of each local culture. Arguably, it is members of that local culture who will be in the best position to make such recommendations.

The chapter also called attention to several methodological issues of importance to cross-cultural researchers in the SDT tradition. Such, for example, are the translation and validation of scales and measures for use in different cultures and whether or not to measure the construct of culture itself when pursuing SDT's confirmatory agenda. As well, the expansion of SDT's usage of qualitative methods will be critical when pursuing the theory's exploratory agenda. One of SDT's most debated and controversial claims has to do with the universality of a need for autonomy in particular. Although the quantitative, confirmatory, nomothetic evidence for the cross-cultural importance of autonomy continues to grow, the fact that this evidence fails to convince some in the field suggests that perhaps a new approach, an additional approach, is required. In the end, I wish to suggest that if an essential aspect of the experience of autonomy is the feeling that one has a voice, and that one's voice can be heard (Ryan & Deci, 2017), then an important, even critical aspect of providing support for another's autonomy is to encourage, to hear, and to respect the voice of that other (see also Craven et al., 2016). Qualitative methods, which use an idiographic approach, are well positioned to allow SDT's researchers to encourage, hear, and respect the voices that come to them from the members of the very cultures they seek to explore. This would, in other words, be a truly autonomy-supportive next step in the expansion of SDT's cross-cultural program of research.

# References

Adefila, A., Broughan, C., Phimister, D., & Opie, J. (2020). Developing an autonomous-support culture in higher education for disabled students. *Disability and Health Journal, 13*, 1–6. https://doi.org/10.1016/j.dhjo.2020.100890

Al-Khouja, M., Graham, L., Weinstein, N., & Zheng, Y. (2020). How autonomy support and ethical value alignment influences attitudes towards diversity in English police. *Journal of Moral Education, 49*, 365–380. https://doi.org/10.1080/03057240.2019.1697867

Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology, 34*, 2045–2068.

Bagheri, L., & Milyavskaya, M. (2020). Novelty-variety as a candidate basic psychological need: New evidence across three studies. *Motivation and Emotion, 44,* 1–22. https://doi.org/10.1007/s1103 1-019-09807-4

Bollen, K. A. 1989. *Structural equations with latent variables.* Wiley.

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1*(3), 185–216.

Bronfenbrenner, U. (2001). The bioecological theory of human development. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social and behavioral sciences* (Vol. 10, pp. 6963–6970). Elsevier.

Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Sage.

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion, 39*(2), 216–236. https://doi.org/10.1007/s11031-014-9450-1

Chirkov, V., & Ryan, R. M. (2001). Parent and teacher autonomy support in Russian and U.S. adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology, 32*, 618–635.

Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalizaiton of cultural orientations and well-being. *Journal of Personality and Social Psychology, 84*, 97–110.

Chirkov, V. I., Ryan, R. M., & Willness, C. (2005). Cultural context and psychological needs in Canada and Brazil: Testing a self-determination approach to the internalization of cultural practices, identity, and well-being. *Journal of Cross-Cultural Psychology, 36*, 423–443.

Church, A. T., Katigbak, M. S., Locke, K. D., Zhang, H., Shen, J., de Jesús Vargas-Flores, J., Ibáñez-Reyes, J., Tanaka-Matsumi, J., Curtis, G. J., Cabrera, H. F., Mastor, K. A., Alvarez, J. M., Ortiz, F. A., Simon, J.-Y. R., & Ching, C. M. (2013). Need Satisfaction and Well-Being: Testing Self-Determination Theory in Eight Cultures. *Journal of Cross-Cultural Psychology, 44*(4), 507–534. https://doi.org/10.1177/0022022112466590

Craven, R. G., Ryan, R. M., Mooney, J., Vallerand, R. J., Dillon A., Blacklock, F., & Magson, N. (2016). Toward a positive psychology of indigenous thriving and reciprocal research partnership model. *Contemporary Educational Psychology, 47*, 32–43. http://dx.doi.org/10.1016/j.cedpsych.2016.04.003

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Sage.

Deci, E. L., Connell, J. P., & Ryan, R. M. (1989). Self-determination in a work organization. *Journal of Applied Psychology, 74*, 580–590.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227–268.

Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern bloc country: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin, 27*(8), 930–942. https://doi.org/10.1177/0146167201278002

Diener, E., Ng, W., Harter, J., & Arora, R. (2010). Wealth and happiness across the world: Material prosperity predicts life evaluation, whereas psychosocial prosperity predicts positive feeling. *Journal of Personality and Social Psychology, 99*, 52–61. https://pubmed.ncbi.nlm.nih.gov/20565185/

Downie, M., Koestner, R., ElGeledi, S., & Cree, K. (2004). The impact of cultural internalization and integration on well-being among tricultural individuals. *Personality and Social Psychology Bulletin, 30*, 305–314.

Frielink, N., Schuengel, C., & Embregts, P. J. C. M. (2019). Psychometric properties of the Basic Need Satisfaction and Frustration Scale–Intellectual Disability (BPNSFS-ID). *European Journal of Psychological Assessment, 35*, 37–45.

Goldberg D. P., & Hillier V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological Medicine, 9*, 139–145. https://doi.org/10.1017/S0033291700021644

Gonzalez, M. G., Swanson, D. P., Lynch, M., & Williams, G. C. (2014). Testing satisfaction of basic psychological needs as a mediator of the relationship between socioeconomic status and physical and mental health. *Journal of Health Psychology, 21*(6), 972–982. https://doi.org/10.1177%2F1359105314543962

González-Cutre, D., Romero-Elías, M., Jiménez-Loaisa, A., Beltrán- Carrillo, V. J., & Hagger, M. S. (2020). Testing the need for novelty as a candidate need in basic psychological needs theory. *Motivation and Emotion, 44*, 295–314. https://doi.org/10.1007/s1103 1-019-09812-7

Guiffrida, D., Lynch, M. F., Wall, A., & Abel, D. (2013). Do reasons for attending college affect academic outcomes? A test of a motivational model from a self-determination theory perspective. *Journal of College Student Development, 54*, 121–139. https://muse.jhu.edu/article/502604

Guo, S., Cheung, C., Qin, T., & Ning, X. (2021). Intrinsic motivation of rural adolescents in China: How individuation influences? *Children and Youth Services Review, 120*, 1–8. https://doi.org/10.1016/j.childyo uth.2020.105778

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations.* Sage.

Human Rights Watch. (2021). *World report.* [https://www.hrw.org/sites/default/files/media_2021/01/2021_h rw_world_report.pdf]

Ilardi, B. C., Leone, D., Kasser, T., & Ryan, R. M. (1993). Employee and supervisor ratings of motivation: Main effects and discrepancies associated with job satisfaction and adjustment in a factory setting. *Journal of Applied Social Psychology, 23*, 1789–1805.

Isik, U., Wouters, A., Verdonk, P., Croiset, G., & Kusurkar, R. A. (2021). "As an ethnic minority, you just have to work twice as hard": Experiences and motivation of ethnic minority students in medical education. *Perspectives in Medical Education, 10*, 272–278. https://doi.org/10.1007/s40037-021-00679-4

Iyengar, S. S., & DeVoe, S. E. (2003). Rethinking the values of choice: Considering cultural mediators of intrinsic motivation. In V. Murphy-Berman & J. J. Berman (Eds.), *Nebraska Symposium on Motivation, Vol. 49: Cross-cultural differences in perspectives on self* (pp. 129–174). University of Nebraska Press.

Jeno, L. M., Raaheim, A., Kristensen, S. M., Kristensen, K. D., Hole, T. N., Haugland, M., & Maeland, S. (2017). The relative effect of team-based learning on motivation and learning: A self-determination theory perspective. *CBE-Life Sciences Education, 16*, 4. https://doi.org/10.1187/cbe.17-03-0055

Jingbo, L., & Elicker, J. (2005). Teacher-child interaction in Chinese kindergartens: An observational analysis. *International Journal of Early Years Education, 13*(2), 129–143. https://doi.org/10.1080/0966976050 0171139

Kaeppel, K., Grenier, R. S., & Bjorngard-Basayne, E. (2020). The F word: The role of women's friendships in navigating the gendered workplace of academia. *Human Resources Development Review, 19*, 362–383. https://doi.org/10.1177/1534484320962256

Kloos, N., Trompetter, H. R., Bohlmeijer, E. T., & Westerhof, G. J. (2019). Longitudinal associations of autonomy, relatedness, and competence with the well-being of nursing home residents. *The Gerontologist, 59*, 635–643. https://doi.org/10.1093/geront/gny005

Little, T. D. (1997). Mean and covariance structures (MACS) analyses of cross-cultural data: Practical and theoretical issues. *Multivariate Behavioral Research, 32*, 53–76.

Liu, X., & Flick, R. (2019). The relationship among psychological need satisfaction, class engagement, and academic performance: Evidence from China. *Journal of Education for Business, 94 (6)*, 408–417. https://doi.org/10.1080/08832323.2018.1541855.

Lynch, M. F. (2004). *Variability in self-concept across personal relationships: The role of culture, basic psychological needs, and authenticity in China, Russia, and the United States* (Unpublished doctoral dissertation). University of Rochester.

Lynch, M. F. (2020). The Cultural Internalization Scale: Assessing internal and external reasons for endorsing one's cultural identity. *Education and Self-Development, 15*(1), 38–55. https://en.eandsdjournal.org/jour nal-article/the-cultural-internalization-scale-assessing-internal-and-external-reasons-for-endorsing-ones-cultural-identity/

Lynch, M. F., La Guardia, J. G., & Ryan, R. M. (2009). On being yourself in different cultures: Ideal and actual self-concept, autonomy support, and well-being in China, Russia, and the United States. *Journal of Positive Psychology, 4*, 290–304.

Lynch, M. F., & Salikhova, N. R. (2017). Teachers' beliefs about the needs of students: Teachers as local experts (a qualitative analysis). *Education & Self Development*, *12*, 33–43. https://en.eandsdjournal.org/journal-article/teachers-beliefs-about-the-needs-of-students-teachers-as-local-experts-a-qualitative-analysis/

Lynch, M. F., Salikhova, N. R., & Eremeeva, A. V. (2020). Basic needs in other cultures: Using qualitative methods to study key issues in self-determination theory research. *Psychology Journal of the Higher School of Economics*, *17*, 134–144. https://dspace.kpfu.ru/xmlui/handle/net/158348

Mackenzie, C. S., Karaoylas, E. C., & Starzyk, K. B. (2018). Lifespan differences in a self-determination theory mode of eudaimonia: A cross-sectional survey of younger, middle-aged, and older adults. *Journal of Happiness Studies, 19*, 2465–2487.

Marbell-Pierre, K. N., Grolnick, W. S., Stewart, A. L., & Raftery-Helmer, J. N. (2019). Parental autonomy support in two cultures: The moderating effects of adolescents' self-construals. *Child Development, 90*, 825–845.

Markus, H. R., & Kitayama, S. K. (2003). Models of agency: Sociocultural diversity in the construction of action. In V. Murphy-Berman & J. J. Berman (Eds.), *Nebraska Symposium on Motivation, Vol. 49: Cross-cultural differences in perspectives on the self* (pp. 1–57). University of Nebraska Press.

Martela, F., & Riekki, T. J. J. (2018). Autonomy, competence, relatedness, and beneficence: A multicultural comparison of the four pathways to meaningful work. *Frontiers in Psychology*, *9*, 1–14. https://doi.org/10.3389/fpsyg.2018.01157

Martela, F., & Ryan, R. M. (2020). Distinguishing between basic psychological needs and basic wellness enhancers: The case of beneficence as a candidate psychological need. *Motivation and Emotion, 44,* 116–133. https://doi.org/10.1007/s1103 1-019-09800-x

Martela, F., & Sheldon, K. M. (2019). Clarifying the concept of well-being: Psychological need satisfaction as the common core connecting eudaimonic and subjective well-being. *Review of General Psychology*, *23*, 458–474.

Mladenovic, M., & Cizmic, S. (2017). The influence of global motivation orientation and needs for autonomy, competence and relatedness on work motivation. *Glasnik Antropoloskog drustva Srbije, 52* (1–2), 63–74.

Nalipay, M. J. N., King, R. B., & Cai, Y. (2020). Autonomy is equally important across East and West: Testing the cross-cultural universality of self-determination theory. *Journal of Adolescence*, *78*, 67–72. https://doi.org/10.1016/j.adolescence.2019.12.009

O'Brien, E. J., & Epstein, S. (1989). *The Multidimensional Self-Esteem Inventory*. Psychological Assessment Resources.

Oishi, S. (2000). Goals as cornerstones of subjective well-being: Linking individuals with cultures. In E. F. Diener & E. M. Suh (Eds.), *Subjective well-being across cultures* (pp. 87–112). MIT Press.

Osin, E. N., Suchkov, D. D., Gordeeva, T. O., & Ivanova, T. Yu. (2015). Udovletvorenye bazovykh psikhologicheskikh potrebnostey kak istochnik trudovoy motivatsii i subjektivnovo blagopoluchiya u rossiskikh sotrudnikov [Satisfaction of basic psychological needs as a source of work motivation and subjective well-being among Russian employees]. *Journal of the Higher School of Economics, 12*, 103–121.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*, 3–72.

Pan, Y., Gauvain, M., & Schwartz, S. J. (2013). Do parents' collectivistic tendency and attitudes toward filial piety facilitate autonomous motivation among young Chinese adolescents? *Motivation and Emotion, 37*, 701–711.

Prentice, M., Jayawickreme, E., & Fleeson, W. (2020). An experience sampling study of the daily dynamics among moral, autonomous, competent, and related need satisfactions, moral, and Big Five enactments, and psychological thriving. *Motivation and Emotion, 44*, 244–256. https://link.springer.com/article/10.1007/s11031-020-09829-3

Rudy, D., Sheldon, K., Awong, T., & Tan, H. (2007). Autonomy, culture, and well-being: The benefits of inclusive autonomy. *Journal of Research in Personality, 41*, 983–1007.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford.

Ryan, R. M., Di Domenico, S. I., Ryan, W. S., & Deci, E. L. (2017). Pervasive influences on wellness and thriving: Cultural, political, and economic contexts and the support of basic psychological needs. In F. Guay, H. W. Marsh, D. McInerney, & R. Craven (Eds.), *Self: Driving positive psychology and well-being, Vol. 6: International advances in self research* (pp. 199–232). Information Age Press.

Ryan, R. M., Kuhl, J., & Deci, E. L. (1997). Nature and autonomy: An organizational view of social and neurobiological aspects of self-regulation in behavior and development. *Development & Psychopathology*, *9*, 701–728.

Ryan, R. M., & Niemiec, C. P. (2009). Self-determination theory in schools of education: Can an empirically supported framework also be critical and liberating? *Theory and Research in Education, 7*, 263–272.

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology, 80*, 325–339.

Sheldon, K. M., Elliot, A. J., Ryan, R. M., Chirkov, V. I., Kim, Y., Wu, C., Demir, M., & Sun, Z. (2004). Self-concordance and subjective well-being in four cultures. *Journal of Cross-Cultural Psychology*, *35*(2), 209–223.

Singelis, T. M. (1994). The measurement of independent and interdependent self-construals. *Personality & Social Psychology Bulletin, 20*, 580–591.

Soenens, B., Vansteenkiste, M., & Van Petegem, S. (2015). Let us not throw out the baby with the bathwater: Applying the principle of universalism without uniformity to autonomy-supportive and controlling parenting. *Child Development Perspectives, 9*, 44–49.

Tay, L., & Diener, E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology, 101*, 354–365.

Triandis, H. C. (1995). *Individualism and collectivism*. Westview.

Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology*, *74*(1), 118–128.

Urdan, T., & Bruchmann, K. (2018). Examining the academic motivation of a diverse student population: A consideration of methodology. *Educational Psychologist*, *53,* 114 - 130. https://doi.org/10.1080/00461520.2018.1440234

Usher, E. L. (2018). Acknowledging the whiteness of motivation research: Seeking cultural relevance. *Educational Psychologist*, *53*, 131–144. https://doi.org/10.1080/00461520.2018.1442220

Vandello, J. A., & Cohen, D. (1999). Patterns of individualism and collectivism across the United States. *Journal of Personality and Social Psychology*, *77*, 279–292.

Van der Kaap-Deeder, J., Soenens, B., Ryan, R. M., & Vansteenkiste, M. (2020). *Manual of the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS)*. Ghent University.

Vansteenkiste, M., Niemiec, C., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: An historical overview, emerging trends, and future directions. In T. Urdan & S. Karabenick (Eds.), *Advances in motivation and achievement, Vol. 16: The decade ahead* (pp.105–165). London: Emerald.

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, *44*, 1–31. https://doi.org/10.1007/s11031-019-09818-1

Vlachopoulos, S. P., & Michailidou, S. (2006). Development and initial validation of a measure of autonomy, competence, and relatedness in exercise: The Basic Psychological Needs in Exercise Scale. *Measurement in Physical Education and Exercise Science, 10*, 179–201.

Vygotsky, L. S. (1977). The development of higher psychological functions. *Soviet Psychology*, *15*, 60–73.

Walck, D. (2017). Enhancing clients' perspectives and the therapeutic process by expanding our view of cultural wealth. *International Journal for the Advancement of Counselling, 39*, 395–404. https://doi.org/10.1007/s10447-017-9305-z

Yardley, L. (2000). Dilemmas in qualitative health research. *Psychology & Health, 15*, 215–228.

Yu, S., Levesque-Bristol, C., & Maeda, Y. (2018). General need for autonomy and subjective wellbeing: A meta-analysis of studies in the US and East Asia. *Journal of Happiness Studies, 19*, 1863–1882.

Zamarripa, J., Castillo, I., Tomás, I., Álvarez, O., & Delgado, M (2017). Escala mexicana de satisfacción de las necesidades psicológicas básicas en educación física [Mexican version of the Basic Psychological Needs Satisfaction in Physical Education Scale]. *Revista de Psicología del Deporte, 26*, 79–84.

# Self-Determination Theory and International Development

Nobuo R. Sayanagi *and* Marieke C. van Egmond

## Abstract

SDT has much to offer international development, especially as a counterpoint to the extrinsic incentive bias and hedonic stance that are prevalent in the field. Although the number of studies is still limited, existing studies in the context of international development and poverty generally support the basic propositions of SDT, especially in regard to the satisfaction of basic psychological needs and intervention outcomes. Theoretically, SDT-based interventions should also promote eudaimonia, although empirical investigation is warranted. Research in international development could, in turn, bring about new perspectives to SDT, for example, that basic psychological need satisfaction seems to moderate the undermining effect. As international development is a field that is new to not just SDT but psychology in general, there will be many challenges in conducting research, such as the lack of valid psychometric measures and ethical guidelines.

**Key Words:** self-determination theory, international development, poverty alleviation, basic psychological needs, undermining effect, motivational crowding, behavioral change, capability approach, eudaimonia

## Introduction

International development, alternatively known as development aid, development cooperation, or international cooperation, is a field that endeavors to alleviate poverty and improve the well-being of people living under impoverished conditions in developing countries. The breadth of activities conducted in international development is vast, including, but not limited to, infrastructure building; emergency relief; financial aid; government advisory; public health; nutrition improvement; technical assistance in industry, farming, and fishing; community development; conservation; and education. Obviously, some of these activities, such as infrastructure building, are not directly relevant to psychology. However, many aim for behavioral or attitudinal changes—which are certainly issues that are addressed by motivational theories like self-determination theory (SDT)—of aid beneficiaries in a manner that would help them ease the difficulties that come with poverty.

In the field of international development, there has been increasing interest in psychology. As early as a quarter of a century ago, Kukita (1996) argued that psychological factors, in particular the intrinsic motivation of aid beneficiaries, are key to the success of aid programs. Alkire (2005, 2007), who also alludes to SDT, asserts that the psychological dimension is underrepresented in research compared with other dimensions in international development. For the 2015 issue of the annual *World Development Report* (World Bank, 2015), one of the most influential publications in the field, the subtitle is *Mind, Society, and Behavior*. The issue asserts that understanding the psychology and behavior of beneficiaries is essential for aid to be effective. More recently, the United Nations Innovation Network (2021) released the *United Nations Behavioural Science Report*, which calls for the systematic application of behavioral science to promote behavioral change in the service of advancing the Sustainable Development Goals (United Nations Department of Economic and Social Affairs, 2015) in fields such as conservation, health, nutrition, gender equality, and security, among many others.

The reason behind the interest in psychology is not entirely clear, but we can reasonably speculate that it is because aid is often not efficient and that there is an implicit agreement that psychological factors are a key to improving aid schemes. In a scathing critique of the field, Banerjee and Duflo (2011, p. viii) assert that "anti-poverty policy is littered with the detritus of instant miracles that proved less than miraculous" and argue that understanding the complexities and richness of the lives of the poor is necessary. Sayanagi (2017, p. 2) also speculates that "these failed policies are based on misunderstandings of the complexities of how those living in poverty behave, and how their subjective experiences influence their behavior." However, the interest between international development and psychology has not been reciprocal.[1] There have been very few psychological studies conducted in international development settings, and thus even fewer SDT studies.

The authors of this chapter believe that SDT has the potential to fill this gap and can provide a significant contribution to international development. We thus begin with an overview of the potential merits of using SDT as a framework to guide development work. We then review the (limited) body of existing SDT studies, including some anecdotal reports. Finally, we discuss the challenges and issues that future studies will face, as well as the possible directions and opportunities for the advancement of SDT in development research and approaches.

---

[1] The World Bank (2015) report cites several studies that utilize psychological measures, including the work of Nobel Prize laureates Daniel Kahneman and James Heckman, but most cited studies have been conducted in the field of behavioral economics and development economics. As will be discussed later, there seem to be issues in the validity of the measurement of psychological constructs. There are very few studies cited that were published in psychological journals.

NOBUO R. SAYANAGI AND MARIEKE C. VAN EGMOND

## Why SDT in International Development?

As mentioned, many international development approaches aim to alter the behavior of beneficiaries. This is most salient in capacity-building or capability-building projects,[2] which train participants in skills that are believed to contribute to the alleviation of poverty and its related hardships. Behavior change is also relevant in other areas, such as education (interventions aimed at students, but also teachers and administrators in education systems in developing countries), public health (e.g., sanitation, contraception, disease prevention, medicine uptake, nutrition improvement, and infant health care, among many others), environmental policy, and community development (e.g., management of local resources such as water).

SDT-oriented readers may be uncomfortable with the term "behavioral change," as it has long been associated with behaviorist interventions that can be controlling. Especially in international development contexts, it may evoke images of *Walden Two* (Skinner, 1948/2005) where "more knowledgeable" foreign planners and managers dictate "better" behaviors to the poor local people. This is a legitimate concern, as even well-meaning efforts to help impoverished people can be predicated on assumptions about their inferiority, which can ultimately be adverse to their advancement (Lott, 2002, p. 108). In this context it refers to a "coordinated sets of activities designed to change specified behavior patterns" (Michie, Van Stralen, & West, 2011, p. 1) that are not limited to behavior modification techniques rooted in behaviorism.

It is important to stress that poverty is not caused by ignorance nor by faulty cultural or personality traits that need to be corrected. Sen (1999) and Nussbaum (2001), two influential figures in antipoverty research, assert that the structural lack of opportunities to develop capabilities is the root cause of poverty. The *capabilities approach* that they cofounded emphasizes creating more opportunities for all individuals. In this regard, research within SDT has suggested that to the extent individuals perceive themselves to have capabilities, they report greater well-being, a result substantially mediated by basic psychological need (BPN) satisfactions (DeHaan, Hirai, & Ryan, 2016).

However, Sayanagi (2017, p. 4) argues that simply providing opportunities is not sufficient, as such opportunities are often not well received. Furthermore, Haushofer and Fehr (2014) and Sayanagi (2017) point out that psychological states induced by poverty, such as a scarcity mindset, can hinder the alleviation of poverty. These behavioral patterns can be hard to change (Sayanagi, 2017). In sum, while poverty is not caused by specific behavioral patterns, living in poverty shapes certain behaviors that consequently make it hard to escape from poverty, and these behaviors are often not easily changed.

Thus, it can be said that aiming for behavior change in international development programs does not necessarily entail being controlling. It is instead the manner in which

---

[2] These concepts will be discussed below.

programs attempt to modify behavior that is in many cases problematic, as it can be ineffective at fostering internalized and volitional behavior change and can even be experienced as intrusive to would-be beneficiaries.

Heath (1999) asserts that there generally exists a bias that overvalues extrinsic incentives in motivation. This "folk behaviorist" bias (see Murayama et al., 2016) seems to be dominant in international development, and indeed many schemes utilize incentives. One widely adopted scheme is conditional cash transfers (CCTs: e.g., Levy, 2008), in which cash is conditionally given to poor families raising young children, the conditionalities typically being that the children regularly attend school (i.e., they are not withdrawn to help with household labor) and/or the children are given regular health checkups.[3] Cash and material incentives are also commonly used in conservation policy in developing countries, as will be reviewed in the next section. One concern from the SDT viewpoint is that such incentives may thwart the need for autonomy and not be effective in terms of long-term behavioral change; we shall discuss their effects in detail later.

Sayanagi, Aikawa, Shuto et al. (2016, pp. 76–79, 93–94) anecdotally report that the undermining effect commonly occurs in capacity-building projects. In many aid projects, cash and material incentives are used to encourage people to train in skills that will help them earn money. However, once the project ends and incentives are discontinued, the participants cease doing what they have been trained to do. In fact, in impoverished countries where many aid agencies are active, it is relatively easy for beneficiaries to find a next aid project that will give them incentives. This is a problem as the intended behavior change is only temporary and benefits of the projects do not fully materialize as intended, whether an improved environment or opportunities to escape from poverty. It also is a waste of aid resources that might have been used better, as agencies spend much time and money to run these programs with the idea that they will contribute to lasting change.

Sayanagi (2017) proposes a modified SDT framework for sustainable behavioral change especially in international development contexts. The modification adjusts basic psychological needs theory (BPNT) to accommodate for low competence satisfaction, which often applies to people living under extreme poverty. This modification is based upon the observation that for people who have difficulty perceiving competence for the task at hand, autonomy-supportive measures alone may not be sufficient. For example, for students who are academically struggling, simply providing a rationale and teacher

---

[3] The effects of CCTs on behavior are not fully clear. As Sayanagi (2017, pp. 28–29) points out, evaluations of CCTs do not always record the rates of compliance, and even if they are recorded, region-level data is used (e.g., changes in percentage of school attendance in the region a CCT is being administered) and not person-level data; thus the causal relationship between the cash transfers and behavioral change is speculative at best. Nonetheless, even based on such data, the degree of CCTs' success varies (Cecchini & Madariaga, 2011, pp. 111–146). As there are CCT programs that are considered successful, examining the relationship between the degree of success and basic psychological need support would be intriguing. See Sayanagi (2017) for a more detailed critique of CCTs.

attunement would not necessarily help them feel effective enough to try mastering the course content. Indeed, there are studies in which autonomy support fails to change the behavior of a majority of subjects in experiments which utilized tasks that were boring, where the effects of engaging were difficult to perceive (Deci et al., 1994; Joussemet et al., 2004). Sayanagi's modified framework posits an interaction between the three basic needs and assumes that the satisfaction of the needs for relatedness and competence moderates the effects of autonomy satisfaction to facilitate behavioral change,[4] which would be sustained even after interventions end if all three needs are sufficiently satisfied. There are few studies that test this hypothesized moderation effect, especially in the context of populations with low perceived competence. While there is little doubt that all three BPNs are important in any context, the dynamic relationship between the three needs is still not fully clear. Studies in the field of international development could advance the understanding of this relationship, as the wide gaps in socioeconomic status produce larger variance in competence satisfaction and frustration.

To summarize thus far, SDT provides a theoretical framework for the efficient and sustainable behavior change in international development settings, of which the key is to support the three BPNs. As we will see in the next section, there is some empirical support for this claim.

Theoretically, supporting the three BPNs would also facilitate eudaimonia, a state of thriving or being fully functioning (Ryan & Deci, 2017, p. 241). Eudaimonia is a concept of happiness in the Aristotelian tradition, in which living well entails pursuing ends that are of inherent worth, and doing them well (Martela, this volume; Ryan, Curren, & Deci, 2013). The capabilities approach (Nussbaum, 2000; Sen, 1999) also emphasizes eudaimonic happiness through the freedom to achieve valued functionings, and Hirai (2018) argues that SDT can provide a means to operationalize the capability approach. One way that poverty could be framed through this lens is that poverty makes it salient that a person is unable to do well enough in what they do for a living, as is the case of impoverished rural farmers in developing countries who are not able to make ends meet through their farming.

A position counter to the eudaimonic stance of SDT is hedonic psychology (e.g., Kahneman, Diener, & Schwartz, 1999), in which well-being is defined as the presence of positive affect and the absence of negative affect. It could be said that international development is divided between the two views, with eudaimonia emphasized in the capability approach and hedonic happiness implicitly emphasized in the "folk behaviorist" approaches that heavily utilize incentives. There are no empirical studies yet on eudaimonia

---

[4] Contrary to the position of SDT, Sayanagi hypothesizes a hierarchy of the three BPNs, with competence and relatedness satisfaction posited to be prerequisites for autonomy satisfaction to be effective. However, there is no evidence to support this claim, and the studies reviewed in Sayanagi (2017) seem to indicate the possibility of a moderation effect at best.

in the context of international development, but it would be a worthy inquiry. Hedonics would see little difference between easing the anxieties associated with extreme poverty through handouts and enabling farmers to mitigate their poverty through the training of more efficient farming. The hedonic approach would favor the former strategy, as the latter would be much more costly in terms of time, money, and human resources. In contrast, the eudaimonic viewpoint would differentiate between the two and clearly prefer the latter, enabling an approach to need-fulfilling lives. In line with SDT, we would expect the eudaimonic position to prevail in its sustainability but concede that it is a matter that needs to be settled through empirical investigation.

## A Review of SDT Studies in the Context of International Development and Poverty

There have not been many SDT studies conducted in international development, but the uniqueness of the setting affords opportunities for new perspectives. In this section, we will review the existing reports and the novel perspectives that they provide.

### The Effect of Incentives: The Undermining Effect Revisited

There have been several development economics case studies regarding the effects of positive and negative incentives on adherence to conservation policies. In most of these studies, as is often the case in the field of economics, the undermining effect is framed as *(motivational) crowding out*, and the increase of intrinsic motivation is referred to as *crowding in* (e.g., Frey & Jegen, 2002). It should also be noted that the definition of "intrinsic motivation" in many of these studies is somewhat liberal and encompasses motivations such as moral commitments, which in the SDT taxonomy would be considered an extrinsic but autonomous form of motivation, and guilt or shame for not complying, which would be considered relatively controlled.

Rode, Goméz-Baggethun, and Krause (2015) reviewed 18 empirical case studies on policies that utilized economic incentives to encourage biodiversity and ecosystem conservation in developing countries. Their conclusion was that crowding out occurred in most of the cases, but there were some cases in which there was no effect, and others in which crowding in was observed. The authors of this study defer making any conclusions or speculations on the circumstances that would predict whether incentives would crowd in or crowd out.

Yasuë and colleagues have examined motivational crowding from an SDT viewpoint, especially the moderating effects of BPN satisfaction. Cetas and Yasuë (2017) systematically reviewed 120 studies on conservation projects in and around protected areas, in both developing and developed nations, and discussed the effects of a variety of policy instruments, including not only regulation (i.e., penalties) and payments but also the provision of alternative livelihoods and education, among others. Rather than automatically categorizing payments as extrinsic motivators, they focused on the manner in which each

policy instrument was administered, and categorized incentives that were implemented in a need-supportive manner "intrinsic" and those that were not "extrinsic." A series of binary logistic regressions indicated that intrinsic instruments were the biggest predictor of not just ecological success (i.e., effective behavioral change) but also economic and social success.

In another systematic review, Akers and Yasüe (2019) examined 74 payment-for-ecosystem-services (PES) from around the world in which monetary incentives are directly distributed in exchange for conservation outcomes. They found that crowding in was more likely to occur in PES schemes that included measures that were need-supportive, and crowding out was more likely when feelings of autonomy were thwarted. The findings of Yasüe and colleagues, that the satisfaction of BPNs facilitates autonomous motivation and engagement, are in line with the basic propositions of SDT. At the same time, these results provide a more nuanced illustration of the undermining effect, that it is not the incentives per se that undermine autonomous motivation but the need-thwarting manner in which they are administered.[5]

Czaicki et al. (2018) studied a program in Tanzania that distributed cash and material incentives to HIV-positive patients and examined the effects upon intrinsic motivation for taking HIV medication as prescribed. The results showed that both the cash and material incentives significantly increased intrinsic motivation at the end of the transfer at six months after the launch of the program, and even six months after the incentives were discontinued: in other words, rather than the undermining effect occurring, a crowding-in effect was observed. The manner in which the incentives were distributed is not reported, so we cannot infer the degree of need support or need thwarting in the process. However, we can surmise that adhering to the medication resulted in supporting the competence need of the patients. Being diagnosed as having HIV would probably be a cause of constant anxiety that one's health would deteriorate. Regularly adhering to prescribed medication would prevent the feared decline in health, an effect that would be readily perceived by the patient. Thus, even if there was an extrinsic incentive for taking medication, autonomous motivation toward treatment was not undermined.

It is important to note that SDT does not see rewards as inherently undermining of autonomy. Traditional lab experiments in SDT show that reward contingencies can be designed or delivered in a manner that is controlling or autonomy-supportive and that positive effects can be expected on behavioral outcomes in the latter case (e.g., Ryan, Mims, & Koestner, 1983). These variations have parallels in real-world settings such as organizations and companies, where rewards are administered in ways that vary in the extent to which they are experienced as controlling or autonomy-supportive (e.g., Cerasoli,

---

[5] It should be noted that the studies in these systematic reviews used mostly region-level data (e.g., rates of adherence in a certain area), not person-level data, so the causal relationship between the policies and individual behavior changes are somewhat speculative.

Nicklin, & Ford, 2014; Gagné, Nordgren-Selar, & Sverke, this volume). Similarly, projects in the development field administer incentives in a variety of ways, ranging from need-thwarting to need-supporting. Additionally, as suggested from the Czaicki et al. (2018) study, the behavior change in itself may be need-supportive. For example, in the context of agricultural aid, a farmer who receives for free seeds that have higher yields than the local variety might be compelled to buy the seeds the next season instead of waiting to receive the seeds again. While the number of studies is still small and there are several limitations to them, these findings in the context of international development support the basic tenets of SDT and organismic integration theory and at the same time yield a new perspective to the undermining effect.

### BPNs in Poverty Contexts

BPNT claims that the three basic needs posited in SDT—autonomy, competence, and relatedness—are universal, and indeed, their universality has been confirmed across diverse cultures and economic and political systems. (See Ryan & Deci, 2017, pp. 561–615 for a review.) There are still only a handful of studies that test the universality claim in international development and poverty contexts, but up to this point, the findings uphold the hypothesis.

Chen, Vansteenkiste et al. (2014) investigated the effects of need satisfaction and need thwarting on well-being and ill-being in Peru, a developing country, and China, a country that has recently developed rapidly but is still considered by many to be developing, and compared results to those observed in developed states such as Belgium and the United States. Since the surveys were conducted with university students, there were very few that were poor in the sample, but nonetheless need satisfaction predicted well-being, and need thwarting predicted ill-being, equivalently across the four countries. In another paper, Chen, Van Assche et al. (2014) conducted surveys in South Africa and China and compared the effects of BPN support with satisfaction of safety and financial needs. The study in South Africa, a country known for its low public safety, was conducted with university and college students. Results indicated that satisfaction of the BPNs had a greater effect of facilitating well-being than did the satisfaction of the safety need. The Chinese study, which was conducted with socioeconomically deprived adults, also indicated that BPNs contributed to well-being more than financial needs. Furthermore, respondents with lower safety and financial satisfaction desired more BPN satisfaction, contradicting the hierarchy of needs suggested by Maslow (1943). Of these two papers by Chen and colleagues, only the Chinese sample was impoverished, but they provide evidence for the universality of BPNT.

While the number of studies is still small, there have recently been some reports on the effects of BPNs on behavior in impoverished populations. For example, De Man and colleagues tested BPNT in regard to behaviors that would prevent or alleviate diabetes through two survey studies on diabetics and prediabetics in sub-Saharan Africa. A study

that was conducted in rural Uganda (De Man, Wouters, Absetz et al., 2020) indicated that perceived relatedness and perceived competence positively predicted vigorous physical activity, and the effect was mediated by autonomous motivation. Another study conducted in a township in South Africa (De Man, Wouters, Delobelle et al., 2020) indicated that perceived relatedness, competence, and autonomous motivation all had direct positive effects upon healthy dietary behavior, and there was also an indirect effect of perceived competence via autonomous motivation. The authors report that perceived autonomy was not measured due to the lack of an appropriate measure. There are some discrepancies in the manner in which the BPNs are associated with motivation and behavior, but in total, the results are generally in line with what BPNT would predict.

In a study on an intervention program that promoted pro-environmental behaviors (PEB) among Bedouin high school students in Israel, Kaplan and Madjar (2015) report that moderators' and parents' autonomy support, as well as students' self-reported relatedness and competence satisfaction, predicted autonomous motivation toward PEB, which in turn predicted PEB. Hockin-Grant and Yasuë (2017) conducted a survey of farmers participating in programs that promote permaculture, an agro-ecological approach that aims to facilitate self-sufficient and sustainable farming practices that are suited to the local socio-ecological context, in rural Kenya. Comparing two types of permaculture projects, they conclude that the program that was more autonomy- and competence-supportive was more effective.

Van Egmond and colleagues have examined BPNT in the context of extreme poverty through a series of studies on schoolchildren in sub-Saharan Africa. A questionnaire survey to rural Malawian schoolgirls by van Egmond et al. (2017) found that all three BPNs positively predicted intrinsic academic motivation. Additionally, relatedness satisfaction and competence satisfaction, but not autonomy satisfaction, had significant indirect effects upon school attendance that were mediated by intrinsic motivation. Some of these results were replicated in a sample of schoolgirls from Mozambique (van Egmond et al., 2020): identified and intrinsic regulation positively predicted school attendance regardless of resource scarceness (i.e. poverty); all three needs were positively related to self-esteem, but only competence was associated with intrinsic motivation and attendance. Van Egmond et al. (2019) also surveyed rural Malawian schoolgirls and found that the satisfaction of relatedness and competence, but not autonomy, partially mediated the effects of parental conditional regard on self-esteem regardless of the level of resource scarcity. These results support BPNT, and furthermore, the findings that need satisfaction was a stronger predictor of intrinsic motivation and attendance in schoolgirls who had higher resource scarcity (van Egmond et al., 2017) and that resource scarceness did not modify the effect of need satisfaction (van Egmond et al., 2019, 2020) provides further evidence against the Maslowian hierarchy of needs, since needs that would be regarded as "higher order" in Maslowian terms were found to matter in conditions where basic physical needs regularly go unmet.

However, Rasskazova, Ivanova, and Sheldon (2016), who surveyed the effect of security and financial needs in addition to BPNs on work outcomes in blue-collar Russian employees, found in one of their two studies that the effect of satisfaction of BPNs was slightly higher when security and financial needs were satisfied, supporting the Maslowian hypothesis. Their other study did not support the hierarchy hypothesis. Since the number of studies on this question is small, more examination is warranted. International development and poverty contexts would be the ideal setting to test the proposition as there is great variance in the degree of satisfaction of the Maslowian lower-level needs.

### SDT in Practice: The SHEP Approach

Berkman and Wilson (2021) argue that psychology has a "practicality crisis" and that many contemporary psychological theories lack practical value. Practicality is an important issue in international development, as the efficiency of projects critically impacts vulnerable peoples' livelihoods. In this section, we will review the Smallholder Horticulture Empowerment Project (SHEP) approach, a very successful scheme that trains farmers based upon SDT principles.

Initially launched in 2006 as a technical cooperation project between the Kenyan Ministry of Agriculture and Japan International Cooperation Agency (JICA), the first phase of SHEP, in which about 2,500 farmers participated, succeeded in doubling participant households' average nominal farming income in three years (Aikawa, 2013, pp. 151–152).[6] The second phase, which was extended to about 20,000 farmers and conducted in 2011–2014, produced comparable results. Internal reports also confirm that the farmers have continued using the techniques that they were trained in well after each three-year program ended. The scheme has been so successful that the SHEP approach has been expanded to a total of 24 countries and 110,000 farmers as of 2019, and now JICA is aiming to spread the scheme to 1 million farmers by 2030 (Japan International Cooperation Agency, 2019).

The SHEP approach was devised by integrating SDT with field workers' implicit knowledge. Its theoretical base emphasizes supporting the three BPNs to facilitate intrinsic motivation toward farming (Aikawa, 2013, p. 157). There are several aspects of SHEP that are designed to support BPNs that are often thwarted in practices that are common in international development. Consequently, many characteristics of the approach are unorthodox.

For example, SHEP programs do not provide any cash or material incentives to farmers. This is based on the observation that providing incentives for training often leads to the training being inefficient. It is very rare that an agricultural training program does not

---

[6] Even after the twofold increase, farming income levels were about US$560 per year per person—an amount that is just barely above the international poverty line at the time, $1.25 per day.

provide any input to the farmers. Most offer seeds, fertilizer, and/or farming equipment in addition to a stipend for participating.

Another aspect that is unique to SHEP is a component called "market survey," which is the first training session provided by the project. The market survey aims to support the competence of participants. Impoverished farmers typically grow horticultural crops (i.e., vegetables) using suboptimal methods, and then try to sell their harvest without any strategy. They consequently get short-ended by buyers because vegetables generally have short shelf lives, and as poor rural farmers do not have many opportunities to sell, they will sell to the first available buyer, inevitably at discounted prices. In the training, farmers go to local markets and are instructed to investigate what crops will sell at what price at what time of the year. Once the farmers complete the survey, they decide which crops to grow and when to grow them. The SHEP headquarters provides a forum for farmers and potential buyers to come together, and farmers are able to secure a profitable selling contract before growing their crops, and then are trained to grow the crops they chose using methods that will make the quality of the vegetables better. It is rare for an agricultural project to train in marketing, and it is almost unheard of that the farmers choose which crops to grow. Agricultural training in international development usually entails that an aid organization has a predetermined crop, usually a higher-yielding improved variety, that will be imparted to the farmers.

Furthermore, unlike many capacity-development projects in the agricultural sector which are decided and selected unilaterally by aid agencies or local authorities, farmers in SHEP programs are allowed to choose if they want to participate, a feature that is autonomy-supportive. When a region is selected for a SHEP program to be implemented, community meetings are held to explicitly state that there will be no cash or material incentives and to provide local farmers an overview of the training and benefits that can be expected and the amount of commitment expected from them. Farmers are invited to submit applications if they desire to participate. (Assistance in compiling the applications is provided, as literacy rates are usually low.)

There are several other aspects that are designed to avoid BPN thwarting and promote BPN support: training is conducted frequently and in groups to build relationships among the farmers; training is highly structured and conducted in small steps, and also timed so that farmers can receive timely feedback of the results of their training; the trainers are provided materials that help them train the farmers efficiently; and the government officials who train and oversee the trainers are also trained regarding the implementation of SHEP, including an intensive course on SDT and its application[7] to ensure that the

---

[7] The textbook used in this training (Sayanagi, Aikawa, Shuto et al., 2016) is available online to allow aid workers with budget constraints to read it. (Hard copies are distributed to all participants of JICA training sessions.) It has also been translated into French and Spanish, as SHEP has been implemented in Francophone African countries and is being introduced to some Latin America countries as well.

SDT principles of the approach are understood and implemented accordingly, not over-ridden by decisions based on the extrinsic incentive bias (Heath, 1999).

Sayanagi and Aikawa (2016) conducted an interview survey with SHEP participant farmers in Kenya. Utilizing the "why questions" approach (Chandler & Connell, 1987), their qualitative investigations found that the Kenyan farmers' motivation to participate in SHEP was indeed predominantly autonomous. Using the same method, the trend was again observed in a different Kenyan SHEP sample (Sayanagi, Aikawa, & Asaoka, 2016). Sayanagi (2019) compared these Kenyan results with a sample of farmers from Madagascar who were participating in a different training scheme and found that the SHEP farmers were more autonomously motivated toward training than the Malagasy farmers. The difference in motivation was attributed to the difference in BPN support between the two programs.

There is some anecdotal evidence that the SHEP approach promotes eudaimonia. Sayanagi, Aikawa, Shuto et al. (2016, p. 21) report that several participants stated, "I have become a better person through SHEP." According to unpublished qualitative data preserved by the lead author of this chapter, mainly two reasons were given when farmers were asked why they thought so: first, they were now able to financially support their family, while before, there were periods when food was lacking and they were unable to allow their young children to go to school; second, gender-sensitivity training "opened [their] eyes to respect [their] wife and children" and improved their family relationships.

The SHEP approach illustrates how aid projects can be designed to support BPNs and can be successful. The manner in which the SHEP approach incorporates SDT principles to suit both the local context and project aims could inform future development schemes. Meanwhile, the SHEP approach (and other future approaches that incorporate SDT) provides a field to investigate the effect of supporting the three BPNs in the context of international development and poverty. The qualitative studies thus far indicate that the satisfaction of each need is important, but the interaction between the three needs (Sayanagi, 2017) is unclear.

## Challenges and Future Directions

While the existing studies generally support the basic positions of SDT, much more empirical investigation is warranted, especially the claim that supporting BPNs will promote eudaimonia in impoverished populations. However, there will be several challenges in conducting research in international development contexts.

Perhaps the biggest hurdle will be psychological measurement. There are very few scales that have been developed in the context of international development and the cultural contexts of developing countries which can by definition be classified as non-WEIRD (Western, educated, industrialized, rich, and democratic; Henrich, Heine, & Norenzayan, 2010). Simply translating scales that were developed in industrialized nations may not

result in valid measurement. This is highlighted by Laajaj et al. (2019), who examined Big Five index data across 23 low- and middle-income countries (largely conducted in development- and behavioral-economics studies); they found that the factor structure was incongruent and internal consistency was low in most cases. Sayanagi et al. (2021) report in a series of five studies their struggles in developing a self-regulation questionnaire (SRQ; e.g., Ryan & Connell, 1989) for rural farmers in Madagascar. Because of the high rate of illiteracy, the scale was administered orally one farmer at a time, a method much less efficient than paper-and-pencil questionnaire scales. Rather than translating and adapting existing SRQ measures, the authors developed items based on farmer responses from Sayanagi and Aikawa (2016) and Sayanagi, Aikawa, and Asaoka (2016). However, the responses to the first version of the scale yielded a variance of almost zero (Sayanagi et al., 2021, Table 2). Despite several modifications, the distributions remained very skewed. Ultimately, the fifth prototype of the scale attained marginally acceptable distributions and internal consistency. Unlike most scales used in industrialized countries, the items asked in second person instead of stating in first person. Additionally, respondents were asked the frequency with which they acted like or thought about the items instead of how much they agreed with statements. For example, whereas a traditional SRQ item on intrinsic regulation would ask how much the respondent agreed with the statement "I participate because I enjoy the project," the corresponding item that was developed asked, "How often do you participate because you want to enjoy the activities of the project?" Sayanagi et al. (2021) speculate that the lack of opportunities for education, and also the state of extreme poverty, may have constrained the farmers' ability to think in degrees, as required by Likert-type scales, or their familiarity with this kind of higher-order cognitive task. Czaicki et al. (2018) and van Egmond et al. (2017) also report very skewed distributions in their scales, which were largely translated and adapted from existing measures rather than having been developed locally, indicating that the lack of variance when answering Likert-like scales that ask for the degree of agreement with a statement may be common when surveys are conducted in the context of development projects.

Confirming the validity of any new scales will be challenging, too, because there are very few scales that have had their validity confirmed. In other words, there are few scales that validity can be tested against.

The challenges in measurement may paradoxically be a watershed for advancing SDT research. Because of the lack of measures that are confirmed to be valid in the context of international development, and because merely translating existing measures often does not produce valid scales, multivariate correlational studies—seemingly the preferred mode of contemporary research on motivation—may not immediately be viable. Instead, a more prudent "brick-by-brick" approach (cf. Ryan & Deci, 2019) would be to locally develop scales and to use qualitative studies to validate their measurement. The qualitative studies' utility would not be just auxiliary to scale development, but they could also provide rich information on the psychological functioning of the research participants.

Chirkov and Anderson (2018a, 2018b) argue that multivariate quantitative studies do not necessarily generate new knowledge, and case-based qualitative methodology has a better chance to advance research and improve the understanding of psychological phenomena such as motivation. The beneficiaries of international development have rarely been studied in SDT or in any psychological research (see Henrich et al., 2010; Quayle & Greer, 2014); it is unclear to what extent psychological theories which were developed in industrialized nations would be applicable to such populations. Qualitative research would provide opportunities to examine the assumptions of existing theories and also to uncover unknown psychological phenomena and functions, which may be unique to the population yet also may be universal but previously overlooked in research conducted in industrialized nations. Chirkov and Anderson (2018b, p. 740) assert that extreme cases can provide more information about underlying mechanisms than do averaged data, and indeed, aid beneficiaries from impoverished regions would represent an extreme vis-à-vis subjects of studies from affluent countries.

One more possible merit of qualitative studies is that they may have informational value for aid workers on the front lines of international development. In their criticism of statistical positivism, Chirkov and Anderson (2018a, p. 725) argue that "individual participants are 'dissolved' into the aggregated data, the resulting de-individualized and a-contextual model represents nobody; thus, it is difficult . . . to apply these statistical associations to real people in real situations." Qualitative studies could provide more concrete and in-context accounts that would be relevant and accessible to aid workers in the field, most of whom have not received any training or education in psychology, to supplement abstract principles or conceptual models. It also may be beneficial to provide analyses of subgroups (i.e., the groups the workers are involved with), whether qualitative or quantitative, that test whether the abstract general models hold up for these subpopulations, as aid workers often are involved with diverse target groups.

Needless to say, quantitative studies would be required to verify the hypotheses advanced through the qualitative studies. Additionally, the conclusions drawn from quantitative studies can be used to inform policy guidelines, as they would identify factors that would potentially reduce poverty on a larger scale.

Accessing the poorest in developing countries will be a challenge in itself. In urban areas, many of the poorest reside in slums, and there would be security risks involved for foreign (or even local) researchers to visit such areas. While security risks are not as high in rural areas, where a majority of the poor live in, reaching such areas is often difficult, as infrastructure is usually underdeveloped; public transportation is typically not reliable and often dangerous, and the poorest regions are often not served. Research would have to be conducted with the cooperation of local agents familiar with these areas, but since there are very few psychology researchers in developing nations (e.g., Quayle & Greer, 2014), studies will inevitably have to be interdisciplinary—in some cases conducted with nonresearcher field workers—which would also present challenges.

There will be ethical challenges particular to conducting research in international development contexts that arise from the power (im)balance between foreign researchers and impoverished participants. As previously discussed, incentives are commonly distributed by aid organizations, and as Narayan et al. (2000, pp. 24–25) state, research participants have developed the expectation, and sometimes the false hope, that foreign researchers will give them a stipend for the day or provide material aid later. Sayanagi et al. (2021) observe that some of their participants might have held such false hopes even though they were explicitly informed at the beginning of the interviews that there would be no such handouts. Fostering the false hope of receiving incentives could cause actual harm to participants in extreme poverty, as they may have turned down a day's manual labor in order to participate in the study and missed an opportunity to earn much-needed cash. Indeed, some aid organizations encourage the compensation of research participants for opportunity loss. However, depending on how compensation is conveyed, it could lead participants' responses to be biased toward what they perceive is desirable to the researchers.[8] Setting a standard stipend rate is also complex, considering that it could disadvantage local researchers in developing countries who usually do not have as much funding as their foreign counterparts. These are just some of the many issues concerning validity and ethics in development research that do not have easy answers, and current ethical guidelines for psychological research do not explicitly or adequately address the issue of researching poverty. Reconsideration of the ethical guidelines is called for, especially as the interest in studying in poverty contexts is growing (e.g., Davis & Williams, 2020).

## Closing Remarks

Psychological research in international development is still in its infancy, and the challenges involved in conducting research will cause it to be time-consuming and inefficient in terms of producing publishable results for the time being. However, it is an important and worthy cause. SDT provides a theoretical foundation that can serve as a counterpoint to the extrinsic incentive bias (Heath, 1999) and hedonic stance that are pervasive in the field. As we have put forward in this chapter, designing and delivering international development programs to support BPNs can facilitate autonomous motivation toward behaviors that would help alleviate poverty and its associated hardships in impoverished populations and also promote eudaimonia. More generally, SDT advocates that autonomy-supportive approaches to motivation and behavior change begin with an empathic understanding of the subjects' point of view, an issue especially important in intercultural interventions—which international development projects inherently are. Attending to what matters to the participants involved is also crucial in conducting psychological research in such contexts, as the relevance of psychological constructs and

---

[8] As discussed previously, it is not rewards per se but the manner in which they are delivered that is predicted to thwart the autonomy need.

paradigms developed in industrialized nations is yet unclear. One approach that perhaps can inform research in international development is the reciprocal research partnership model proposed by Craven et al. (2016), which incorporates SDT principles with holistic Indigenous Australian worldviews with the aim of producing evidence-based research that will result in policies meaningful to Indigenous populations. Indeed, it is necessary to empower individuals at the intrapersonal level as well as the policymaking level in order to efficiently alleviate poverty. We hope that this chapter will interest more SDT researchers to get involved and work toward the further integration of SDT perspectives in the field of international development and the fight against global poverty.

## References

Aikawa, J. (2013). Initiatives of SHEP and SHEP UP: Capacity development of small-scale farmers for increased responsiveness to market needs. In JICA Research Institute (Ed.), *For inclusive and dynamic development in sub-Saharan Africa* (pp. 143–169). JICA Research Institute.

Akers, J. F., & Yasuë, M. (2019). Motivational crowding in payments for ecosystem service schemes: A global systematic review. *Conservation and Society, 17*, 377–389.

Alkire, S. (2005). Subjective quantitative studies of human agency. *Social Indicators Research, 74*, 217–60.

Alkire, S. (2007). *Choosing dimensions: The capability approach and multidimensional poverty*. Working Paper No. 88. Chronic Poverty Research Centre.

Banerjee, A. V. and Duflo, E. (2011). *Poor economics: A radical rethinking of the way to fight global poverty*. New York: Public Affairs.

Berkman, E. T., & Wilson, S. M. (2021). So useful as a good theory? The practicality crisis in (social) psychology theory. *Perspectives on Psychological Science*. Advance online publication.

Cecchini, S., & Madariaga, A. (2011). *Conditional cash transfer programmes: The recent experience in Latin America and the Caribbean*. Economic Commission for Latin America and the Caribbean. United Nations Publication.

Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin*, *140*, 980–1008. doi:10.1037/a0035661

Cetas, E. R., & Yasuë, M. (2017). A systematic review of motivational values and conservation success in and around protected areas. *Conservation Biology, 31*, 203–212.

Chandler, C. L., & Connell, J. P. (1987). Children's intrinsic, extrinsic and internalized motivation: A developmental study of children's reasons for liked and disliked behaviors. *British Journal of Developmental Psychology, 5*, 357–365.

Chen, B., Van Assche, J., Vansteenkiste, M., Soenens, B., & Beyers, W. (2014). Does psychological need satisfaction matter when environmental or financial safety are at risk? *Journal of Happiness Studies, 16*, 745–766.

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf., J. (2014). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion, 39*, 216–236.

Chirkov, V., & Anderson, J. (2018a). Statistical positivism versus critical scientific realism: A comparison of two paradigms for motivation research: Part 1. A philosophical and empirical analysis of statistical positivism. *Theory & Psychology, 28*, 712–736.

Chirkov, V., & Anderson, J. (2018b). Statistical positivism versus critical scientific realism: A comparison of two paradigms for motivation research: Part 2. A philosophical and empirical analysis of critical scientific realism. *Theory & Psychology, 28*, 737–756.

Craven, R. G., Ryan, R. M., Mooney, J., Vallerand, R. J., Dillon, A., Blacklock, F., & Magson, N. (2016). Toward a positive psychology of indigenous thriving and reciprocal research partnership model. *Contemporary Educational Psychology, 47*, 32–43. http://dx.doi.org/10.1016/j.cedpsych.2016.04.003

Czaicki, N. L., Dow, W. H., Njau, P. F., & McCoy, S. I. (2018). Do incentives undermine intrinsic motivation? Increases in intrinsic motivation within an incentive-based intervention for people living with HIV in Tanzania. *PLoS ONE, 13,* e0196616.

Davis, R. P., & Williams, W. R. (2020). Bringing psychologists to the fight against deep poverty. *American Psychologist, 75,* 655–667.

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality, 62,* 119–42.

DeHaan, C. R., Hirai, T., & Ryan, R. M. (2016). Nussbaum's capabilities and self-determination theory's basic psychological needs: Relating some fundamentals of human wellness. *Journal of Happiness, 17*(5), 2037–2049.

De Man, J., Wouters, E., Absetz, P., Daivadanam, M., Naggayi, G., Kasujja, F. X., Remmen, R., Guwatudde, D., & Van Olmen, J. (2020). What motivates people with (pre)diabetes to move? Testing self-determination theory in rural Uganda. *Frontiers in Psychology, 11,* 404. https://dx.doi.org/10.3389/fpsyg.2020.00404

De Man, J., Wouters, E., Delobelle, P., Puoane, T., Daivadanam, M., Absetz, P., Remmen, R., & Van Olmen, J. (2020). Testing a self-determination theory model of healthy eating in a South African township. *Frontiers in Psychology, 11,* 2181. https://dx.doi.org/10.3389/fpsyg.2020.02181

Frey, B. S., & Jegen, R. (2002). Motivation crowding theory. *Journal of Economic Surveys, 15,* 589–611.

Haushofer, J., & Fehr, E. (2014). On the psychology of poverty. *Science, 344,* 862–867.

Heath, C. (1999). On the social psychology of agency relationships: Lay theories of motivation overemphasize extrinsic incentives. *Organizational Behavior and Human Decision Processes, 78,* 25–62.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature, 466,* 29–29.

Hirai, T. (2018). For a happy human development. In F. Comim, S. Fennell, and P. B. Anand (Eds.), *New frontiers of the capability approach* (pp. 384–410). Cambridge University Press.

Hockin-Grant, K. J., & Yasuë, M. (2017). The effectiveness of a permaculture education project in Butala, Kenya. *International Journal of Agricultural Sustainability, 15,* 432–444.

Japan International Cooperation Agency. (2019). Joint declaration for achieving better lives of one million small scale farmers through SHEP approach. TICAD VII SHEP Approach Side Event press release, August 29. Retrieved from https://www.jica.go.jp/english/our_work/thematic_issues/agricultural/shep/c8h0vm0000bm5c1m-att/declaration_en.pdf

Joussemet, M., Koestner, R., Lekes, N., & Houlfort, N. (2004). Introducing uninteresting tasks to children: A comparison of the effects of rewards and autonomy support. *Journal of Personality, 72,* 139–166.

Kahneman, D., Diener, E., & Schwartz, N. (1999). *Well-being: The foundations of hedonic psychology.* Russell Sage Foundation.

Kaplan, H., & Madjar, N. (2015). Autonomous motivation and pro-environmental behaviours among Bedouin students in Israel: A self-determination theory perspective. *Australian Journal of Environmental Education, 31,* 223–347. https://dx.doi.org/10.1017/aee.2015.33

Kukita, J. (1996). Kaihatsu enjo to shinrigaku [Development aid and psychology]. In K. Sato (Ed.), *Enjo kenkyu nyumon: Enjo gensho e no gakusai-teki approach* [Introduction to aid studies: An interdisciplinary approach to aid phenomena] (pp. 281–320). Institute of Developing Economies, Japan External Trade Organization.

Laajaj, R., Macours, K., Hernandez, D. A. P., Arias, O., Gosling, S. D., Potter, J., Rubio-Cortina, M., & Vakis, R. (2019). Challenges to capture the Big Five personality traits in non-WEIRD populations. *Science Advances, 5,* eaaw5226.

Levy, S. (2008). *Good intentions, bad outcomes: Social policy, informality, and economic growth in Mexico.* Brookings Institution.

Lott, B. (2002). Cognitive and behavioral distancing from the poor. *American Psychologist, 57,* 100–110.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50,* 370–396.

Michie, S., Van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science, 6,* 1–12.

Murayama, K., Kitagami, S., Tanaka, A., & Raw, J. A. (2016). People's naiveté about how extrinsic rewards influence intrinsic motivation. *Motivation Science, 2*(3), 138.

Narayan, D., Patel, R., Schaff, K., Rademacher, A., & Koch-Schulte, S. (2000). *Voices of the poor: Can anyone hear us?* Oxford University Press.

Nussbaum, M. (2001). *Women and human development: The capabilities approach.* Cambridge University Press.

Quayle, M., & Greer, M. (2014). Mapping the state of the field of social psychology in Africa and patterns of collaboration between African and international social psychologists. *International Journal of Psychology, 49*, 498–502.

Rasskazova, E., Ivanova, T., & Sheldon, K. (2016). Comparing the effects of low-level and high-level worker need-satisfaction: A synthesis of the self-determination and Maslow need theories. *Motivation and Emotion, 40*, 541–555.

Rode, J., Gómez-Baggethun, E., & Krause, T. (2015). Motivation crowding by economic incentives in conservation policy: A review of the empirical evidence. *Ecological Economics, 117*, 270–282.

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749–761.

Ryan, R. M., Curren, R. R., & Deci, E. L. (2013). What humans need: Flourishing in Aristotelean philosophy and self-determination theory. In A. S. Waterman (Ed.), *The best within us: Positive psychology perspectives on eudaimonia* (pp. 57–75). American Psychological Association.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., & Deci, E. L. (2019). Brick by brick: The origins, development, and future of self-determination theory. In A. J. Elliot (Ed.), *Advances in motivation science* (Vol. 6, pp. 111–156). Elsevier.

Ryan, R. M., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. *Journal of Personality and Social Psychology, 45*, 736–750. https://dx.doi.org/10.1037/0022-3514.45.4.736

Sayanagi, N. R. (2017). Breaking the poverty trap: A psychological framework for facilitating autonomous motivation and sustainable behavioral change in development aid beneficiaries. *JICA Research Institute Working Paper, 151*, 1–46.

Sayanagi, N. R. (2019). *A comparison of farmers' motivation towards training programs in Kenya and Madagascar: Differences explained by psychological need support*. Paper presented at Joint International Conference 2019 of Japan Association for Human Security Studies and Japan Society for International Development at Komaba Campus, University of Tokyo.

Sayanagi, N. R., & Aikawa, J. (2016). The motivation of participants in successful development aid projects: A self-determination theory analysis of reasons for participating. *JICA Research Institute Working Paper, 121*, 1–20.

Sayanagi, N. R., Aikawa, J., & Asaoka, M. (2016). *The relationship between motivation and outcomes in development aid projects: Implications from an SDT-based approach in Kenya*. Paper presented at the 6th International Conference on Self-Determination Theory, Victoria, British Columbia.

Sayanagi, N. R., Aikawa, J., Shuto, K., & Asaoka, M. (2016). *Introduction to the psychology of international cooperation: Seventeen motivation case studies collected from the field*. Japan International Cooperation Agency. Retrieved from http://libopac.jica.go.jp/images/report/12092193.pdf French translation: *Psycholgie approfondie de la cooperation internationale: Dex-sept cas de motivation recueillis sur la terrain*. Japan International Cooperation Agency. Retrieved from http://libopac.jica.go.jp/images/report/12092 201.pdf Spanish translation: *Introducción a la psichologia de la cooperación internacional: Diecisiete estudios de casos de motivación recogidos de campo*. Japan International Cooperation Agency. Retrieved from https:// www.jica.go.jp/english/our_work/thematic_issues/agricultural/shep/c8h0vm0000bm5ayp-att/introduc tion_sp.pdf.

Sayanagi, N. R., Randriamanana, T., Razafimbelonaina, H. S. A., Rabemanantsoa, N., Abel-Ratovo, H. L., & Yokoyama, S. (2021). The challenges of psychometrics in impoverished populations of developing countries: Development of a motivation scale in rural Madagascar. *Japanese Journal of Personality, 30*, 56–69.

Sen, A. (1999). *Development as freedom*. Anchor Books.

Skinner, B. F. (2005). *Walden Two*. Hackett. (Original work published 1948)

United Nations Department of Economic and Social Affairs. (2015). *Global sustainable development report 2015 edition*. United Nations.

United Nations Innovation Network. (2021). *United Nations behavioural science report*. United Nations Innovation Network.

Van Egmond, M. C., Hanke, K., Omarshah, T. T., Navarrete Berges, A., Zango, V., & Sieu, C. (2020). Self-esteem, motivation and school attendance among sub-Saharan African girls: A self-determination theory perspective. *International Journal of Psychology, 55*, 842–850.

Van Egmond, M. C., Navarrete Berges, A., Omarshah, T., & Benton, J. (2017). The role of intrinsic motivation and the satisfaction of basic psychological needs under conditions of severe resource scarcity. *Psychological Science, 28*, 822–828.

Van Egmond, M. C., Omarshah, T., Navarrete Berges, A., Benton, J., Zalira, U., & Morrell, F. (2019). The relationship between caregivers' gender equality norms and girls' need satisfaction and self-esteem under conditions of resource scarcity. *Motivation and Emotion, 44*, 257–269.

World Bank. (2015). *World development report 2015: Mind, society, and behavior*. World Bank.

# Social Issues: A Self-Determination Theory Perspective

Randall Curren

## Abstract

This chapter provides a contextualized overview of self-determination theory's (SDT) contributions to the theory and practice of addressing social issues. It addresses the contested role of basic needs in social philosophy and explains the relationships between basic psychological needs and accounts of basic human needs that have been influential in global justice studies. It argues that autonomy, competence, and positive relatedness constitute a comprehensive set of basic human needs that societies and global development efforts should aim to enable individuals to satisfy. It addresses the significance of SDT research for eudaimonic justice, intergenerational justice, the social welfare versus individual responsibility debate, and the basis of social cooperation. The chapter also addresses SDT's contributions to addressing problems of sustainability, education, work, and civic culture. It shows how SDT research on human flourishing, materialism, experience of nature, and motivation for environmentally beneficial behaviors are providing a basis for policies conducive to sustainability, understood as the long-term preservation of opportunities to live well. It surveys key SDT findings on need support, motivation, performance, and well-being in educational and work settings. Finally, it concludes that SDT research is contributing to theorical understandings of justice focused on basic needs and human flourishing, while addressing a variety of important social issues and providing a wealth of actionable guidance for strengthening cooperation and improving the functioning of schools, workplaces, and other institutions.

**Key Words:** basic needs, justice, flourishing, sustainability, education, work, punishment, civic friendship

Self-determination theory (SDT) provides powerful resources for evaluating the design and performance of social systems and specific institutions, such as schools, workplaces, and governmental and nongovernmental organizations. The primary basis for such evaluations should be the impact these systems and institutions have on the well-being of everyone whose lives they shape and affect. These systems and institutions shape human activities toward or away from fulfillments of potential that constitute living well, and SDT sheds light on what is essential to living well. As a well-established theory of wellness, it can helpfully inform philosophical understandings of the nature of just systems and institutions. As a well-established theory of motivation, it also provides guidance on

how just policies can be effectively implemented and just institutions can achieve their aims. SDT's understanding of the motivational basis of cooperation and its relationship to the satisfaction of basic psychological needs is extraordinarily important in this regard. All in all, SDT is uniquely equipped to diagnose and ameliorate problematic aspects of institutions that are counterproductive and bad for people.

SDT offers a wealth of theoretical resources and findings that are helpful to addressing specific social and institutional problems from what philosophers call a *non-ideal* theoretical standpoint. Academic researchers and theorists of justice adopt such a standpoint when they bring their expertise to bear on the contextual realities that individuals and institutions face in making specific decisions that are significant for human well-being and justice. A non-ideal approach offers actionable, empirically informed, and justice-enhancing guidance to diverse social and institutional actors in an imperfect world. From an *ideal-theory* standpoint, SDT provides a body of replicated research that can usefully inform a general theory of (*ideal*) justice and just institutions. While social issues and institutional problems can be fruitfully addressed without reference to such theories, social philosophy—the philosophical analysis of social issues—has undoubtedly been advanced by theories of what is ideally just. The concern of such theories is to define what would constitute a just society, constitutional system, or world order.

Theories of (ideal) justice are attempts to identify problems of public life that can be solved or mitigated through compliance with fair terms of cooperation and to identify and defend terms of cooperation (*constitutional principles*) that could realistically be adopted, with the result that problems would be solved or ameliorated. These theories may take the existence of basic institutions as given and simply define the principles of justice on which some or all of them should operate, or they may identify certain kinds of institutions as essential—or as obstacles—to solving problems of public life. Defining the problems of public life is a foundational aspect of the enterprise and one that has reflected the difficulties of specific eras and different understandings of human nature. Historically, these theories have varied in how much they explicitly rely on claims about human nature, often preferring to rely on abstract conceptions of "the human condition," such as having the potential to obtain mutual benefit through cooperation, facing resource scarcity, requiring neutral adjudication of conflict, being epistemically interdependent, or being dependent on the care of others. There is no fundamental prohibition against reliance on scientific findings concerning human nature in theories of justice, and there are advantages to such reliance if the claims are well established.

A notable aspect of contemporary discussions of justice is how prominent human needs are in popular discourse and how marginal they are to philosophical theories of justice. SDT has played a role in progress toward closing this gap, and it provides a basis for further progress. Another notable fact about philosophical theories of (ideal) justice is that they treat *compliance* with the principles of justice they propose as a defining aspect of a just or well-ordered society, while offering little guidance on how to address failures of

compliance when they occur. Doing so requires more than "commonsense" assumptions about motivation, and SDT is the most comprehensive body of research on motivation available.

In this chapter, I address the contested role of basic needs in social philosophy and explain the relationships between basic psychological needs in SDT and accounts of basic needs that have been influential in global justice studies. The significance of SDT research for eudaimonic justice, intergenerational justice, the social welfare versus individual responsibility debate, and the basis of social cooperation will also be addressed. Finally, I will discuss SDT's contributions to addressing problems of sustainability, education, work, and civic culture.

## The Ethical Significance of Needs

It is natural to assume that SDT research on basic psychological needs has important implications for a variety of social issues. How could this not be the case when needs play a prominent role in ordinary claims about social justice, and a well-established finding in SDT research is that no one at any age or in any culture is happy unless all three of these needs are satisfied? Yet philosophical disagreements over the ethical significance of needs and the prominence of other conceptions of justice have resulted in human needs playing little role in recent social and political philosophy (Brock & Miller, 2019). This section addresses these disagreements and conceptions of justice in order to clarify the ethical significance of SDT research on basic psychological needs.

Needs figured prominently in global development policy in the 1970s and early 1980s, when the World Bank began to fund health, education, housing, and agriculture projects under a "basic needs" approach (Freeman, 2011, p. 193), but this was largely supplanted in the late 1980s by Amartya Sen's (1984, 1992) more conceptually sophisticated capability approach (CA). The CA offers a *metric of justice* or conception of the focus of assessments of fairness that it defends as superior to a *welfare* (preference satisfaction or wealth-focused) approach and the *primary goods* approach developed by John Rawls (Brighouse & Robeyns, 2010; Nussbaum, 2000, pp. 34–166).

None of these approaches assigns any independent significance to needs. In the CA, capabilities are conceptualized as real opportunities for people to function in desirable ways, with the word "real" signifying that individuals' attributes and circumstances allow them to function in the relevant ways at will. The ethical focus of the CA is thus *freedoms*, though Sen's (1992, p. 45) version refers to "basic capabilities" or abilities to function in some "crucially important" ways up to thresholds essential to a "minimally decent life," and Martha Nussbaum's (2000, 2006) version counts such threshold capabilities as human rights. These maneuvers create constructs that function much like basic needs within the capability approach (Brock & Miller, 2019), such as rights to not die prematurely, be able to have good health, and be able to think and reason in a "way informed and cultivated by an adequate education" (Nussbaum, 2000, p. 78). Rawls's (2001,

p. 57) theory of justice identifies principles of justice that would ensure fair access to *primary goods*, which are conceptualized as "social conditions and all-purpose means that are generally necessary" to pursuing a good life. These primary goods are basic rights and liberties, freedom of movement and choice of occupation, the powers associated with positions of authority and responsibility, income and wealth, and institutional bases of self-respect (pp. 58–59). Rawls's principles of justice limit inequality and require equal civil liberties and opportunities for employment, but needs as such do not play a role. The political philosopher Gillian Brock (2009, p. 63) has aptly noted that discussions of equal opportunity have focused too much on "chances of attaining favored social positions" and too little on "opportunities to have basic ingredients for a decent life, or basic needs."

Many reasons have been given for denying that individuals' unmet needs create obligations on the part of other individuals or institutions to meet those needs (Braybrooke, 1987, pp. 5–24; Doyal & Gough, 1991, pp. 9–21; Brock & Miller, 2019). One influential argument holds that appeals to needs are implicitly assertions that someone needs X in order to Y, making Y the thing that may or may not create obligations in others rather than what may be needed to secure Y (Barry, 1965, pp. 47–49). Needs would be merely instrumental. In practice, many assertions of need are instrumental to aims or desires that other people might not regard as compelling, and critics have questioned whether it is possible to distinguish needs from luxuries or mere desires *objectively*. Critics have also feared that a government with the authority to make policy based on a distinction between needs and mere desires or preferences is a formula for paternalistic oppression or tyranny. Freedom requires equal treatment for all expressed preferences, according to this view. A further concern is that acknowledgment of an ethical mandate to satisfy other people's unmet needs would create a culture of dependence and a bottomless pit of expectations and government obligations to meet them, undermining the personal responsibility of "takers" and robbing the self-reliant "makers" of the fruits of their labor (Schmidtz & Goodin, 1998, pp. 9, 16, 60). The debate over the ethical significance of needs is thus an aspect of the *social welfare versus individual responsibility* debate associated with Thatcher-Reagan conservativism.

Responses to these concerns share some common features. They hold that only objectively definable needs that are essential to a decent life (Braybrooke, 1987; Brock, 2009; Copp, 1998; Shue, 1996; Wiggins, 1998) or a flourishing life (Reader, 2005) can ground ethical claims against governments or individuals who do not have prior special obligations to those in need. The most influential approach along these lines is that of Len Doyal and Ian Gough (1991, pp. 53, 54), which identifies *physical health* and *autonomy*, conceiving the latter as "the ability to make informed choices," as basic needs that are foundational to success in social participation of any kind and the achievement of "any other valued goals." They identify further *intermediate needs*, such as nutritious food and clean water, a nonhazardous work environment, significant primary relationships, and

appropriate education, as contributing to the satisfaction of the two basic needs in measurable ways.

Building on this, Brock (2009, pp. 66–67) has identified a somewhat different list of five needs that are foundational to "agency and thereby [the ability to satisfy] our basic needs": physical and psychological health, the security needed to act, understanding the options one faces, autonomy, and decent social relations. More significant for the purposes of this chapter is her reliance on SDT research (Deci & Ryan, 1985) in the fuller descriptions of agency-related needs associated with this list. She writes that these agency-related needs include autonomy in the sense of being free of controlling influences, having a learning environment "in which positive feedback . . . creates the sense of competence necessary to a learner's self-efficacy" and in which learners feel "valued and connected," and a general psychological need (or needs) for "connectedness, intimacy, recognition, esteem, or respect" (Brock, 2009, p. 66). A minor reorganization of the elements in Brock's descriptions of agency-related needs would yield the three SDT basic psychological needs (autonomy, competence, and positive relatedness) plus physical and mental health and security.

The strength of the three basic psychological needs as predictors of wellness would warrant treating them as a comprehensive set of basic needs—a longer but more comprehensive alternative to Doyal and Gough's (1991) list of two basic needs, physical health and autonomy, while shorter and no less comprehensive than Brock's (2009) list of five agency-related needs. Brock argues that Doyal and Gough's two-item list is not truly comprehensive because their definition of autonomy is limited to the ability to make informed choices, overlooking the significance of coercion and other forms of controlling influence, as well as the role of access to information in making sound decisions. From an SDT perspective, the need for autonomy and to experience competence in decision-making would be reliably satisfied only in need-supportive contexts (i.e., contexts that facilitate the satisfaction of all three basic psychological needs), and Brock's needs for physical security, freedom from controlling influences, and understanding the options one faces would all qualify as aspects of autonomy and competence-supportive contexts. The three basic psychological needs form a comprehensive set with respect to autonomy, while including physical health as an additional need would be superfluous. Physical health is a necessary condition for satisfying the three basic psychological needs, so it is entailed by their satisfaction.

Following Doyal and Gough's (1991) distinction between *basic* and *intermediate* needs, an SDT account of *basic human needs* would identify autonomy, competence, and positive relatedness as a comprehensive set of basic needs that societies and global development efforts should aim to enable individuals to satisfy. The focus of these efforts should be ensuring that the contexts of everyone's lives are *need-supportive* or function in ways that facilitate the satisfaction of all three basic psychological needs. SDT research provides extensive guidance on key aspects of what constitutes need-supportive contexts, but a

comprehensive list of *intermediate needs* would also include the kinds of items founda-
tional to physical and psychological health and security that Doyal and Gough (1991) and
Brock (2009) have identified. Measures of satisfaction of those intermediate needs would
provide important information for targeting ameliorative efforts, while measures of the
satisfaction of basic psychological needs would provide the ultimate measure of success.

The underlying ethical logic of Doyal and Gough's (1991) and Brock's (2009)
approaches, and of one that treats basic psychological needs as the comprehensive set
of basic human needs, would be the same. It would recognize that the widely held soci-
etal ideal of individuals taking responsibility to meet their own needs presupposes that
certain developmental and circumstantial prerequisites have been met. These prerequi-
sites of competent and autonomous action in any social context are universal basic needs
that can do important ethical work in a theory of justice and in non-ideal assessments
of institutions and recommendations for reform. In the context of debate over whether
the recognition of ethical obligations to meet needs undermines personal responsibility,
SDT's understanding of need satisfaction and thriving as inherently occurring through
individuals' constructive engagement with the world should be welcomed as a deeply
important contribution. Satisfaction of basic psychological needs is essentially through
our own activity, not as passive recipients.

## Flourishing, Perfectionism, and Eudaimonic Justice

The tendency of basic needs approaches has been to focus on global poverty and assume
that a compelling account of universal basic needs would identify low-cost prerequisites
for a *decent* life rather than more costly prerequisites for a *flourishing* life. SDT research
implies that the choice between these alternatives is less stark than it is assumed to be.
Persistent frustration of any of the three basic psychological needs is so bad for people, in
so many ways, that the ethical case for providing need-supportive contexts is very strong.
On the other hand, the satisfaction of these needs predicts subjective well-being and an
associated array of health, productivity, and life outcome benefits. The satisfaction of
autonomy, competence, and relatedness needs is linked to personal thriving, flourishing,
or the fulfillment of human potential (Ryan, Curren, & Deci, 2013). Yet the need frustra-
tion versus satisfaction axis is not a material deprivation versus affluence axis. The inherent
pleasures and satisfactions of relating to other people in mutually affirming ways, of being
self-determining in a significant range of one's activities, and of experiencing a growth of
competence need not be any more materially intensive than meeting the basic needs that
Doyal and Gough (1991) and Brock (2009) identify. Estimations of the cost of creat-
ing psychologically need-supportive contexts must also recognize their importance for
productivity, much as Sen (1999, pp. 38–49) has argued in defending a *human develop-
ment (capability)* focus for global development policy. Focusing on the satisfaction of basic
psychological needs rather than on wealth creation largely obviates the need to decide
between focusing on the requirements of a decent life and focusing on the requirements

for a flourishing life. Focusing on basic psychological needs is focusing on the fulfill-
ment of basic forms of human potential that constitute living well; it yields a *eudaimonic*
approach to justice—one focused on human thriving, flourishing, or living well.

Eudaimonic approaches to justice are outgrowths of the ancient question of how
happiness and human goodness (*aretê*, virtue, excellence) are related. A basic question for
the philosophical tradition descending from Socrates through Aristotle and to the present
is whether human nature lends itself to collectively beneficial cooperation. Will human
beings willingly accept the fair terms of cooperation that define justice or what is ethi-
cal? Is it in our nature to be simultaneously good and happy? Or must we be externally
controlled to limit the harm we are inclined to inflict on one another? Aristotelian *eudai-
monism* locates a natural basis for human cooperation in a psychic connection between
goodness and happiness; it holds that there is a strong convergence between what is
humanly good or admirable and what is most pleasant and satisfying. The activities that
make a life good are identified as simultaneously admirable and personally pleasant and
satisfying and as requiring the possession and exercise of forms of human goodness, excel-
lence, or virtue. The assumption of a positive relationship between human goodness and
happiness is largely empirical, so a vindication of traditional eudaimonism requires the
coordinated contributions of both philosophy and psychology. SDT research has proven
very helpful in this respect.

For the purposes of understanding how forms of human goodness, excellence, or
virtue are required for individuals to fulfill their potential in ways that yield happiness
(i.e., are pleasant and satisfying), it is helpful to distinguish three basic forms of human
potential: intellectual, creative, and social (Curren, 2013a; Ryan et al., 2013). Intellectual
potential—the potential for rational self-determination—is fulfilled in making good
decisions about what to believe and do and acting accordingly, while creative and social
potential are fulfilled in the achieved qualities of creative and productive endeavors and
relationships. Note that there are more and less ethically inflected ways to say that forms
of human excellence are required to fulfill potential in ways that satisfy basic psychologi-
cal needs. One could say that decisional competence is needed to satisfy one's need for
autonomy, that social competence is needed to satisfy one's need for positive relatedness,
and that competence in one's endeavors is needed to reliably satisfy one's need for compe-
tence. In more overtly ethical terms, one must have good judgment in deciding what to
do, one must value and treat people well, and one must be good at the things one does to
experience the inherent rewards of autonomy, positive relatedness, and competence. The
virtues of mind and character that are needed to fulfill human potential in admirable acts
are also needed to achieve the inherent psychic rewards of such acts. It thus seems to be a
fact of human nature, confirmed by SDT research, that acquiring and enacting virtues of
mind and character is good for individuals as well as for their societies.

A criticism of eudaimonic approaches is that they are *perfectionistic* or committed to
an ideal of human perfection or optimal development that is incompatible with cultural

pluralism or the freedom of individuals to pursue diverse conceptions of a good life. Indeed, some psychological theorists have described them as *elitist* in this regard (Kashdan, Biswas-Diener, & King, 2008). In an age of culture wars fought over identity and multiculturalism, this is a sensitive issue, to which SDT brings important findings. A central tenet of contemporary theories of justice, including Rawls's and Nussbaum's, is that free and equal citizenship requires constitutional protection and acceptance of all identities and conceptions of a good life that are compatible with equal citizenship and fair terms of cooperation. SDT research offers cross-cultural confirmation of the importance of autonomy for personal well-being (Chirkov, Ryan, & Sheldon, 2011). SDT researchers have also investigated the relationships between Nussbaum's listed capabilities and well-being (DeHaan, Hirai, & Ryan, 2016) and perceived access to Rawls's primary goods and well-being (Bradshaw et al., forthcoming), showing that both capabilities and perceived access to primary goods—including the rights and liberties of equal citizenship—predict wellness outcomes mediated by satisfaction of basic psychological needs. The fact that satisfaction of basic psychological needs is essential to human thriving is compatible with an immense variety of cultural paths to satisfying those needs. In short, SDT does show that some patterns of human development are healthier, or better for individuals and society, than others, but it also confirms the importance of individuals having the freedom to pursue diverse conceptions of a good life.

A straightforward way to conceptualize a diversity-respecting theory of justice that treats basic psychological needs as fundamental is to borrow some methodological elements from Rawls's theory of justice (Curren, 2013a, 2013b; Curren & Metzger, 2017, pp. 72–86). Basic to this methodology is an "Original Position" thought experiment that is designed to simulate an impartial perspective on what would constitute fair terms of social cooperation (Rawls, 1971, 2001). In this thought experiment, each of us is asked to imagine that we know nothing specific about ourselves or who we might represent, so that the constitutional principles we select do not unfairly favor people of one specific kind or another. We can know general facts about human nature and social systems, including matters of scientific consensus, behind this "veil of ignorance." Rawls's (1971, pp. 485–496) reliance on psychology in *A Theory of Justice* was limited to elements of social learning theory, but this is good evidence he would have regarded the core findings of basic psychological needs theory as matters of scientific consensus that can be relied on in formulating and defending principles of justice.

Granting this, one could also broaden the questions that Rawls puts to "representatives" behind the veil of ignorance. One could ask not only what the principles regulating society's major institutions should be, but also how their aims or functions should be defined. An SDT-informed answer to the latter question would be that we all want to live well—to live in ways that are worthy of respect or admiration and that we experience as pleasant and satisfying—and that we would want institutions to be need-supportive or function in ways that make it possible for us to satisfy our basic psychological needs as

we engage in activities that constitute living well. Representatives behind the veil of ignorance would agree that there should be major institutions whose functions are to promote the acquisition of the *internal* attributes necessary for living well and to provide *external* contexts in which these attributes can be expressed in admirable and rewarding activity constitutive of living well (Curren, 2013a). These would include *educational* institutions, whose basic function is to promote forms of development conducive to living well, and *epistemic* institutions, whose basic function is to provide the information we all need to make good decisions. *Workplaces* require competence in tasks that occupy much of individuals' waking lives, and eudaimonic justice would require that such contexts be psychologically need-supportive and permit the fulfillment of potential in work that is admirable and satisfying (i.e., *good* or *meaningful*). The gaps between these defined functions and the ways actual institutions function imply a needs-focused reform agenda.

## Intergenerational Justice and Sustainability

Sustainability is a social issue of immense long-term significance, for it is no exaggeration to say that the fate of billions of people, countless species, and civilization itself are at stake. Climate destabilization puts everything at risk, and a stable climate is one of several life-sustaining planetary systems that are threatened by human activities. The concept of sustainability is intended to convey the ethical importance of human beings living in ways that do not cumulatively undermine the stability and capacity of the ecological systems on which they and other species rely, but there is no consensus analysis of the ethical aspects of sustainability.

Building on an SDT-informed account of eudaimonic justice, Curren and Metzger (2017) have argued that sustainability should be conceptualized as the preservation of opportunity to live well into the distant future. The concept of opportunities to live well not getting worse over time (a form of *diachronic* and *intergenerational* justice) superficially resembles Rawls's concept of (*synchronic*) fair equality of opportunity, but fair equality of opportunity is not projectable over extended periods of time. Brock's (2009, p. 63) observation that recent theories of justice have focused too much on "chances of attaining favored social positions" is pertinent here. Fair equality of opportunity is conceptualized as a fair competition for the most desirable positions in a common pool of occupations and offices, but over time there is no such common pool. Occupations come and go, and terms of employment can change radically within a single generation. Other Rawlsian *primary goods*, including many forms of wealth, may also lack meaningful comparability over time unless they are indexed to what is inherent in living well. The lesson of this is that a meaningful *intergenerational* measure of preservation of opportunity must focus on what is inherent in living well. Nor will basic need or capability approaches limited to prerequisites for a decent life suffice, since they will not support comparisons above that baseline. This limitation would allow sustainability to be defined in a way that would permit near-term luxuries to diminish future opportunity to no more than what is consistent with

a decent life for everyone (Curren & Metzger, 2017, pp. 14–16). By contrast, an SDT basic psychological needs satisfaction metric would support the kinds of intergenerational comparisons of opportunity to live well that are implied by the concept of sustainability. It would focus on what is inherent in living well, unlike a Rawlsian primary goods approach, and it is not limited to prerequisites for a *decent* life.

A growing body of SDT research addresses sustainability-related questions about materialism, well-being, experience of nature, ecological footprint, and motivation for environmentally beneficial behaviors. The scale of environmental damage reflects the explosive growth of the global economy and per capita consumption since the mid-20th century, making the relationships between consumption, materialism, and environmental attitudes and behaviors important to address. SDT findings begin with evidence that people who prioritize materialistic values or goals have more environmentally damaging attitudes and behaviors, consume more and report a higher incidence of compulsive consumption and debt, and have larger ecological footprints (Brown & Kasser, 2005; Hurst et al, 2013). Despite their consumption they fare worse in terms of flourishing: they are less caring and have lower-quality personal relationships, experience lower levels of personal well-being, and report more health problems (Kasser, 2016; Ryan & Deci, 2017). The causal relationships between materialism and unhappiness are bidirectional, suggesting that less focus on material consumption and greater focus on satisfying basic psychological needs could be better for both present and future generations. Greater immersion in nature and interventions that encourage intrinsic goal orientations (personal growth, relationships, community) or transcendent values (altruistic and biospheric values, relationship to nature) can be effective in reducing materialism and its attendant ills (Kasser, 2016; Weinstein, Przybylski, & Ryan, 2009).

A second focus of SDT research has been the fostering of self-determined (identified and integrated) environmental motivation and understanding the respective roles of pro-environmental values and motivations for specific kinds of pro-environmental behaviors (PEBs) (Legault et al., 2020; Legualt, this volume; Masson & Otto, 2021; Tagkaloglou & Kasser, 2018). Building on studies indicating that self-determined motivation for PEBs predicts a higher incidence, persistence, and breadth of PEBs than other factors do, Legault et al. (2020) tested an intervention that provided informative rationales for conservation and invited participants to identify their own reasons and concrete approach-oriented plans for saving water and electricity. The reported effects were more substantial and cost-effective than those reported for existing conservation programs and prior interventions.

Recognizing that large-scale collective action will be essential to the success of environmental sustainability efforts, Tagkaloglou and Kasser (2018, p. 92) researched factors favorable to pro-environmental activism, confirming that self-determined motivation is important but concluding that further studies are needed to clarify the relationship between self-efficacy and success in "new and difficult PEBs." Masson and Otto (2021) bring further nuance to such questions by addressing the relative predictive power of

self-determined motivation and value orientations for different forms of PEBs. Decisions involving a mix of environmental and nonenvironmental reasons (e.g., in choosing a low-emission vehicle) were better explained by (autonomous) pro-environmental values, while "behavior that is almost entirely dedicated to a proenvironmental cause may be explained better by self-determined motivation" (p. 6), which they equate to congruence with autonomy, competence, and relatedness (p. 1). Pro-environmental values are manifested in many forms of PEBs, and an implication of this study is that decisions to undertake or persist in PEBs involving novel high-demand roles would be largely determined by congruence with competence, autonomy, and relatedness needs. This is consistent with prior research on engagement and persistence in other volunteer roles (Gagné, 2003) and with SDT research on autonomous valuing (Curren & Ryan, 2020).

A third focus has been the interface of self-determined environmental motivation and centralized regulatory interventions (Baxter & Pelletier, 2020; Marshall, Hine, & East, 2017; Pelletier, Baxter, & Huta, 2011). The common wisdom in sustainability studies is that while individual efforts to reduce ecological footprints are quite important, climate stabilization and other key environmental goals will not be achieved without systemic and regulatory reforms (Curren & Metzger, 2017, pp. 27–51; Ostrom, 2010; Speth & Haas, 2006). Environmental impact is mediated by systems and structures that cannot be altered without collective action, and it is impossible for individuals to know how much effort is sufficient without collective monitoring and allocation of costs. SDT is ideally equipped to develop guidance on how to optimize the combining of autonomous and controlling motivation that these observations imply.

Reviewing the results of several studies, Pelletier et al. (2011) note that government efforts are more effective in motivating PEBs when they are perceived as autonomy-supportive, as SDT would predict. They recommend tailoring autonomy-supportive messaging to three distinct phases of behavior change: deciding whether there is a problem, whether one will act to address it, and if so, how one will address it. Within this global approach, interventions should be tailored to the phase that would come next for the message recipient, and they should provide information about problems and identify concrete actions. Justifications for actions should explain how the actions can be helpful in achieving intrinsic values, such as health and well-being. Step-by-step procedures and means of tracking progress should be identified. Extrinsic incentives should also be implemented in ways that do not preempt the acquisition of self-determined pro-environmental values (p. 273).

Baxter and Pelletier (2020, p. 3) survey the limitations of external sanctioning systems, noting that they "are most effective when participants believe they are administered based on a common concern for the collective outcome (Balliet et al., 2011)." In short, people are more likely to comply with regulatory schemes that they regard as reasonable. The studies they report introduced a centralized sanction system designed to encourage sustainable behavior, and they found that "the efficacy of the centralized sanction system

in increasing sustainable behavior was quite largely affected by the order of presentation. . . . Participants do best when allowed to first experience the task autonomously, and then to have the sanctions added afterwards" (Baxter and Pelletier, 2020, p. 11). In other words, a combination of self-determined and non-self-determined motivation can be productive if the groundwork for the former is prioritized. From the standpoint of proper ethical regard for persons as rational beings, giving priority to autonomy-supportive educational interventions is the right thing to do (Curren, 2013b, 2020), as well as what is most effective.

Research on environmental governance has made great strides toward recognizing the extent to which effective governance is fundamentally distributed, participatory, multiscalar, and often self-organized (Curren & Metzger, 2017, pp. 46–50; Ostrom, 2010). Marshall et al. (2017) bring an SDT perspective to this important work of advancing democratic and effective environmental governance in a study comparing highly autonomous community-based governance with centralized governance. As SDT would predict, they found greater autonomy support and stronger "autonomous motivations to contribute to collective action in climate change adaptation" in the community-governance scenario (p. 7).

## Education, Work, and Civic Culture

Work and civic culture are being transformed by the growth of educational systems across the globe, giving rise to social issues illustrated by developments in the United States. The completion of a baccalaureate degree has become a requirement for middle-class status in the United States, as new forms of expertise and automation have eliminated vast swaths of work that once supported families and provided meaningful positions of respect in the society for those without a college education (Curren, 2017a). Those with college degrees are less likely to live in the same neighborhoods, share the same pastimes, or have friendly interactions in other civic spheres with those without college degrees than they did a generation ago (Levitsky & Ziblatt, 2018). While life expectancy in the United States has risen, it is declining for those without college degrees, owing to deaths of despair by suicide, drug overdose, and alcohol abuse (Case & Deaton, 2020). These deaths of despair and the rise of white supremacist and nationalist authoritarian movements are both largely attributable to the unavailability of *meaningful work*—work that provides a sense of meaningful and respected contribution to society (Gest, 2016; Kruglanski, 2021). The weighty social issues of the present moment also include a racial reckoning, associated in the United States with a racialized "school-to-prison pipeline," the Black Lives Matter movement, and a decarceration movement that seeks to bring incarceration rates more into line with those of a democracy in which laws are imposed not by force but by the consent of the governed. Jim Crow apartheid in the American South was a form of nationalist authoritarian rule over Black citizens, and nationalist authoritarian movements in the United States and elsewhere have embraced radical right populist leaders who play "us" off against "them" (Levitsky & Ziblatt, 2018; Stanley, 2018).

Many of the same factors that have contributed to this polarized political landscape have contributed to a crisis of confidence in education. The pressures on teachers and students at all levels have intensified as higher degrees become more essential, educational costs and debt rise, and pathways into positions of respect in society falter. There is no simple solution to these problems, but SDT research on basic psychological needs, education, work, and regimes of control offers helpful bases for institutional reforms.

Black Americans suffer the humiliating and often fatal indignity of being presumed guilty, irresponsible, and unworthy of free and equal citizenship. They are disproportionately harmed by excessive and prejudicial reliance on policing, incarceration, and misguided replication of criminal justice regimes in schools (Barry, 2005; Curren, 2020). Black children engaged in the same conduct as white children are likely to be perceived as more culpable and dangerous than white children of the same age (Skiba et al., 2016), and the harsh exclusionary punishments they receive are an even stronger predictor than poverty of their dropping out of school, being unemployed, and ending up in prison (Gregory, Skiba, & Noguera, 2010; Flannery, 2015). These facts reveal not just racism but a faith in the efficacy and righteousness of punishment that is misguided both ethically and empirically. The punishments dispensed by schools have no proven efficacy in reducing problem behaviors, and what justice requires of schools is in any case that they prioritize formative investments in children that promote good judgment and capacities of rational self-governance (Curren, 2020).

Eudaimonic justice, informed by SDT, requires that societies provide their members with educational institutions designed to promote forms of development conducive to living well. They should promote the acquisition of understanding, capabilities, and virtues of intellect and character, in need-supportive settings that are favorable to students expressing these developing attributes in rewarding activity. Schools should enable students to be valued members of a harmonious social world, develop and exercise their own judgment, and meet attainable challenges that allow them to experience a rewarding growth of competence. Without such need support, there is little prospect of students accepting a school's goals and values as their own or making the efforts essential to meaningful learning. Experiments with problem-solving alternatives to punishment indicate that academic problems give rise to 80% of behavioral problems in schools (Greene, 2018, p. 24), and there are good reasons to think that psychologically need-supportive *just school communities* that adopt these problem-solving alternatives can dramatically outperform other schools both academically and with respect to student conduct (Power, 1988; Power & Hart, 2005; Curren, 2020).

This entails a form of character education, and from the standpoint of eudaimonic justice a need-supportive education in virtues of intellect and character is essential to both individual and societal flourishing (Curren, 2017b, 2020). Its proper aim is moral self-determination (Curren & Ryan, 2020), or reason-responsive valuing of fellow human beings, nature, and everything else we have good reason to value. In the face of civic

polarization, animosity, and distrust, an important aspect of the character-formative aspect of just school communities and other civic institutions would be to nurture the openness to seeing the good in each other that would facilitate the reciprocal goodwill, trust, and cooperation known as *civic friendship* (Curren & Elenbaas, 2020). SDT-based educational interventions have been effective in promoting greater interpersonal respect and less bullying via more autonomous endorsement of prosocial values in school communities (Kaplan & Assor, 2012).

Black Americans, others who are targets of dehumanizing rhetoric and attitudes, and those suffering from economic and social marginalization all share universal human needs for meaningful and respected roles in society and to have their value affirmed. Overcoming prejudice is important, but so too are institutional reforms to improve the quality of our lives at school and at work and thereby reduce the chasm of opportunity to experience autonomy, competence, positive relatedness, and the experience of meaning and significance associated with contributing to society in ways congruent with our values. SDT provides criteria for testing whether institutional reforms are effective in fostering greater flourishing.

SDT research has demonstrated that autonomous motivation is the only kind of motivation that is consistently positively associated with academic achievement (Taylor et al., 2014), that absence of intrinsic motivation is bad for learning and for students (Gottfried et al. 2008), and that lack of need support predicts amotivation, low academic performance, low academic self-esteem, behavioral problems, and intention to drop out of school (Legault, Green-Demers, & Pelletier, 2006). Building on the work of Reeve, Bolt, and Cai (1999), Reeve and Jang (2006) established that eight distinct teacher behaviors provide autonomy support, summarized by Ryan and Deci (2017, p. 367):

> listening to students, making time for students' independent work, giving students an opportunity to talk, acknowledging signs of improvement and mastery, encouraging students' effort, offering progress-enabling hints when students seemed stuck, being responsive to students' comments and questions, and acknowledging students' experiences and perspectives.

Further important findings are that grading (Klapp, 2015) has significant negative effect on academic achievement, especially deep conceptual learning, that extrinsic goal framing of the reasons students should engage in learning is counterproductive (Vansteenkiste et al., 2009), and that high-stakes tests and administrative pressures on teachers undermine the quality of teaching, in part by inducing more controlling behaviors toward students (Deci, 2009; Ryan & Brown, 2005; Ryan & Weinstein, 2009; Pelletier & Sharp, 2009). Support for autonomy and other basic psychological needs has demonstrable benefit in sustaining students' autonomous motivation to learn (Jang, Reeve, & Deci 2010) and

in reducing violence and promoting friendliness and caring among students (Assor et al., 2009).

SDT research on workplaces has demonstrated similarly that autonomously motivated work is better for workers, more effective, and more profitable (Deci, Olafsen, & Ryan, 2017), that need-supportive corporate cultures yield worker motivational profiles that are more autonomous on balance (Doshi & McGregor, 2015), and that autonomous motivation at work predicts greater commitment to the job and less emotional exhaustion or burnout (Fernet, Austin, & Vallerand, 2012). Basic psychological need satisfaction plays a significant role in mediating the relationships between the demands of work, resources available at work, and employee exhaustion and engagement (Van den Broeck, Vansteenkiste, & De Witte, 2008), and SDT field trials with training corporate managers in autonomy-support have shown significant positive impact in manager behaviors and worker autonomous motivation and engagement (Hardré & Reeve, 2009). An important finding regarding *meaningful* work, defined as work experienced as "significant and intrinsically valuable," is that satisfaction of autonomy, competence, and relatedness needs and experience of beneficence (making a positive impact or contribution) are independent and significant predictors of work being experienced as meaningful (Martela & Riekki, 2018). This aligns with previous research on *good* work (Gardner, Csikszentmihalyi, & Damon, 2001) and with SDT hypotheses regarding experience of meaning in life (Weinstein, Ryan, & Deci, 2012).

## Conclusion

SDT research is contributing to theorical understandings of justice focused on basic needs and human flourishing, while addressing a variety of important social issues and providing a wealth of actionable guidance for strengthening cooperation and improving the functioning of schools, workplaces, and other institutions. A key to its success and growing influence is its vindication of the classical eudaimonic idea that it is in our nature to be happy in fulfilling our potential in ways that value other human beings and the world around us. Understanding the needs we all share, the damage to individuals, societies, and the world arising from the frustration of these needs, and the ways we can build a more need-supportive world is the surest path to a more just, humane, and peaceful world.[1]

## References

Assor, A., Kaplan, H., Feinberg, O., & Tal, K. (2009). Combining vision with voice: A learning and implementation structure promoting teachers' internalization of practices based on self-determination theory. *Theory and Research in Education*, *7*(2), 234–243.

Balliet, D., Mulder, L. & Van Lanhe, P. (2011). Reward, punishment, and cooperation: A meta-analysis. *Psychological Bulletin, 137*, 594–615.

---

[1] I owe thanks to Rich Ryan and my social and political philosopher colleagues, Richard Dees and Rosa Terlazzo, for their helpful comments on a previous draft of this chapter.

Barry, B. (1965). *Political argument*. Routledge and Kegan Paul.

Barry, B. (2005). *Why social justice matters*. Polity Press.

Baxter, D., & Pelletier, L. G. (2020). The roles of motivation and goals on sustainable behaviour in a resource dilemma: A self-determination theory perspective. *Journal of Environmental Psychology, 69*, 101437.

Bradshaw, E., DeHaan, C., Parker, P., Curren, R., Duineveld, J., Di Domenico, S., & Ryan, R. (forthcoming). *The perceived conditions for living well: Positive perceptions of primary goods linked with basic psychological needs and wellness. Journal of Positive Psychology*, https://doi.org/10.1080/17439760.2021.1991446

Braybrooke, D. (1987). *Meeting needs*. Princeton University Press.

Brighouse, H., & Robeyns, I. (Eds.). (2010). *Measuring justice: Primary goods and capabilities*. Cambridge University Press.

Brock, G. (2009). *Global justice: A cosmopolitan account*. Oxford University Press.

Brock, G., & Miller, D. (2019). Needs in moral and political philosophy. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Summer 2019 ed.). https://plato.stanford.edu/archives/sum2019/entries/needs/.

Brown, K. W., & Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Social Indicators Research, 74*, 349–368.

Case, A., & Deaton, A. (2020). *Deaths of despair and the future of capitalism*. Princeton University Press.

Chirkov, V. I., Ryan, R. M., & Sheldon, K. M. (Eds.) (2011). *Human autonomy in cross-cultural context: Perspectives on the psychology of agency, freedom, and well-being*. Springer.

Copp, D. (1998). Equality, justice, and the basic needs. In G. Brock (Ed.), *Necessary goods: Our responsibility to meet others' needs* (pp. 113–133). Rowman & Littlefield.

Curren, R. (2013a). Aristotelian necessities. *Good Society, 22*(2), 247–263.

Curren, R. (2013b). A neo-Aristotelian account of education, justice, and the human good. *Theory and Research in Education, 11*(3), 232–250.

Curren, R. (2017a). On the arc of opportunity: Education, credentialism, and employment. In K. Schaff (Ed.), *Fair work: Ethics, social policy, globalization* (pp. 59–77). Rowman & Littlefield International.

Curren, R. (2017b). *Why character education?* Impact Series. Wiley-Blackwell. http://onlinelibrary.wiley.com/doi/10.1111/imp.2017.2017.issue-24/issuetoc.

Curren, R. (2020). Punishment and motivation in a just school community. *Theory and Research in Education, 18*(1), 117–133.

Curren, R., & Elenbaas, L. (2020). Civic friendship. Insight Paper, JCCV. University of Birmingham. https://www.jubileecentre.ac.uk/userfiles/jubileecentre/pdf/insight-series/RC_LE_CivicFriendship.pdf

Curren, R., & Metzger, E. (2017). *Living well now and in the future: Why sustainability matters*. MIT Press.

Curren, R., & Ryan, R (2020). Moral self-determination: The nature, existence, and formation of moral motivation. *Journal of Moral Education, 49*, 295–315.

Deci, E. L. (2009). Large-scale school reform as viewed from the self-determination theory perspective. *Theory and Research in Education, 7*(2), 244–254.

Deci, E. L., Olafsen, A. H., & Ryan, R.M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior, 4*, 19–43.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.

DeHaan, C. R., Hirai, T., & Ryan, R. M. (2016). Nussbaum's capabilities and self-determination theory's basic psychological needs: Relating some fundamentals of human wellness. *Journal of Happiness Studies, 17*(5), 2037–2049.

Doshi, N., & McGregor, L. (2015). *Primed to perform: How to build the highest performing cultures through the science of total motivation*. HarperCollins.

Doyal, L., & Gough, I. (1991). *A theory of human need*. Macmillan.

Fernet, C., Austin, S., & Vallerand, R. J. (2012). The effects of work motivation on employee exhaustion and commitment: An extension of the JD-R model. *Work and Stress: An International Journal of Work, Stress, and Productivity, 26*(3), 213–229.

Flannery, M. E. (2015). The school-to-prison pipeline: Time to shut it down. *NEA Today*, January 5.

Freeman, M. (2011). *Human rights: An interdisciplinary approach* (2nd ed.). Polity.

Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion, 27*(3), 199–223.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good work: When excellence and ethics meet*. Basic Books.

Gest, J. (2016). *The new minority: White working class politics in an age of immigration and inequality*. Oxford University Press.

Gottfried, A. E., Gottfried, A. W., Morris, P. E., & Cook, C. R. (2008). Low academic intrinsic motivation as a risk factor for adverse educational outcomes: A longitudinal study from early childhood through early adulthood. In C. Hudley & A. E. Gottfried (Eds.), *Academic culture and the culture of school in childhood and adolescence* (pp. 36–69). Oxford University Press.

Greene, R. W. (2018). Transforming school discipline: Shifting from power and control to collaboration and problem solving. *Childhood Education, 94*(4): 22–27.

Gregory, A., Skiba, R. J., & Noguera, P. A. (2010). The achievement gap and the discipline gap: Two sides of the same coin?" *Educational Researcher, 39*(1): 59–68.

Hardré, P.L., & Reeve, J. (2009). Training corporate managers to adopt a more autonomy-supportive motivating style toward employees: An intervention study. *International Journal of Training and Development, 13*(3), 165–184.

Hurst, M., Dittmar, H., Bond, R., & Kasser, T. (2013). The relationship between materialistic values and environmental attitudes and behaviors: A meta-analysis. *Journal of Environmental Psychology, 36*, 257–269.

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure, but autonomy support and structure. *Journal of Educational Psychology, 102*(3), 588–600.

Kaplan, H., & Assor, A. (2012). Enhancing autonomy-supportive I-thou dialogue in schools: Conceptualization and socio-emotional effects of an intervention program. *Social Psychology of Education, 15*, 251–269.

Kashdan, T. B., Biswas-Diener, R., & King, L. A. (2008). Reconsidering happiness: The costs of distinguishing between hedonics and eudaimonia. *Journal of Positive Psychology, 3*(4), 219–233.

Kasser, T. (2016). Materialistic values and goals. *Annual Review of Psychology, 67*, 9.1–9.26.

Klapp, A. (2015). Does grading affect educational attainment? A longitudinal study. *Education: Principles, Policy and Practice, 22*(3), 302–323.

Kruglanski, A. (2021). How the quest for significance and respect underlies the white supremacist movement, conspiracy theories and a range of other problems. *The Conversation*, March 12.

Legault, L., Bird, S., Powers, S. E., & Sherman, A. (2020). Impact of a motivational intervention and interactive feedback on electricity and water consumption: A smart housing field experiment. *Environment and Behavior, 52*(6), 666–692.

Legault, L, Green-Demers, I., & Pelletier, L. (2006). Why do high school students lack motivation in the classroom? Toward an understanding of academic amotivation and the role of social support. *Journal of Educational Psychology, 98*(30), 567–582.

Levitsky, S., & Ziblatt, D. (2018). *How democracies die*. Crown.

Marshall, G. R., Hine, D. W., & East, M. J. (2017). Can community-based governance strengthen citizenship in support of climate change adaptation? Testing insights from self-determination theory. *Environmental Science & Policy, 72*, 1–9.

Martela, F., & Riekki, T. J. J. (2018). Autonomy, competence, relatedness, and beneficence: A multicultural comparison of the four pathways to meaningful work. *Frontiers in Psychology: Organizational Psychology, 9*, 1–14.

Masson, T., & Otto, S. (2021). Explaining the difference between the predictive power of value orientations and self-determined motivation for proenvironmental behavior. *Journal of Environmental Psychology, 73*, 101555.

Nussbaum, M. (2000). *Women and human development*. Cambridge University Press.

Nussbaum, M. (2006) *Frontiers of justice: Disability, nationality, species membership*. Harvard University Press.

Ostrom, E. (2010). A multi-scale approach to coping with climate change and other collective action problems. *Solutions, 1*(2), 27–36.

Pelletier, L., & Sharp, E. (2009). Administrative pressures and teachers' interpersonal behavior. *Theory and Research in Education, 7*(2), 174–183.

Pelletier, L. G., Baxter, D., & Huta, V. (2011). Personal autonomy and environmental sustainability. In V. Chirkov, R. Ryan, & K. Sheldon (Eds.), *Personal autonomy in cultural contexts: Global perspectives on the psychology of agency, freedom, and people's well-being* (pp. 257–278). Springer.

Power, C. (1988). The just community approach to moral education. *Journal of Moral Education, 17*(3), 195–208.

Power, F. C., & Hart, S. N. (2005). The way forward to constructive child discipline. In S. N. Hart (Ed.), *Eliminating corporal punishment: The way forward to constructive child discipline* (pp. 91–128). UNESCO Educational Publications.

Rawls, J. (1971). *A theory of justice*. Harvard University Press.

Rawls, J. (2001). *Justice as fairness: A restatement*. Harvard University Press.

Reader, S. (Ed.). (2005). *The philosophy of need*. Cambridge University Press.

Reeve, J., Bolt, E., & Cai, Y. (1999) Autonomy-supportive teachers: How they teach and motivate students. *Journal of Educational Psychology*, *91*(3), 537–548.

Reeve, J., & Jang, H. (2006). What teachers do and say to support students' autonomy during a learning activity. *Journal of Educational Psychology*, *98*(1), 209–218.

Ryan, R. M., & Brown, K. W. (2005). Legislating competence: The motivational impact of high stakes testing as an educational reform. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence* (pp. 354–374). Guilford Press.

Ryan, R. M., Curren, R., & Deci, E. L. (2013). What humans need: Flourishing in Aristotelian philosophy and self-determination theory. In A. S. Waterman (Ed.), *The best within us: Positive psychology perspectives on eudaimonia* (pp. 57–75). American Psychological Association.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., & Weinstein, N. (2009). Undermining quality teaching and learning: A self-determination theory perspective on high-stakes testing. *Theory and Research in Education, 7*(2), 224–233.

Schmidtz, D., & Goodin, R. E. (1998). *Social welfare and individual responsibility*. Cambridge University Press.

Sen, A. (1984). *Resources, values and development*. Blackwell.

Sen, A. (1992). *Inequality reexamined*. Clarendon Press.

Sen, A. (1999). *Development as freedom*. Oxford University Press.

Shue, H. (1996). *Basic rights: Subsistence, affluence and US foreign policy* (2nd ed.). Princeton University Press.

Skiba, R, J., Arredondo, M. I., Gray, C., & Rausch, M. K. (2016). What do we know about discipline disparities? New and emerging research. In R. Skiba, K. Mediratta, & M. K. Rausch (Eds.), *Inequality in school discipline: Research and practice to reduce disparities* (pp. 21–38). Palgrave Macmillan.

Speth, J. G., & Haas, P. M. (2006). *Global environmental governance*. Island Press.

Stanley, J. (2018). *How fascism works: The politics of us and them*. Random House.

Tagkaloglou, S., & Kasser, T. (2018). Increasing collaborative, pro-environmental activism: The roles of motivational interviewing, self-determined motivation, and self-efficacy. *Journal of Environmental Psychology, 58*, 86–92.

Taylor, G., Jungert, T., Mageau, G. A., Schattke, K., Dedic, H., Rosenfield, S., & Keostner, R. (2014). A self-determination theory approach to predicting school achievement over time: The unique role of intrinsic motivation. *Contemporary Educational Psychology*, *39*(4), 342–358.

Van den Broeck, A., Vansteenkiste, M., & De Witte, H. (2008). Explaining the relationships between job characteristics, burnout and engagement: The role of basic psychological need satisfaction. *Work & Stress, 22*, 277–294.

Vansteenkiste, M., Soenens, B., Verstuyf, J., & Lens, W. (2009). "What is the usefulness of your schoolwork?" The differential effects of intrinsic and extrinsic goal framing on optimal learning. *Theory and Research in Education*, *7*(2), 155–163.

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2009). Can nature make us more caring? Effects of immersion in nature on intrinsic aspirations and generosity. *Personality and Social Psychology Bulletin, 35*, 1315–1329.

Weinstein, N., Ryan, R. M., & Deci, E. L. (2012). Motivation, meaning, and wellness: A self-determination perspective on the creation and internalization of personal meanings and life goals. In P. T. P. Wang (Ed.), *The human quest for meaning* (pp. 81–106). Routledge.

Wiggins, D. (1998). What is the force of the claim that one needs something? In G. Brock (Ed.), *Necessary goods: Our responsibilities to meet others' needs* (pp. 33–55). Oxford University Press.

# A Group-Conscious Approach to Basic Psychological Needs Theory

Frank J. Kachanoff

### Abstract

Basic psychological needs theory (BPNT) proposes that humans have basic organismic needs to feel autonomous, related, and competent. Deprivation or frustration of these needs results in diminished well-being. This chapter describes how BPNT has traditionally taken an individual-focused approach by considering whether individuals personally feel that their *own* needs are nourished within their social context. It then outlines and reviews support for a *group-conscious* BPNT approach. This approach considers how an individual's psychological need satisfaction is impacted by whether they perceive the psychological needs of *other* group members, and their *group* as a whole, to be satisfied. The chapter concludes with implications and future directions.

**Key Words:** Key words: basic psychological needs, group contexts, social identity, group needs, self-determination theory

"Am I free to act in accordance with my own values and interests?"

"Do people accept me for who I am?"

"Can I achieve mastery and accomplish my goals?"

These questions are prognostic of whether people satisfy basic psychological needs for autonomy, relatedness, and competence. To answer them, people intuitively consider their personal experiences. Do they feel as though their parents, teachers, or bosses explain directives in a way that resonates with their own values? Do they feel close and connected to the people around them? As people pursue their goals, do they get enough feedback to know whether they are on the right track? If we think of people as plants seeking nutrients from their environment, then personal need-satisfying experiences are the nutrients in the earth that directly touch the plant's roots. In this chapter however, I ask whether there is something broader than people's own personal experiences which also influences whether they satisfy basic psychological needs.

Consider this quote from Nelson Mandela as he described his experiences as a Black South African during the oppressive apartheid regime: "Freedom is indivisible; the chains

on any one of my people were the chains on all of them, the chains on all of my people were the chains on me" (Mandela, 1995, p. 624). For Mandela, his autonomy as an individual was not only a function of how he felt he was treated personally; it was a function of whether he perceived that his fellow Black South Africans felt free as a people. Mandela's statement illustrates how psychological need satisfaction is dependent not only on people's own personal experiences but also on their perceptions of their group's collective experiences.

In this chapter, I review emerging research within self-determination theory (SDT) that considers whether basic psychological need satisfaction is impacted by how people perceive their social group to be treated in society—what I call a "group-conscious approach" to basic psychological needs theory (BPNT; see Vansteenkiste, Soenens, & Ryan, this volume). I will begin by reviewing the social identity approach within social psychology (see Hornsey, 2008, for review), which considers how people are personally impacted by how they perceive the experiences of their fellow group members and their social group. I then outline how the social identity approach can be applied within SDT to take a group-conscious BPNT approach, and contrast this with the individual-focused approach traditionally applied within BPNT. Next, I review research within and outside of SDT that supports the group-conscious approach. I conclude by discussing implications and future directions for the group-conscious approach.

## Applying a Social Identity Approach in SDT

People *identify* with social groups throughout their lives: they have "knowledge of [their] membership of a social group (or groups) together with the value and emotional significance attached to that membership" (Tajfel, 1978, p. 63). People identify with groups based on social categories such as race, ethnicity, nationality, religion, sexual orientation, or gender identity. People also identify with groups that are tied to institutions (e.g., work teams, student groups). And even when people do not personally identify with a certain social group, they can still be aware that other people categorize them as belonging to that group (Shapiro & Neuberg, 2007).

Attached to social groups are rich social identities: the shared beliefs, values, customs, and history that makes people "who we are." While social identities might not always be salient to a person, part of who a person is and how they act—the names they take, the languages they speak, and the foods they eat—are often tied to their social identities (Oyserman, 2007; Usborne & Taylor, 2010). The identity-based theory of motivation, for instance, suggests that people "just feel right" when they behave in ways that align with what is normative and valued within their group (Oyserman, 2007). As a Canadian, I "feel right" when I watch a game of hockey (a sport tied to Canadian culture). Thus people align their goals and behavior with their social identity. From an SDT perspective, identity-based behaviors may "feel right" because people tend to integrate them into the self. Social identities also serve as a reference point which people can use to articulate a

coherent and clear sense of self (Hogg, 2000; Taylor, 1997). People use normative information about how members within their group think and behave as a standard with which to compare and evaluate their own beliefs and behavior. Even if people choose to act differently from what is normative in their group, their knowledge of how they are the same as (or different from) other group members helps them maintain a clear sense of self (Usborne & Taylor, 2010).

The core idea of the group-conscious approach to BPNT is that if people inform their behavior and sense of self from their social identities, then they might experience threats they perceive to the psychological needs of their group and fellow group members as though they personally experience those threats themselves. Returning to Mandela's description of apartheid, he experienced autonomy restrictions endured by his fellow Black South Africans as though he personally experienced them. The chains on him and the chains on his people were one and the same.

BPNT has not traditionally considered how people perceive the experiences of their group and group members. However, the impact which the group's collective experiences have on the individual has been extensively studied within research adopting the social identity approach—a macro-theory of intra- and intergroup psychology (Hornsey, 2008; Tajfel & Turner, 1979; Turner et al., 1987). Research applying the social identity approach suggests that identifying with social groups is robustly associated with experiencing greater psychological well-being (Haslam et al., 2009). Relevant to BPNT, the positive effects of group identification on well-being are due to social identities promoting psychological need satisfaction (including the satisfaction of some of the core needs described within BPNT). For example, in a longitudinal study, the positive effects of social identification on well-being were mediated by greater feelings of belongingness (i.e., the relatedness need within SDT) and greater feelings of control (i.e., the competence need in SDT), as well as greater self-esteem and greater meaning in life (Greenaway et al., 2016).

Although social groups help provide people with the important psychological nutrients they need to thrive, people's connection to their social groups also means that they may be negatively impacted by collective threats that harm their social groups (Leigh & Melwani, 2019). For instance, perceiving one's group to be negatively valued is associated with diminished self-esteem (Luhtanen & Crocker, 1992). The group-conscious approach of BPNT builds on this idea by considering how needs-based threats to the group undermine the three BPNT needs of autonomy, competence, and relatedness.

## A Group-Conscious Approach of BPNT

BPNT proposes that in the same way plants require essential nutrients, humans depend on their social environments to satisfy their basic psychological needs for autonomy, relatedness, and competence (Vansteenkiste, Ryan, & Soenens, 2020). Social environments include narrow interpersonal relationships (e.g., parent-child, teacher-student, employer-employee, coach-athlete relationships), small-group contexts (e.g., sports teams, work

teams, classes of students), and broad sociocultural contexts (e.g., organizations, local communities, nations). BPNT often applies an *individual-focused* approach, considering whether a person (organism) personally has their needs satisfied (vs. deprived or frustrated) within their social context. This is true regardless of whether that social context is narrow (e.g., interpersonal relationships) or broad (e.g., a national context). For example, Ryan and Deci (2000, p. 74) suggested that to understand how one's need for autonomy may be thwarted, researchers must turn to "individuals' immediate social contexts and then their developmental environments." Using the individual-focused approach, BPNT researchers might consider whether an individual child feels as though their psychological needs are satisfied by their parents (e.g., Mageau et al., 2015), whether an individual student feels as though their psychological needs are satisfied by their classroom environment (Niemiec & Ryan, 2009), or whether an individual citizen feels as though their psychological needs are satisfied by the sociocultural context of their nation (Chirkov et al., 2003; Downie, Koestner, & Chua, 2007). Using the plant analogy, the individual-focused approach of BPNT considers whether a plant directly acquires essential nutrients from its environment.

In contrast, the *group-conscious* BPNT approach also considers how an individual's psychological need satisfaction is impacted by whether they perceive that the psychological needs of their fellow group members, or the needs of their group as a whole, are satisfied within intra- or intergroup contexts (Kachanoff, Wohl et al., 2020; Parker et al., 2019; Thomas et al., 2017). I use the term "group-conscious" rather than "group-focused" because this approach does not discount the importance of the immediate context acting on the individual, but views both the individual's personal experience and their perception of the group's experience as distinct and critical.

Returning to the plant analogy, consider how apple trees, for instance, depend on pollen from other trees of the same species to be transferred to them through cross-pollination. Cross-pollinating plants are interdependent: if one plant in the crop is malnourished, this adversely impacts the other plants in the crop. By taking a group-conscious BPNT approach, we can think of people as interdependent cross-pollinating plants: people will suffer need-frustration/deprivation not only when their own needs are directly malnourished within their own social environment, but also when they perceive their environment deprives/frustrates the needs of their fellow group members.

As I reviewed at the beginning of this chapter, people are interdependent such that they often adopt normative behaviors and values from their group and, as a result, see themselves partly as a reflection of their group (Greenaway et al., 2016; Hornsey, 2008; Oyserman, 2007). As a consequence, what impacts a social group collectively has direct consequences for people's own personal experiences. For instance, imagine you perceive that there are pressures on members of your national group not to engage in behavioral customs that are central to your group's traditional way of life. In this context, you may personally feel self-conscious and constrained in how you can behave on the basis of your

group membership and, in turn, experience diminished personal autonomy. Similarly, if you were to learn that your group as a whole is disliked in society, you may personally feel as though others from outside your group will reject you on the basis of your group membership, and in turn, you will experience diminished relatedness. Finally, if you believe that others from outside your group stereotypically view members of your group as incompetent, you might feel that others will judge you as incompetent irrespective of how you behave. These examples illustrate the core hypothesis of the group-conscious BPNT approach: individuals experience diminished autonomy, relatedness, and competence when they feel that other groups try to control, reject, or negatively stereotype their group.

So far, I have applied the basic logic "what happens to my group by default has implications for what happens to me" to provide a rationale for the group-conscious BPNT approach. However, people also feel empathically connected to what happens to their fellow group members, even when they personally do not experience the same events as other members of their group. For example, group members may personally experience suffering when they see that a member of their group is victimized (even if they themselves were not directly harmed; Leigh & Melwani, 2019). This empathic overlap between the self and the group is described as "identity fusion" (Swann et al., 2012). Applying the idea of identity fusion within SDT, I propose that because of their empathic connection to the experiences of their fellow group members, people may personally experience need-thwarting when they perceive that other members of their group feel controlled, rejected, or incompetent. Critically, I suggest that this can occur even when individuals personally feel that their *own* psychological needs are supported within their immediate social contexts.

Figure 53.1 provides an abstract depiction of the individual-focused versus group-conscious BPNT approach. It is helpful as well to consider a concrete example of how people's perceptions of whether their group's needs are satisfied can be distinct from their own personal experiences. Consider the narrative of a participant in a study my colleagues and I conducted asking them to describe how their LGBTQ+ community had (or lacked) autonomy as a group (Kachanoff, Cooligan et al., 2020). The participant, who identifies as an asexual/ace trans girl and bi-romantic individual, wrote:

> The biggest barrier to collective autonomy for the trans community in Canada is likely the evaluations needed before acquiring hormones. While I was lucky and found a councilor quite open to a full spectrum of gender expression all the way to non-binary status, many are faced with a pressure to present as near gender stereotypes in order to be given access to [hormone replacement therapy].

This participant felt that their individual autonomy was supported during their interactions with their councilor. If we apply an individual-focused BPNT approach, we would predict that this person experiences personal autonomous need satisfaction because they
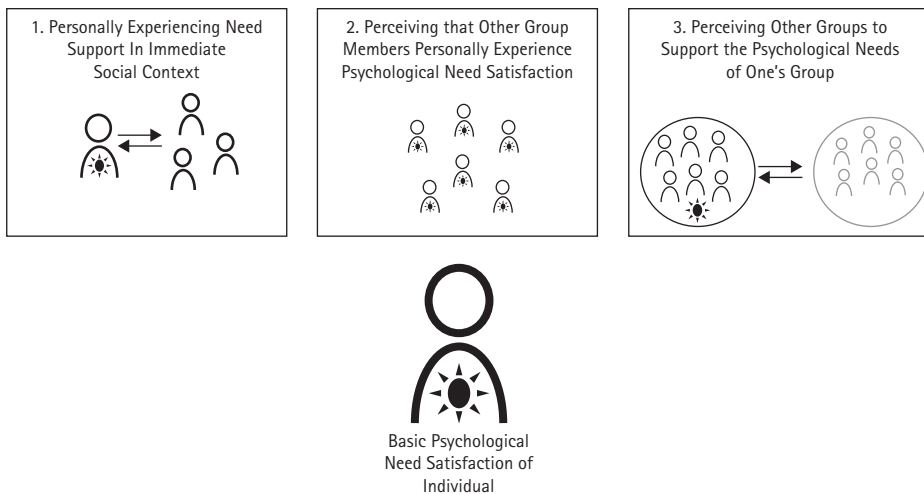
**Figure 53.1** The group-conscious BPNT approach. Basic psychological needs are impacted by three sources: (1) how individuals perceive they *personally* are treated in their immediate social context (traditional BPNT, Vansteenkiste, Soenens, & Ryan, this volume); (2) whether group members think other group members personally experience psychological need satisfaction (Thomas et al., 2017); and (3) whether the needs of the group as a whole are satisfied (Kachanoff et al., 2019; Parker et al., 2019).

are personally supported by important others. However, this individual is also aware that members of their trans community often do not feel as though they receive autonomy support. If we apply a group-conscious BPNT approach we would predict that this individual may also personally experience reduced autonomous need satisfaction because they are impacted by their group's experience of need frustration: they may fear that one day their own autonomy will be taken away because of their group membership, and/or they may empathically share the feeling of restriction which they know their fellow group members experience.

This important distinction between whether individuals personally feel their psychological needs are supported by others and whether they feel that the needs of their group are collectively supported is consistent with the personal/group discrimination discrepancy principle (Taylor et al., 1990). Research applying the personal/group discrimination discrepancy principle suggests that group members differ in the extent to which they personally feel discriminated against as members of their group, and the extent to which they think that other members of their group (and their group as a whole) experience discrimination. The group-conscious BPNT approach assumes that this distinction applies to people's personal experiences of need-based support and their perception of how their group as a whole is treated.

## Evidence for a Group-Conscious Approach of BPNT

I will now review supporting evidence for the group-conscious BPNT approach. I begin with autonomy needs, then consider relatedness and competence needs.

*A Group-Conscious Approach to Studying Autonomy Needs*

Research applying a group-conscious BPNT approach suggests that two group factors impact whether individuals satisfy their need for autonomy: (1) whether individuals perceive that other group members have autonomous motivation for engaging in valued group behaviors (i.e., collective self-determination; Thomas et al., 2017) and (2) whether individuals perceive that their group as a whole has the freedom to determine and express its social identity without being controlled by other groups (i.e., collective autonomy; Kachanoff et al., 2019).

*Collective self-determination: "Do other members of our group have autonomous versus controlled motives for expressing their social identity?"* Contained within social identities are prescribed values, norms, and customs. SDT research applying an individual-focused BPNT approach suggests that people experience greater autonomous need satisfaction and well-being when they personally have autonomous versus controlled motivation for engaging in valued customs and behaviors (Chirkov et al., 2003). People satisfy their need for autonomy when they act in accordance with their social identity because they have internalized the importance and value of doing so (i.e., autonomous motivation) rather than because they would feel guilty and ashamed if they didn't (i.e., controlled motivation).

A group-conscious BPNT approach asks a similar but distinct question: Do people also experience greater autonomous need satisfaction when they feel as though *other* group members engage in valued group behaviors because of autonomous versus controlled motives? Thomas and colleagues (2017) refer to this latter perception as *collective self-determination.* Thomas and colleagues assessed whether Australians personally had autonomous versus controlled motivation for engaging in a prosocial intergroup helping behavior (supporting global poverty reduction). Respondents were asked whether they engaged in poverty reduction because they would feel like a bad person if they didn't (a controlled reason) or because they valued doing so (an autonomous reason). Critically, Thomas and colleagues also asked participants whether they felt that other Australian citizens had autonomous versus controlled motivation for engaging in intergroup helping (i.e., collective self-determination). Respondents were asked whether they thought other Australians engaged in global poverty reduction because *they* valued doing so or because *they* would feel guilty if they didn't do so. Results of the study suggested that people's own autonomous motivation for engaging in intergroup helping was positively associated with whether they felt that their fellow group members had autonomous reasons for engaging in intergroup helping. This suggests that there is a link between people's own sense of autonomy for engaging in a valued behavior within the group (e.g., intergroup helping) and whether people feel that their fellow group members similarly feel autonomous in engaging in that behavior. Importantly, people's perception of collective self-determination was related to greater psychological well-being, even controlling for people's own autonomous motivation.

It is possible that the association which Thomas and colleagues (2017) observed between people's own autonomous motivation for engaging in valued group behaviors and their perception that other group members feel autonomous about this behavior is due to shared method variance or projection. Individuals who themselves feel autonomous about engaging in a valued group behavior might simply assume that other group members also feel autonomous. As such, it will be helpful for future work to replicate these findings using longitudinal methods in which personal and group-member perceptions of autonomy are assessed at different time points. Yet despites these potential limitations, the results of Thomas and colleagues provide important initial evidence suggesting that people's personal sense of autonomy is associated with their beliefs about whether other group members similarly experience personal autonomy. These findings are consistent with research based on the social identity approach, which suggests that people's personal experiences can become "fused" with the experiences of other group members (Swann et al., 2012).

The work of Thomas and colleagues (2017) provides exciting avenues for future BPNT research. While Thomas and colleagues focused on group members' beliefs about their group members' motivation for engaging in a very specific behavior (intergroup helping), future work might consider whether people's personal autonomous need satisfaction is impacted by their beliefs about whether other group members generally feel autonomous in everyday life. Need-satisfaction measures (e.g., Chen et al., 2015; Sheldon & Gunz, 2009) could be reframed to statements like "I think members of my group feel free to do things in their own way" or "I think members of my group have a lot of pressures they could do without." Based on Thomas and colleagues' findings, general beliefs about the autonomous need satisfaction of other group members should be associated with one's own autonomous need satisfaction.

**Collective autonomy: "Is our group free to determine and express its own social identity without restriction from other groups?"** Collective self-determination (Thomas et al., 2017) is the perception that other group members have autonomous versus controlled motives for engaging in valued group behaviors. A related but distinct concept is *collective autonomy*: a person's perception of whether their group as a whole is free in society to determine and express its social identity without feeling unduly controlled or restricted by other social groups (Kachanoff et al., 2019). While collective self-determination is an intragroup perception about why other group members choose to act in accord with their social identity, collective autonomy is an intergroup perception about whether one's group as a whole is supported (versus restricted) by other groups in society to express its identity.

People do not always perceive that their group is free to express its social identity and instead experience collective autonomy restriction. A historical example of collective autonomy restriction is the legacy of Indigenous residential schools in North America in which Indigenous children were forcefully prevented from expressing any aspect of their culture (Wilk, Maltby, & Cooke, 2017; Lajimodiere, 2014). Yet collective autonomy

restriction is not limited to the past. In 2018, the Canadian province of Quebec passed Bill 21 (Koussens, 2020), which prevents religious ethnic minorities from wearing religious symbols in government-employed positions. For instance, under Bill 21, Muslim teachers are not permitted to wear a hijab or a niqab in the classroom. Similar restrictions on religious face coverings exist in several European countries. Collective autonomy restrictions are pervasive and not limited to ethnic or religious groups. The LGB community is subject to restrictive policies like bans on gay marriage and policies forbidding disclosure of a non-heteronormative sexual orientation (e.g., the "Don't ask, don't tell" policy which previously existed in the U.S. military; Burrelli & Feder, 2009). Members of the trans/ nonbinary community also experience collective restriction in the form of restrictions on hormone therapy (Burns, 2020) and bans from military service (Delgardo, 2019).

Importantly, collective autonomy restriction is a *subjective* perception of how one's group is treated, and might not reflect objective reality. Because it is subjective, members of dominant majority groups might also perceive collective autonomy restriction, despite having power in society. For example, in majority-white and majority-Christian countries, some white-identified and Christian-identified individuals have expressed that (what they perceive as) hypersensitivity over the rights of historically marginalized and underrepresented groups is undermining their own freedom to express aspects of their white or Christian identity (e.g., perceived suppression of "Merry Christmas" greetings; Cooper, 2016).

Given the pervasiveness of collective autonomy restriction across history, social context, and social hierarchies, my colleagues and I assessed its impact on personal autonomous need satisfaction and well-being (Kachanoff et al., 2019). In a series of studies, we asked people about the collective autonomy of their core cultural group—what we defined as the "group you refer to naturally when people ask you what your background is, and you reply 'I am x.'" Our samples were diverse; participants named 41–90 different core cultural groups (across the different samples) on the basis of national, religious, ethnic, and racial identities (or a combination of these identities). Participants rated their perception of collective autonomy restriction with items such as "Other groups have tried to control what we should value and believe" and "Other groups have tried to control what customs and practices we should follow." We assessed personal autonomous need satisfaction as the average of the autonomy-need-satisfaction and autonomy-need-frustration (reverse-scored) items developed by Sheldon and Gunz (2009). We also assessed psychological well-being using indices of eudaimonic and hedonic well-being. We found that participants individually felt less personally autonomous (i.e., they personally felt pressured, controlled, and unable to do things in their own way) the more they felt that their core cultural group was not free to express its own culture. As a consequence of its undermining effect on personal autonomy, perceiving collective autonomy restriction indirectly reduced psychological well-being. Our results were robust across relatively individualistic nations (e.g., Canada, England, and the United States) and collectivistic nations (e.g.,

India and the Philippines). Our results were also robust controlling for important factors considered within the individual-focused BPNT approach, including whether people felt their autonomy was personally supported by the other members of their group or whether people had autonomous versus controlled motivation for expressing their culture (e.g., Chirkov et al., 2003). These findings are replicable; in an independent set of studies, Parker et al. (2019) found that perceiving that one's group is free to express its own social identity (vs. held back by external pressures in society) was robustly associated with autonomous need satisfaction (vs. frustration) among large samples of Americans and Australians.

The impact of collective autonomy on personal autonomy also generalizes beyond the context of ethnicity, race, religion, or nationality. My colleagues and I have found that members of the LGBTQ+ communities of Canada and the United States personally experienced less autonomous need satisfaction and, as a consequence, less psychological well-being when they reflected on how their LGBTQ+ community lacked (vs. enjoyed) collective autonomy (Kachanoff, Cooligan et al., 2020). Our effects were robust controlling for whether community members felt that their family, friends, and peers personally supported their autonomy, and whether community members personally felt they could be open about their sexual identity (Legate, Ryan, & Rogge, 2017; Legate, Ryan, & Weinstein, 2012).

Taken together, this work highlights the importance of considering both whether people perceive that others personally support them as individuals, and whether their social group as a whole has collective autonomy in its society.

### A Group-Conscious Approach to Studying Relatedness Needs

Little research within SDT has considered whether individual relatedness need satisfaction is impacted by people's perception that their group as a whole is accepted in society. However, research applying the social identity approach (Schmitt et al., 2014; Wirth & Williams, 2009) can inform this question. In a meta-analysis, Schmitt and colleagues (2014) found that perceiving one's group to be the target of discrimination has an overall negative effect on esteem, an outcome closely linked to relatedness (Leary et al., 1995). Although relatedness needs were not directly assessed in this work, these findings provided some indication that perceiving one's group to be rejected in society might frustrate an individual's relatedness needs.

Research by Wirth and Williams (2009) also provides evidence that perceiving one's group to be rejected might frustrate relatedness needs. Wirth and Williams had participants experience ostracism either on the basis of an important social group identity (their sex) or in a way that was not tied to their group. Participants experienced ostracism by playing Cyberball, a powerful manipulation of social rejection in which participants control a virtual avatar in a video game and toss a ball to two other players. Eventually, participants are excluded from the game when two other players choose to throw the ball only

to one another. In Wirth and Williams's focal condition, participants saw that their avatar was a different sex from the other two avatars. In the control condition, participants experienced ostracism, but no sex differences between the avatars were made salient. Critically, people who experienced group-based ostracism had a more difficult time recovering their sense of relatedness after cyberball compared to people who experienced ostracism that was not tied to their group. In this work, participants personally experienced the group-based ostracism. Thus, this work does not directly test whether people's perception that their group as a whole is rejected undermines relatedness needs. Still, it is notable that Wirth and Williams found that group-based ostracism was more difficult to recover from than general ostracism (i.e., personal rejection was experienced in both conditions).

Importantly, two recent studies applying a group-conscious BPNT approach found that perceptions that one's group is accepted (vs. rejected) in society related to people's own relatedness need satisfaction among large samples of Australians and Americans (Parker et al., 2020). Future BPNT research could look to extend these findings: For instance, future work could apply a similar approach used by Thomas and colleagues (2017; in the context of autonomy needs) to assess whether people perceive that other group members feel accepted versus rejected by others. From a group-conscious BPNT perspective, we would hypothesize that individuals would personally feel a diminished sense of relatedness when they perceive that other members of their ingroup also lack a sense of relatedness.

### A Group-Conscious Approach to Studying Competence Needs

Little work within SDT has considered whether an individual's competence needs are impacted by whether they feel their group as a whole is competent. One exception is work by Parker and colleagues (2020) that applied an SDT framework to show how perceiving one's group as competent in terms of its being able to achieve its goals and influence its environment related to personal competence. The association between group competence and personal competence has, however, received substantial attention in research applying the social identity approach (Jugert et al., 2016; Oyserman, Bybee, & Terry, 2006). For example, the identity-based model of motivation suggests that people look to their group members to see what long-term goals are valued, to learn the approach other group members use to succeed at those goals, and to assess whether it is common for group members to succeed (Oyserman, 2007). As a consequence, in contexts where individuals perceive it is normative for other group members to fail at their goals, they may also expect to fail in that context (undermining their competence). For instance, an intensive longitudinal intervention study with low-income and minority high school students suggested that whether students interpreted difficulty in school as a sign of inevitable failure (vs. as a normative part of achievement) was dependent on their perception of academic success (or failure) being normative within their community (Oyserman et al., 2006). By intervening to shift students' understanding of what difficulty meant within the context of their community, Oyserman and colleagues increased students' academic initiative and academic

performance over a two-year period. The findings demonstrate how a core component of feeling competent—believing that one can succeed in the face of adversity—is tied to people's perception that their fellow group members can do the same.

Extensive research also shows that people's knowledge of negative stereotypes about their group's competence in specific domains, referred to as "stereotype threat" (Steele, 1997), can impede their performance when cues of the stereotype are made salient. Even if people personally reject negative stereotypes about their group, situations which elicit concern that others look to judge their performance with an eye to confirm negative stereotypes can undermine performance (Shapiro & Neuberg, 2007; Lewis & Michalak, in press). An avenue for future group-conscious BPNT research is to consider how environments may be competence-need-thwarting in terms of whether they cue negative group stereotypes.

## Implications and Future Directions of the Group-Conscious BPNT Approach

In this chapter I reviewed research supporting a group-conscious BPNT approach that shows how individuals' psychological need satisfaction is impacted by whether they perceive their fellow group members and social groups to be autonomous, related, and competent. I conclude with implications and future directions for the group-conscious BPNT approach.

### Turning to Group Contexts

The group-conscious BPNT approach suggests the importance of SDT researchers considering how large-scale inter- and intragroup contexts shape an individual's own psychological need satisfaction. While past work in SDT has considered how the cultural context of one's group (e.g., horizontal vs. vertical cultural contexts) shape whether group members can fully integrate their culture (e.g., Chirkov et al., 2003), there are many other group contexts which could be studied through the lens of SDT. For example, how do megathreats to a group (Leigh & Melwani, 2019), like the death of George Floyd among the Black community, impact the psychological need satisfaction of individuals? Research applying a social-identity-based approach has addressed this question by focusing on people's emotion and esteem (Leigh & Melwani, 2019). A group-conscious BPNT approach could further enrich our understanding of this process by outlining its impact on psychological need satisfaction.

Applying a group-conscious approach also involves assessing intergroup-relevant *outcomes* not typically considered within SDT (see Kachanoff et al., 2022 for review). For instance, my colleagues and I have applied an SDT framework to show how threats to collective autonomy motivate disadvantaged groups (e.g., Black Americans) and advantaged groups (e.g., white Americans) to engage in collective action (Kachanoff, Kteily et al., 2020). In other work, my colleagues and I found that collective autonomy support in

an intergroup apology from a transgressing group to a victimized group can enhance reconciliation (Kachanoff et al., 2017). Future research could consider how other intergroup outcomes (e.g., intergroup attitudes) are impacted by whether group members feel that their group needs are supported by other groups.

### Revisiting the Liberal Paradox

The group-conscious BPNT approach also has implications for SDT's stance on cultural relativism. SDT challenges cultural relativism by arguing that certain cultural practices are always damaging because they inherently frustrate psychological needs (e.g., infibulation; Ryan & Deci, 2017, Chapter 22). Even strong advocates of cultural relativism, including Kymlicka, Walzer, and Taylor, have struggled to reconcile their general tenet of not interfering with the culture of other groups when a group's practices violate what they perceive as fundamental individual rights (see O'Neill, 1999 for review). This tension between the rights (needs) of the individual and the rights (needs) of the group is termed "the liberal paradox." If we approach the liberal paradox from the lens of the individual-focused BPNT perspective, we might prioritize protecting the needs of individual group members at the cost of interfering with the group's needs to determine its own culture without interference. However, the group-conscious BPNT approach suggests that it may be difficult to disentangle the rights (needs) of the individual from the rights (needs) of the group. Thus, outside interference of a group's culture might undermine the very individual needs that interference was intending to protect. Future work could test if perceiving restriction of cultural practices deemed harmful by an outside group has overall positive or negative consequences for group members' need satisfaction and well-being. Indeed, Verkuyten, Yogeeswaran, and Adelman (2020) review evidence that perceived intolerance of one's culture by other groups undermines psychological need satisfaction. In fact, even perceived tolerance can be harmful to group members because it implies that outside groups have the power to determine what one's group can do.

### Power

When applying the group-conscious BPNT approach it is important to consider how perceptions of power differentials between individuals (groups) providing and receiving autonomy support can have different implications in interpersonal versus intergroup contexts. SDT has documented the positive consequences of autonomy support both within interpersonal relationships that typically have symmetrical power dynamics (e.g., friendship or romantic relationships) and that typically have asymmetrical power dynamics (e.g., parent-child, teacher-student, doctor-patient relationships). For autonomy support to be constructive within asymmetrical interpersonal relationships, it is assumed that the person providing autonomy support (e.g., a parent, teacher, or doctor) has legitimate power to advise the person receiving support (e.g., a child, student, patient). Moreover, within asymmetrical interpersonal relationships it is also assumed that the provider of support

has the best interests of the person receiving support in mind: parents are assumed to care about their children and doctors are assumed to care about their patients. Intergroup contexts, however, may be more complex because they are often hierarchical and competitive (Sidanius et al., 2017) and because group members often assume the worst about the intentions of other group members (Lees & Cikara, 2020). As such, groups might find it disrespectful to even assume that another group would be in a position where it had power to offer directives to their group even if those directives were communicated in an autonomy-supportive way (Verkuyten et al., 2020). Future work is needed to explore whether groups are ever willing to receive directives from other groups, and if so, what characteristics of the intergroup relationship (e.g., trust, positive contact) and transmission of directives (e.g., autonomy-supportive language) might lead to groups accepting autonomy-supportive directives from others.

Future research should also consider whether power differences between groups moderate the negative impact of group-need threat on group members; for instance, Schmitt and colleagues (2014) find that the detrimental effects of discrimination on well-being are larger for disadvantaged compared to advantaged groups. In other work, Kachanoff, Kteily et al. (2020) found that deprivation of group needs led disadvantaged groups to challenge the status quo, but advantaged groups to legitimize the status quo (presumably because the status quo is designed to satisfy the needs of advantaged but not disadvantaged groups). These nuances suggest the important implications that taking power into account may have for how researchers study psychological need satisfaction in intergroup contexts.

### Differentiating between Group-Need Support and Group-Need Satisfaction

SDT makes important distinctions between psychological need satisfaction (Sheldon & Gunz, 2009) and psychological need support. So far, however, different research teams applying a group-conscious BPNT approach diverge in whether they assess group-need satisfaction in a general sense without direct reference to other groups (see Parker et al., 2019) versus the perception that other groups support or thwart the needs of one's group (see Kachanoff et al., 2019, Kachanoff, Cooligan et al., 2020). Thus, these two approaches assess need satisfaction versus need support at the group level, respectively. Future work is needed to integrate both elements into one model.

### Multiple Group Identities

Future work applying the group-conscious BPNT approach should consider how people simultaneously juggle multiple social identities (see Gardner & Garr-Schultz, 2017). For instance, someone might identify as Latinx, a man, and a Latinx man. That person might vary in terms of how much they feel the SDT needs (at the group level) are being satisfied for each group. Important questions arise: Is the individual's personal need satisfaction the sum of how much they generally perceive the needs of each group to be satisfied? Or

is their individual need satisfaction a function of which of the three social identities is salient? For instance, social categorization theory (Turner et al., 1987) suggests that people are most impacted by the social identity which is salient (or turned on) within their environment. Past SDT research has examined the impact of need satisfaction across different domains (Milyavskaya & Koestner, 2011) using ecological momentary assessment and multilevel analysis. Future work could apply a similar approach to assess how perceived group-need satisfaction of multiple different social identities relevant to an individual impact the individual's need satisfaction over time depending on their salience.

## Summary

In this chapter I outlined and reviewed evidence to support the group-conscious approach to BPNT. The traditional BPNT approach has primarily considered whether individuals personally feel that their basic psychological needs are directly satisfied as they navigate their social environment. Building on this framework, the group-conscious BPNT approach suggests that SDT-based research should additionally consider whether people feel that the needs of their group (and of their fellow group members) are met in intra- and intergroup contexts. Because people derive part of their personal identity from social groups and because people experience an empathic connection (or fusion) with fellow group members, people may personally suffer need-thwarting when they feel that the basic needs of their fellow group members are thwarted. In other words, people are not like solitary plants that depend only on the minerals that touch their roots; they are more like cross-pollinating trees that also depend on the vitality of the trees around them to flourish. By considering people's perception of whether other members within their group (and their group as a whole) experience need satisfaction, the group-conscious BPNT approach offers exciting new directions for SDT researchers to gain a holistic understanding of when people satisfy their basic psychological needs for autonomy, relatedness, and competence.

## References

Burrelli, D. F., & Feder, J. (2009). *Homosexuals and the U.S. military: Current issues.* Congressional Research Service Report for Congress. Congressional Research Service.

Burns, K. (2020). Why Republicans are suddenly in a rush to regulate every trans kid's puberty. *Vox*, January. Retrieved from https://www.vox.com/identities/2020/1/29/21083505/transgender-kids-legislation-puberty-blockers

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B. Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, *39*, 216–236.

Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology*, *84*, 97–110. doi:10.1037/0022-3514.84.1.97

Cooper, W. (2016). The scared white people who love Donald Trump. *Vice*, July 12. Retrieved from https://www.vice.com/en_us/article/wdbqwb/the-alt-rights-fear-of-a-black-planet

Delgardo, D. (2019). I served 30 years in the military. Trump's transgender ban calls me unfit. *Time*, November 9. Retrieved from https://time.com/5721582/transgender-military-veterans-day/

Downie, M., Koestner, R., & Chua, S. N. (2007). Political support for self-determination, wealth, and national subjective well-being. *Motivation and Emotion, 31*, 174–181. doi:10.1007/s11031-007-9070-0

Gardner, W. L., & Garr-Schultz, A. (2017). Understanding our groups, understanding ourselves: The importance of collective identity clarity and collective coherence to the self. In J. Lodi-Smith & K. G. DeMarree (Eds.), *Self-concept clarity* (pp. 125–143). Springer.

Greenaway, K. H., Cruwys, T., Haslam, S. A., & Jetten, J. (2016). Social identities promote well-being because they satisfy global psychological needs. *European Journal of Social Psychology*, *46*(3), 294–307. doi:10.1002/ejsp.2169

Haslam, S. A., Jetten, J., Postmes, T., & Haslam, C. (2009). Social identity, health and well-being: An emerging agenda for applied psychology. *Applied Psychology: An International Review*, 58, 1–23. doi:10.1111/j.1464-0597.2008.00379.x

Hogg, M. A. (2000). Subjective uncertainty reduction through self-categorization: A motivational theory of social identity processes. *European Review of Social Psychology*, *11*, 223–255. doi:10.1080/14792772043000040

Hornsey, M. J. (2008). Social identity theory and self-categorization theory: A historical review. *Social and Personality Psychology Compass*, *2*, 204–222. doi:10.1111/j.1751-9004.2007.00066.x

Jugert, P., Greenaway, K. H., Barth, M., Büchner, R., Eisentraut, S., & Fritsche, I. (2016). Collective efficacy increases pro-environmental intentions through increasing self-efficacy. *Journal of Environmental Psychology*, *48*, 12–23. doi:10.1016/j.jenvp.2016.08.003

Kachanoff, F. J., Gray, K., Koestner, R., Kteily, N., & Wohl, M. J. (2022). Collective autonomy: Why groups fight for power and status. *Social and Personality Psychology Compass*, *16*(1), e12652. doi: 10.1111/spc3.12652

Kachanoff, F. J., Caouette, J., & Wohl, M. J. A., & Taylor, D. M. (2017). Allowing the victim to draw a line in history: Intergroup apology effectiveness as a function of collective autonomy support. *European Journal of Social Psychology, 47*, 663–676. doi:10.1002/ejsp.2260

Kachanoff, F. J., Cooligan, F., Caouette, J., & Wohl, M. J. (2020). Free to fly the rainbow flag: The relation between collective autonomy and psychological well-being amongst LGBTQ+ individuals. *Self and Identity*, *20* 1–33. doi:10.1080/15298868.2020.1768890

Kachanoff, F. J., Kteily, N. S., Khullar, T. H., Park, H. J., & Taylor, D. M. (2020). Determining our destiny: Do restrictions to collective autonomy fuel collective action? *Journal of Personality and Social Psychology*, *119*, 600–632. doi:10.1037/pspi0000217

Kachanoff, F. J., Taylor, D. M., Caouette, J., Khullar, T. H., & Wohl, M. J. A. (2019). The chains on all my people are the chains on me: Restrictions to collective autonomy undermine the personal autonomy and psychological well-being of group members. *Journal of Personality and Social Psychology*. 116, 141–165. doi:10.1037/pspp0000177

Kachanoff, F. J., Wohl, M. J., Koestner, R., & Taylor, D. M. (2020). Them, us, and I: How group contexts influence basic psychological needs. *Current Directions in Psychological Science*, *29*, 47–54. doi:10.1177/0963721419884318

Koussens, D. (2020). Nationalistic secularism and the critique of Canadian multiculturalism in Quebec. In R. Mielusel & S.E Pruteanu (Eds.), *Citizenship and belonging in France and North America* (pp. 17–32). Palgrave Macmillan.

Lajimodiere, D. K. (2014). *American Indian boarding schools in the United States: A brief history and legacy*. In Institute for the Study of Human Rights. *Indigenous peoples' access to justice, including truth and reconciliation process*. Columbia Academic Commons.

Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, *68*, 518–530. doi:10.1037/0022-3514.68.3.518

Lees, J., & Cikara, M. (2020). Inaccurate group meta-perceptions drive negative out-group attributions in competitive contexts. *Nature Human Behaviour*, *4*, 279–286. doi:10.1038/s41562-019-0766-4

Legate, N., Ryan, R. M., & Rogge, R. D. (2017). Daily autonomy support and sexual identity disclosure predicts daily mental and physical health outcomes. *Personality and Social Psychology Bulletin*, *43*, 860–873. doi:10.1177/0146167217700399

Legate, N., Ryan, R. M., & Weinstein, N. (2012). Is coming out always a "good thing"? Exploring the relations of autonomy support, outness, and wellness for lesbian, gay, and bisexual individuals. *Social Psychological and Personality Science*, *3*, 145–152. doi:10.1177/1948550611411929

Leigh, A., & Melwani, S. (2019). #BlackEmployeesMatter: Mega-threats, identity fusion, and enacting positive deviance in organizations. *Academy of Management Review*, *44*, 564–591. doi:10.5465/amr.20170127

Lewis, N. A., Jr., & Michalak, N. M. (in press). Has stereotype threat dissipated over time? A cross-temporal meta-analysis. *Comprehensive Results in Social Psychology*. https://doi.org/10.31234/osf.io/w4ta2

Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin*, *18*, 302–318.

Mageau, G. A., Ranger, F., Joussemet, M., Moreau, E., Koestner, R., & Forest, J. (2015). Validation of the Perceived Parental Autonomy Support Scale (P-PASS). *Canadian Journal of Behavioural Science*, *47*, 251–262. doi:10.1037/a0039325

Mandela, N. (1995). *Long walk to freedom: The autobiography of Nelson Mandela*. Back Bay Books.

Milyavskaya, M., & Koestner, R. (2011). Psychological needs, motivation, and well-being: A test of self-determination theory across multiple domains. *Personality and Individual Differences*, *50*, 387–391. doi:10.1016/j.paid.2010.10.029

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and Research in Education*, *7*, 133–144.

O'Neill, D. I. (1999). Multicultural liberals and the Rushdie affair: A critique of Kymlicka, Taylor, and Walzer. *Review of Politics*, *61*, 219–250. doi:10.1017/S0034670500051986

Oyserman, D. (2007). Social identity and self-regulation. In A. Kruglanski, & T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (pp. 432–453). Guilford Press.

Oyserman, D., Bybee, D., & Terry, K. (2006). Possible selves and academic outcomes: How and when possible selves impel action. *Journal of Personality and Social Psychology*, *91*, 188–204. doi:10.1037/0022-3514.91.1.188

Parker, P., Ryan, R., Duineveld, J., & Bradshaw, E. (2019). Validation of the Social Identity Group Need Satisfaction and Frustration Scale. April 18. Unpublished manuscript available at https://doi.org/10.31234/osf.io/ycbwe

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68–78. doi:10.1037/0003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Schmitt, M. T., Branscombe, N. R., Postmes, T., & Garcia, A. (2014). The consequences of perceived discrimination for psychological well-being: A meta-analytic review. *Psychological Bulletin*, *140*, 921–948. doi:10.1037/a0035754

Shapiro, J. R., & Neuberg, S. L. (2007). From stereotype threat to stereotype threats: Implications of a multi-threat framework for causes, moderators, mediators, consequences, and interventions. *Personality and Social Psychology Review*, *11*, 107–130. doi:10.1177/1088868306294790

Sheldon, K. M., & Gunz, A. (2009). Psychological needs as basic motives, not just experiential requirements. *Journal of Personality, 77*, 1467–1492. doi:10.1111/j.1467-6494.2009.00589.x

Sidanius, J., Cotterill, S., Sheehy-Skeffington, J., Kteily, N., & Carvacho, H. (2017). Social dominance theory: Explorations in the psychology of oppression. In C. G. Sibley & F. K. Barlow (Eds.), *The Cambridge handbook of the psychology of prejudice* (pp. 149–187). Cambridge University Press. doi:10.1017/9781316161579.008

Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, *5*, 613–629. doi:10.1037/0003-066X.52.6.613

Swann, W. B., Jr., Jetten, J., Gómez, Á., Whitehouse, H., & Bastian, B. (2012). When group membership gets personal: A theory of identity fusion. *Psychological Review*, *119*, 441–456. doi:10.1037/a0028589

Tajfel, H. (1978). *Differentiation between social groups*. Academic Press.

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Worchel & S. Austin (Eds.), *The social psychology of intergroup relations* (pp. 33–47). Brooks/Cole.

Taylor, D. M. (1997). The quest for collective identity: The plight of disadvantaged ethnic minorities. *Canadian Psychology/Psychologie Canadienne*, *38*, 174–190. doi:10.1037/0708-5591.38.3.174

Taylor, D. M., Wright, S. C., Moghaddam, F. M., & Lalonde, R. N. (1990). The personal/group discrimination discrepancy: Perceiving my group, but not myself, to be a target for discrimination. *Personality and Social Psychology Bulletin*, *16*, 254–262. doi:10.1177/0146167290162006

Thomas, E. F., Amiot, C. E., Louis, W. R., & Goddard, A. (2017). Collective self-determination: How the agent of help promotes pride, well-being, and support for intergroup helping. *Personality and Social Psychology Bulletin*, *43*, 662–677. doi:10.1177/0146167217695553

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987). *Rediscovering the social group: A self-categorization theory*. Blackwell.

Usborne, E., & Taylor, D. M. (2010). The role of cultural identity clarity for self-concept clarity, self-esteem, and subjective well-being. *Personality and Social Psychology Bulletin*, *36*, 883–897. doi:10.1177/0146167210372215

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic psychological need theory: Advancements, critical themes, and future directions. *Motivation and Emotion*, *44*, 1–31.doi:10.1007/s11031-019-09807-4

Verkuyten, M., Yogeeswaran, K., & Adelman, L. (2020). The negative implications of being tolerated: Tolerance from the target's perspective. *Perspectives on Psychological Science*, *15*, 544–561. doi:10.1177/1745691619897974

Wilk, P., Maltby, A., & Cooke, M. (2017). Residential schools and the effects on Indigenous health and well-being in Canada—A scoping review. *Public Health Reviews*, *38*, 1–23.

Wirth, J. H., & Williams, K. D. (2009). "They don't like our kind": Consequences of being ostracized while possessing a group membership. *Group Processes & Intergroup Relations*, *12*, 111–127. doi:10.1177/1368430208098780

# A Self-Determination Theory Perspective on Stigma and Prejudice

William S. Ryan *and* Annabelle Moore

## Abstract

A large body of research documents the negative impact of being a member of a stigmatized group on well-being. Despite these population-level findings, research suggests that there is considerable variation in the well-being of members of stigmatized groups such that although some individuals may be suffering, others may be flourishing. This chapter uses self-determination theory (SDT) as a framework for discussing key determinants of this variation. Stigma represents a social condition of prejudice that can directly thwart people's basic psychological needs for autonomy and relatedness. The chapter focuses on the role of basic psychological need support and thwarting, particularly in relation to autonomy, in understanding the internalization of negative attitudes toward the self and others; the impact of stigma on well-being through intrapersonal, interpersonal, and institutional-level processes; and the regulation and change of prejudicial attitudes and discrimination. Interpersonal and institutional supports for autonomy and relatedness can reduce the extent to which stigmatizing experiences occur, as well as the harms that follow. Insofar as our modern world has become increasingly global and multicultural, these issues of stigma, prejudice, and inclusion have become correspondingly more salient. This thus represents an important area for continued research and intervention development to which SDT has much to offer.

**Key Words:** self-determination theory, stigma, prejudice, autonomy, well-being, identity development

The vast majority of articles on stigma and prejudice begin with a set of statistics illustrating the deleterious effect that these have on the mental and physical health of marginalized groups. While documenting these intergroup deficits is indeed important, doing so can make it seem as if such suffering is an inevitable part of having a marginalized identity. Yet these statistics describing population averages often don't reveal the great variability in well-being within the groups being compared. Although some individuals may be suffering, others may be flourishing. Indeed, stigma and the negative consequences for well-being that follow from it are features of the social context in which individuals are imbedded. Self-determination theory (SDT) provides a theoretical lens through which to examine variations in stigma across social contexts as they impact supports for psychological needs, particularly the need for autonomy.

At its core, autonomy support is support for the person's authentic self (Ryan & Ryan, 2019). Such support is, as we see throughout SDT, essential for all persons to flourish (Ryan & Deci, 2017). Personal autonomy entails a sense of volition and agency in determining and acting in accord with one's own personal identity (Deci & Ryan, 1995; Weinstein, Przybylski, & Ryan, 2012). Abundant evidence shows that autonomy is associated with well-being across cultures and developmental periods (e.g., Chen et al., 2015; Vansteenkiste, Ryan, & Deci, 2008). Yet, as we will discuss in this chapter, the support and thwarting of autonomy play out in particular ways in the context of stigma, prejudice, and discrimination, for both actor and target. Indeed, basic need support, and in particular support for autonomy, plays a key role in understanding the internalization of negative attitudes toward the self and others, the impact of stigma on well-being through intrapersonal, interpersonal, and institutional-level processes, and the regulation and change of prejudicial attitudes and discrimination.

## Defining Stigma

Stigma is classically defined as a feature or characteristic that marks a person as different from, and devalued by, others within a social context (Goffman, 1963). Key features of stigma thus include the categorization and labeling of the stigmatized "other" as different and separate from "us" and the devaluation of the "other" in relation to this normative "us" (Link & Phelan, 2001). The nature of this difference can vary depending on the features of the stigmatized identity. One of the key differences between stigmatized identities that Goffman (1963) identified is whether the identity is considered "tribal" or passed down and shared within families. Such tribal stigmas may be culturally transmitted (e.g., via religion) or via a combination of genetics and culture (e.g., via ethnicity). Other key differences are how visible the stigmatized identity is to others and the extent to which the difference is perceived by others to be under the individual's control (Crocker, Major, & Steele, 1998; Jones et al., 1984). These dimensions provide an organizing framework for examining the similarities and differences between the treatment and experiences of members of different stigmatized groups.

Definitionally, stigma is specific to and embedded within the social context (rather than within the individual). Anyone can therefore be the subject of stigma if the context is right (e.g., a Republican in a room full of Democrats). Yet when discussing stigma, most researchers and even Goffman himself focus on individuals and groups that are systematically stigmatized across multiple, if not the majority of social contexts (e.g., individuals with mental health diagnoses, individuals with disabilities, sexual and gender minorities, and people of color).

*Pervasive stigma*—that is, stigma across many contexts—may lead to broad negative stereotypes and attitudes that are internalized by both those "marked" and those "unmarked" by the stigma, leading to self-stigma, prejudice, and discrimination. Thus, while stigma definitionally resides in the social context, culturally pervasive stigmas may

be internalized such that the stigma becomes embedded in the person as well. When applied to the self, this results in self-stigma or *internalized stigma*; when applied to others, it leads to prejudice and discrimination. Stigma is embedded not only within individuals but within institutions (Link & Phelan, 2001), reifying systemic marginalization of and discrimination against stigmatized groups and contributing to the internalization of negative attitudes. Such negative attitudes from both others and the self will certainly have negative implications for the well-being of stigmatized persons and, as we will see, for those enacting discrimination as well.

The contextual nature of stigma also has the important implication and recognition that we can change the social context. Individuals can move away from stigmatizing contexts and toward environments of support. The social context of interpersonal interactions also holds the potential for change (e.g., by changing attitudes such that the formerly stigmatized identity, while still different, is no longer devalued). At a broader social and structural level, we can change policy and attitudes to reduce the number and types of contexts in which individuals are singled out as different and/or in which their identities are devalued.

SDT's focus on the support of basic psychological needs, and autonomy support in particular, provides guidance on how we can change these contexts to promote flourishing for all individuals and, in particular, members of oppressed and marginalized groups. As a theory of human development, motivation, and well-being, SDT has a lot to say about both why individuals engage in discriminatory actions and the impact this has on the target of such actions. What motivates such negative views and treatment of others? How do these negative attitudes and actions impact how stigmatized individuals view themselves? How can we reduce the pervasiveness and intensity of negative attitudes and improve the well-being of stigmatized groups? In this chapter we utilize SDT as a framework to address each of these questions.

## The Internalization of Stigmatizing Attitudes toward Self and Other

### The Self and Identity Formation

SDT is concerned with the health and flourishing of the self. Rather than viewing the self as object, SDT considers the self as a process or as the initiator and synthesizer of one's experiences (Ryan, 1995; Ryan & Deci, 2017). The self is the process by which one attempts to integrate the various identities, roles, and characteristics that we encounter through our experience with the world. Identity formation is the process of accepting and integrating some of these identities and roles and not others (Ratelle & Guay, this volume; Soenens & Vansteenkiste, 2011). Indeed, identities, including stigmatized ones, are not something we are born with, at least in a psychological sense. Instead we learn about the various identities available to us from the social context and the social pressure we experience to adopt some identities and distance ourselves from others. In this same way, we also learn about what identities are socially (un)desirable in others and, to varying

extents, internalize these attitudes as our own. Yet we do not arrive as completely blank slates; there are also drives from within—desires and attractions toward some activities and identities and dislike of/distancing from others. Identities are thus formed under "dual influences of individual diversities and cultural affordances" (Ryan & Deci, 2017, p. 385); they will be internalized to varying degrees depending on the level of need support the individual experiences for this identity. When these intrinsic proclivities clash with the expectations and desires of others, the process of identity integration becomes difficult. Thus, stigmatized identities, which are by definition socially devalued, present a challenge to integrating all aspects of identity into a coherent self, a critical developmental task, as various perspectives have suggested (e.g., Erikson, 1959; Jung, 1959; Rogers, 1963).

### Parental Control and Conditional Regard

One of the earliest and most foundational sources of information about which identities and behaviors are valued (and which are not) is one's parents or primary caregivers. In particular, autonomy need support early in life is critical to development of an integrated and fully functioning self. Autonomy-supportive parents encourage self-expression and self-initiation and communicate acceptance of the emotions and thoughts expressed by their children (Ryan et al., 2006). Controlling parents, however, pressure and/or shame their children to behave in certain ways and communicate that only some identities and emotional experiences are acceptable (Roth & Assor, 2012).

This type of *conditional regard* (Kanat-Maymon, Assor, & Roth, this volume) is associated with more unstable or *contingent self-esteem* (Roth et al., 2009). This instability is based in the insecurity about one's lovability or worthiness communicated by the contingent nature of the love and regard one has received. In short, because others have communicated to one that one's value is contingent, the extent to which one values one's own self also becomes contingent. Conditional regard therefore contributes not only to a low overall sense of self-worth but also to "internally controlling" motivations to hide or reveal aspects self (Assor, Roth, & Deci, 2004). This can lead to the introjection of identities and of negative attitudes toward parts of the self and toward others who embody such presumably undesirable characteristics or identities. For example, Weinstein, Ryan et al. (2012) found that children of parents perceived as more controlling evidenced greater discrepancies between self-reported sexual orientation and an implicit measure of sexual orientation, indicating suppression or distancing of oneself from non-heterosexual attractions. Weinstein, Ryan et al. further showed that this effect was particularly strong when parents expressed homophobic attitudes themselves. In turn, discrepancies between implicit and explicit measures were associated with more homophobic attitudes, greater discriminatory bias toward those perceived to be gay or lesbian, and stronger support for homophobic political policies. Supporting the role of contingent self-esteem as the mechanism underlying such effects, low autonomy support from parents was associated with more contingent self-esteem, which in turn

was associated with a weaker relation between implicit and explicit measures of sexual orientation (i.e., greater suppression).

Notably, the stigmatizing attitudes expressed by parents vary greatly both within and between various identity categories. *Tribal identities*, those passed down within families, are less likely to result in explicit identity-based rejection within the home, compared to nontribal identities, where children are assuming identities different from those of their parents or traditional cultures. LGBTQ identities exemplify such nontribal identities. Data on LGBTQ youth testifies to how rejection from one's family because of one's identity can have devastating effects. Reports suggest that between 20% and 40% of homeless youth are LGBTQ (Center for American Progress, 2010; Maccio & Ferguson, 2016), much higher than the estimated base rate of 7% to 10%. Even when they are not explicitly rejected, LGBTQ youth may receive messages from parents that discount their identities and experiences. For example, results of a qualitative interview study of transgender and gender-diverse young adults suggest that their experiences of their divergent sexual and/ or gender identity being discounted, dismissed, or ignored are common (Brown et al., 2021). On the more positive side, social support from family specifically is a key predictor of mental health among LGB individuals (Al-Khouja, Weinstein, & Legate, 2021).

This is not to say that individuals with tribal stigmas do not get messages about the value of these identities from their parents. In many cases, family members who share the stigmatized identity can serve as a source of positive identity-related messages that can help to counter negative messages from broader society (e.g., Hughes et al. 2006; McHale et al., 2006). However, parents and others in one's community can also communicate controlling messages about how the stigmatized identity should and should not be enacted (e.g., "model minority" messages; Qin, Way, & Mukherjee, 2008). In other words, while parents can aid their children in navigating prejudice and discrimination from others, they may also communicate their own internalized stigma. In one study, Hill et al. (2021) examined intergenerational transmission of internalized racism from first-generation Chinese immigrants to their adolescent children. Using a dyadic prospective approach, the authors collected data on both parents' and adolescents' internalized stigma and cultural values. Three years later, the adolescents (now enrolled in university) were contacted to provide data on their chosen major and career aspirations. Results indicated that there was indeed intergenerational correlation in internalized racism and that higher levels of internalized racism were related to greater likelihood of pursuing science and health professions, consistent with an emphasis on STEM careers as a pathway to success and as a way to avoid potential discrimination (Hughes et al., 2006). The authors posit that internalized racism, even of positive stereotypes, can serve to constrain the expectations parents have for their children, potentially interfering with autonomy need satisfaction.

Another identity group that experiences extensive rejection within the home environment are "overweight" individuals. Indeed, parents are a primary source of negative

feedback about weight (Puhl & Latner, 2007). Although not technically considered a tribal stigma, "overweight" parents are more likely to have children who are "overweight" and thus share in the attribute. Unfortunately, due to high levels of internalized stigma, these parents may also pass on negative messages to their children and/or model implicit negative attitudes regarding weight (Pudney, Himmelstein, & Puhl, 2019). The extent to which weight is perceived to be controllable also predicts the endorsement of antifat biases (Puhl & Latner, 2007).

The potential for and experience of contingent regard and parental rejection may differ greatly depending on the *visibility/concealability* of the stigmatized identity. For example, a child born with a physical disability cannot conceal this from their parents. An overweight individual similarly has a visible attribute associated with pervasive stigma. An LGBTQ adolescent, however, may be able to conceal that identity. This presents critical challenges for those with concealable stigmas, including determining when and with whom one can safely express this identity along with weighing the costs of concealment against those of disclosure (Pachankis, 2007).

## Stigma and Well-Being: The Importance of Autonomy Support

SDT research shows that autonomy support plays a key role in the dynamics of when individuals will conceal or disclose a pervasively stigmatized identity, and the outcomes of such disclosure. For example, Legate, Ryan, and Weinstein (2012) found that LGB individuals were more open about their sexual identity in autonomy-supportive contexts, and that it was only in these contexts that this openness was associated with well-being benefits. By contrast, in settings low in autonomy support LGB individuals were less likely to be "out," and even when they were they experienced fewer well-being benefits from such disclosure. In another study, Ryan, Legate, and Weinstein (2015) examined close others' (including parents') reactions to sexual identity disclosure. They found that receiving negative reactions to identity disclosure, particularly from fathers, was associated with greater symptoms of depression and low self-esteem. Notably, this effect was mediated by a lack of perceived autonomy satisfaction following disclosure. In other words, the impact of negative reactions to disclosure was driven by the thwarting of autonomy inherent in these rejecting responses.

In defining stigma, Goffman (1963) notes that it is an aspect of an individual that engulfs the person in the eyes of others, such that they are defined by this characteristic and devalued because of it. In this way, we can think of stigma as a form of conditional regard—in this case, a negative regard for the person based on the enactment or embodiment of particular devalued characteristics. Indeed, stigma is conditional regard writ large, operating both within interpersonal relationships and across social contexts to communicate which identities are valued within society and which are not. Antithetical to conditional regard is autonomy support, which entails support for another's self-expression, taking the perspective of the other, and facilitating a sense of choice and agency. Thus,

providing autonomy support can be an effective and potent means by which to facilitate positive identity development, particularly among members of stigmatized groups.

*Internalized Stigma and Well-Being*

Wherever stigmatizing messages come from, whether from parents and close others or society at large (or both), they may be internalized. Once internalized, these attitudes, whether applied to the self or to others, have important implications for the well-being of both enactors and targets of stigma.

Thus far we have been using the word "internalize" to refer to how attitudes are adopted and integrated within the self, or how people internalize attitudes and beliefs regardless of whether they apply directly to one's own identity group. In other words, a person can internalize negative attitudes toward LGBTQ individuals, whether or not one identifies as such. Importantly, within the stigma literature, the terms "internalized stigma" and "self-stigma" are used specifically to refer to the adoption and application of negative attitudes toward one's own identity.

Holding negative attitudes toward oneself is, understandably, detrimental to well-being. In fact, internalized stigma is one of the strongest predictors of poor mental health among individuals with concealable stigmas (Mak et al., 2007), including sexual minorities (e.g., Newcomb & Mutanski, 2011) and those with a mental health diagnosis (e.g., Ritsher & Phelan, 2004). Internalized stigma is not, however, a concern unique to concealable stigmas. For example, while there are many more studies on enacted compared to internalized racism, psychological research on this topic is an important area of study (Lipsky, 1987), as is its impact on mental health (Molina & James, 2016), and is an area that is receiving renewed interest (e.g., David, Schroeder, & Fernandez, 2019).

Given the well-documented relation between internalized stigma and reduced well-being, understanding the factors that reduce internalized stigma is key. As discussed above, early stigmatizing messages about one's identity—particularly from parents—likely play an important role in the internalization of negative attitudes toward the self, as they convey contingent regard. Conversely, parents who provide support for their children's autonomy may be able to mitigate the internalization of stigma. Supporting this idea, Legate, Weinstein, Ryan et al. (2019) found that parental autonomy support predicts lower levels of internalized homophobia and better psychological health among LGB individuals. Statistical modeling also suggested that this effect operates through reductions in feelings of shame. Thus, while controlling and prejudiced parents can serve as key sources of negative attitudes toward the self, autonomy-supportive parents may help reduce susceptibility to internalizing negative messages from the broader culture.

Autonomy support in other relationships and contexts is also critical to reducing the negative effects of internalized homophobia on well-being. Research shows that autonomy-supportive contexts are particularly positively associated with wellness (i.e., less depression and anxiety, greater self-esteem) for those higher in internalized homophobia (W. S. Ryan

et al., 2017). Although individuals with high levels of homophobia experience lower well-being on average compared to those with low levels of internalized homophobia, this difference is much less pronounced in contexts in which high levels of autonomy support are received.

More recently, Li, Wang, and Xing (2021) examined the relation between autonomy support from friends and family and depressive symptoms among gay Chinese men. Results indicated that autonomy support from both sources was significantly related to fewer symptoms of depression. In the case of support from friends (but not family), this relation was sequentially mediated by reduced internalized homonegativity and rumination. As this study is cross-sectional, it cannot speak to causal relations between these variables. Still, it highlights the importance of autonomy support for stigmatized individuals across cultures and the need for future longitudinal research on the relation between autonomy support, internalized stigma, and well-being.

### Ownership and Well-Being

Not only do internalized attitudes about one's identity impact well-being, but so too does the way a person relates to their identity and the extent to which they are able to express it authentically. As discussed above, healthy development depends on the assimilation and integration of various identities and experiences, both positive and negative, into a coherent sense of self. Moreover, integration of both negative and positive past identities and experiences predicts greater well-being (Weinstein, Ryan et al., 2012). The construct of identity *ownership* refers to the extent to which an individual has accepted and integrated an identity into their overall construction of self (Weinstein et al., 2017). Stigmatized identities, however, may be more difficult to own due to their devaluation within society. Yet even among members of stigmatized groups, ownership of these identities is related to greater psychological health (Ghavami et al., 2011). Thus, understanding what factors facilitate ownership is important both for identity development and for well-being.

Autonomy support may facilitate greater exploration and ultimately ownership of identities, including and especially those that are socially devalued. In a series of studies, Weinstein et al. (2017) examined the relation of autonomy support from others for a specific identity with ownership and well-being. The authors examined these relations among a range of identities, including stigmatized identities such as race (i.e., Latino/Latina), gender (i.e., women in Saudi Arabia), and sexual orientation (i.e., LGB individuals), as well as other difficult identities self-selected by participants. Results supported the hypothesis that stigmatized identities were indeed associated with lower ownership. Cross-sectional and experimental results indicated that while perceived autonomy support was associated with greater ownership across all types of identities, it had a stronger positive impact on ownership of stigmatized identities compared to nonstigmatized identities. Autonomy support was also positively related to psychological health, and again an interaction between autonomy support and identity type was found, such that

perceiving autonomy support for one's identity had the greatest positive impact on psychological health for stigmatized (compared to nonstigmatized) identities. Thus, similar to the internalized stigma results discussed above, autonomy support had the greatest impact on the well-being of those who needed it most. Importantly, moderated mediation analyses suggest that the effect of autonomy support on psychological health may operate through increased ownership, especially in the case of stigmatized identities (Weinstein et al., 2017).

### Authenticity and Well-Being

The construct of ownership is closely intertwined with that of *authenticity*. Authenticity entails acting in a way that is both *self-authored* and *genuine* (Ryan & Ryan, 2019). That is, authenticity is the experience of one's actions as volitionally enacted, owned, and self-endorsed and reflecting abiding values (Ryan & Ryan, 2019). Because authenticity focuses on self-endorsement as a key component, autonomy is essential and definitional to the experience of authenticity. Authenticity involves not just autonomous action but also genuineness, which involves openness and honesty, letting others see "the real you," and not being disingenuous or "fake" in interactions (Kernis & Goldman, 2006). In short, to be authentic is to reveal one's "real self" in interaction with others.

Like autonomy, authenticity is a construct that varies both within and between individuals. It reflects the variation in the extent to which individuals autonomously endorse their actions and express these freely to others. Although much of the work on authenticity has focused on individual differences in trait authenticity, researchers are increasingly recognizing and studying the significant variation within persons in their authenticity across time and context (e.g., Sedikides et al., 2017). This is consistent with SDT's view of authenticity not as a static characteristic of a person but as a state that is more likely to occur in situations in which basic psychological need support is provided (Ryan & Ryan, 2019). In particular, situational variation in autonomy support predicts feelings of authenticity, feeling close to the "true self," and well-being (Sheldon et al., 1997). Authenticity is thus an "everyday achievement" that may be more or less afforded by the social environment (Ryan & Ryan, 2019). Importantly, greater self-reported authenticity is positively associated with well-being at both the between- and within-person levels (Goldman & Kernis, 2002; Lynch, La Guardia, & Ryan, 2009; Robinson et al., 2013; Sheldon et al., 1997).

Yet this "everyday achievement" of authenticity may be much more difficult for members of stigmatized groups. While it is certainly possible to be authentically oneself as a member of a stigmatized group, one is more likely to face situations in which one's authentic self is devalued or challenged, making it difficult to express oneself openly. Members of stigmatized groups may feel pressure to alter their behavior in an effort to avoid confirming stereotypes or, in the case of concealable stigmas, hide that identity entirely (Crocker et al., 1998). One may understandably choose to behave in ways that are

less authentic in order to reduce the potential of facing rejection, harassment, and other forms of discrimination.

Because LGB identities are still highly stigmatized and often concealable, they offer a way of looking at variation in identity expression across relationships and contexts. Indeed, research suggests that despite dichotomous language about being "in" versus "out of the closet," there is significant variation in identity disclosure (e.g., Cole, 2006) and openness and comfort discussing and expressing this identity across relationships and social contexts (Legate et al., 2012; Mohr & Fassinger, 2000). The construct "outness" (Mohr & Fassinger, 2000) refers to the level of openness and comfort one has discussing one's sexual identity in a given context. A recent study found that only 13% of the variability in how openly bi- and plurisexual individuals expressed this identity across situations was due to stable individual-level differences (Kase & Mohr, 2021).

Within the SDT literature, several studies have examined social and contextual variation in LGB individuals' disclosure and open expression of their sexual-minority identity. Breaking ground on this topic is Legate et al.'s (2012) study examining within-person variation in outness among LGBT individuals across multiple relational contexts, including family, friends, workplace, and faith community. The authors found that individuals varied in their levels of outness across these contexts and, importantly, that outness was predicted by perceived autonomy support in that context. Critically, outness and perceived autonomy support interacted to predict well-being, such that higher levels of outness were associated with greater well-being only in autonomy-supportive contexts. This research highlights the importance of authentic self-expression and provides support for this expression in predicting well-being outcomes.

Subsequently, Legate, Ryan, and Rogge (2017) found further evidence for relations between autonomy support, authenticity, and well-being. The authors used experience-sampling methodology to examine variation in disclosure, well-being, and basic psychological need satisfaction across meaningful social interactions three times a day for two weeks. Disclosure or outness was operationalized in terms of how much the identity was discussed, how comfortable the participant was (or would have been) if the topic of sexual orientation arose in conversation, how much they concealed things about their identity, and whether the participant was concerned about revealing too much. Thus this measure captured variation in participants' experiences of authenticity or transparency versus suppression of their identity. Results indicated that experiencing greater autonomy support in daily interactions predicts greater outness, and that outness in turn predicted greater psychological and physical well-being via fulfillment of psychological need satisfaction.

The importance of contextual support for authentic self-expression in facilitating need satisfaction and ultimately well-being is consistent with research by Al-Khouja et al. (2021) demonstrating that support for self-expression is the key quality of family social support that predicts LGB mental health. Authenticity is important for well-being not just at home but in the workplace as well. Related to this idea, Fletcher and Everly (2021)

found that LGBT individuals' perceptions of supportive workplace practices are associated with greater life satisfaction via the experience of greater authenticity.

Importantly, Legate et al. (2017) also found that variation in outness across interactions was not, in itself, harmful to well-being. In fact, results from their research indicate that greater variability in outness is associated with greater well-being and fewer physical symptoms, suggesting adaptive benefits in facilitating positive and preventing negative identity-relevant interactions. Put differently, these results suggest that identity disclosure is often *selective,* the determinant of disclosure being perceived autonomy support in one's social context. The authors also found that all three basic psychological needs mediate the relation between disclosure and subsequent well-being. This finding suggests that autonomous disclosure may not just facilitate well-being through increased authenticity but also may enhance well-being through increasing experiences of competence and connection to others.

## Ostracism, Social Rejection, and Well-Being

Thus far we have focused on how the support and thwarting of autonomy in social contexts and relationships impacts well-being through internalization and identity-formation-related processes. However, regardless of how one relates to oneself, one may still face social exclusion and other forms of enacted stigma on the basis of one's societally devalued identity. Repeated identity-based exclusion can shape expectations for future interactions in ways that further affect well-being, which we explore in this next section.

### Impact on the Target of Ostracism

Members of stigmatized groups are more likely to be the target of ostracism (Kurzban & Leary, 2001). People may avoid members of stigmatized groups due to their own endorsement of negative stereotypes or out of fear of potential social ramifications of associating with members of a stigmatized group. People may also ostracize others in attempts to restore or enhance their self-esteem, enhance their social identity, or justify specific sociopolitical structures (Crocker et al., 1998).

Research suggests that ostracism elicits robust, negative, and reflexive reactions (Williams, 2009). Much of the experimental research on this topic utilizes the now classic Cyberball paradigm in which participants play a virtual ball-tossing game, in this case with computerized agents whom the participants are led to believe are other study participants (Williams & Jarvis, 2006). In this paradigm, ostracism is manipulated by assigning participants to play with agents who are programmed to include versus exclude them in a virtual game of catch. Studies using this paradigm show that ostracism is highly aversive even when unintentional and even when participants know that a computer, rather than another human, is the source of ostracism (Zadro, Williams, & Richardson, 2004). This is also true even when one is ostracized by despised out-group members (e.g., Black participants ostensibly ostracized by the KKK; Gonsalkorale & Williams, 2007). Whatever

its source, ostracism is associated with worse mood, greater anger, and reduced sense of belonging, control, self-esteem, and meaningful existence (Williams, 2009).

Within SDT, ostracism typically represents a direct thwarting of the target person's need for relatedness (connection and belonging) and need for autonomy (self-expression). Most directly, ostracism frustrates belonging or relatedness needs (Legate et al., 2013) as it by definition prohibits excluded individuals from achieving need-fulfilling relationships with the excluding individuals (Williams & Jarvis, 2006). However, experiencing ostracism has also been shown to thwart competence and autonomy needs (Legate, Weinstein, & Ryan, 2021). Other research suggests that the mood-depressing effects of ostracism may also reduce intrinsic motivation for other activities (Lustenberger & Jagacinski, 2010), which may additionally contribute to need frustration.

Being the target of stigma may influence well-being not only by thwarting psychological needs but by hindering physical health as well. Megías et al. (2018) explicitly examined the impact of experiences of stigma on health through the thwarting of SDT's basic psychological needs. They conducted interviews with and collected daily diary measures from morbidly obese patients after bariatric surgery about their experiences of weight stigma, basic psychological need support, psychological symptoms, and behaviors related to weight regulation. Megías et al. found that experiences of weight stigmatization and discrimination were associated with thwarted autonomy, competence, and relatedness needs; this in turn resulted in psychological symptoms such as depression and anxiety, as well as behaviors that were counterproductive to their goals of weight regulation—namely binge eating and abandoning diet/exercise regimens. This shows that the adverse social and health outcomes commonly associated with obesity can be at least partially attributed to basic psychological need frustration. In other words, at least part of the negative health outcomes associated with obesity are not directly due to the detrimental physiological impacts of obesity, but rather are due to the effect of perceived stigma on basic psychological need fulfillment.

### Impact on the Ostracizer

Whereas a large body of research demonstrates the need-thwarting and negative well-being effects of ostracism on the person being ostracized, recent evidence indicates that the person *doing* the ostracizing also experiences thwarted needs and reduced well-being. Previously we discussed how conditional regard, especially from close others, contributes to an overall low, but also unstable, sense of self-worth. This contingent and precarious sense of worth is in part based on distancing oneself from those who exhibit undesirable characteristics or identities. It is perhaps ironic, then, that excluding others, which is often done in response to threats to self or thwarted needs, leads to further need thwarting.

Legate et al. (2013) first examined the impact of ostracizing others on need satisfaction and well-being in a series of studies utilizing the classic Cyberball paradigm. In their first experiment, Legate et al. instructed participants to play Cyberball under one of three

randomly assigned conditions. In the ostracizer condition, participants were specifically instructed to exclude one of the other two players, who were in reality preprogrammed computer agents. To enhance the ostracism, the third player (computer agent) was programmed to throw only to the excluded player (computer agent) twice in the beginning and then never again. This condition was compared to compliance and neutral conditions. In the compliance condition participants were specifically instructed to throw the ball equally to the other two players, who were programmed to do the same. In the neutral condition no specific instructions on to whom and how often to throw the ball were given, and again the two computer agents were programmed to throw the ball to one another and the participant equally. Controlling for baseline mood, psychological needs, gender, and race, participants in the ostracizer condition reported the lowest levels of autonomy need satisfaction, followed by those in the compliance and then the neutral conditions, which were each significantly different from one another. Ostracizing others was also associated with reduced relatedness satisfaction and greater negative affect relative to the other two conditions. Further, mediational analyses suggest that the impact of the condition on negative affect was driven by the thwarting of autonomy and relatedness needs. Thus, similar to being ostracized oneself, ostracizing others (even when specifically instructed to do so) increases negative affect via thwarted autonomy and relatedness needs.

In a second experiment, Legate et al. (2013) replicated and extended these findings, directly comparing the psychological costs of ostracizing others to being ostracized oneself. Here, the compliance condition from Study 1 was replaced by the aforementioned ostracized condition, in which the Cyberball game is programmed such that the participant receives the ball twice at the beginning of the game and then never again. In both the ostracized and ostracizer conditions, negative affect was significantly greater than in the neutral condition. Examining specific negative emotions, however, revealed that while distress was high in both of these conditions, shame and guilt were significantly greater only in the ostracizer condition, and anger was significantly greater only in the ostracized condition. Importantly, thwarted autonomy occurred only in the ostracizer condition (relative to the neutral condition), whereas relatedness needs showed evidence of being thwarted in both the ostracizer and ostracized conditions. Again, the impact of the condition (ostracizer or ostracized compared to neutral) on negative affect was fully mediated by need thwarting. Taken together, these results suggest that when people comply with instructions to exclude others, they experience a thwarting of autonomy and relatedness, which drives greater negative affect.

In this research, participants were instructed to engage in the ostracizing behavior without rationale or justification. It is thus possible that the effects on mood are driven by the lack of a clear justification for one's hurtful actions toward the other. Legate et al. (2021) explicitly examined this question in a recent paper. In their first study, they examined the impact of both sides of ostracizing experiences on well-being using a daily diary methodology to examine ostracism effects as they occur in vivo. Results indicated that

both on days when participants were ostracized as well as on days when they ostracized others, they reported thwarted needs for autonomy and relatedness and worse psychological health than those who did not have ostracizing or ostracized experiences (Legate et al., 2021). This suggests that the need-thwarting effects of ostracizing others are not limited to instances of mere compliance.

In a second study Legate et al. (2021) examined this question by experimentally comparing the psychological impact of four conditions in which participants thought back to a time when they (1) were pressured to engaged in ostracism, (2) engaged in justified ostracism, (3) were the victim of ostracism, or (4) had a meaningful interaction with someone (control condition). Although participants who recalled ostracizing someone else due to social pressure reported being more thwarted in their autonomy than those who recalled a time they engaged in ostracism that felt justified, even justified ostracism took a toll on well-being via the thwarting of autonomy and relatedness needs (compared to those instructed to think of a meaningful interaction). Taken together, these results support SDT's contention that hurting others—even when seemingly justified and therefore endorsed rather than coerced—thwarts psychological needs. This research speaks to the principle that doing harm to others is difficult to do in a truly autonomous manner. Antisocial actions, including stigmatizing others, may be difficult to integrate or "own," and thus do not only alienate one from others but alienate one from oneself as well.

Holding prejudicial attitudes may impact not only psychological well-being but also physiological indicators of stress. Research suggests that interacting with out-group members can have different physiological effects depending on the extent of the prejudicial attitudes held. Specifically, Page-Gould, Mendoza-Denton, and Tropp (2008) found that during interracial interactions between white and Latino/a participants, implicit prejudice was associated with greater physiological stress, as indexed by increased cortisol. Race-based rejection sensitivity was also associated with increased cortisol, indicating that the stress of intergroup interactions is moderated by the attitudes and expectations of both parties.

## Institutional-Level Processes and Pervasive Influences on Well-Being

Psychological research on stigma and prejudice both from SDT and more generally has tended to focus on intrapersonal processes within the stigmatized person and the immediate interpersonal contexts in they are embedded. Indeed, we have reviewed much literature in which the individual and their perceptions of self along with the proximal social context (e.g., family, friends, coworkers, religious community) is the focus. More recently, there has been growing interest in and research within SDT on examining the broader sociopolitical contexts in which these interactions are embedded (R. M. Ryan et al., 2017). SDT suggests that the impact of these institutional- and cultural-level processes on well-being is due to the relative support versus thwarting of basic psychological needs, as well as the types of goals and values citizens internalize.

*Civil Liberties and Cultural Capabilities*

Cultures, political environments, and economic systems differentially support and thwart basic psychological needs (Ryan & DeHaan, this volume). Indeed, research by Chirkov (2011; Chirkov et al., 2003) suggests that country-level authoritarian beliefs and hierarchical practices restrict individual autonomy. Within the laboratory context, restricting freedom regarding policymaking is associated with thwarted autonomy and less communal cooperation in a resource-sharing game (DeCaro, Janssen, & Lee, 2015). Not only do sociopolitical systems differ in their ability to fulfill psychological needs in general, but they may also differ in the extent to which they do so for members of different identity categories. For example, Weinstein, Legate et al. (2021) examined the impact of civil liberties, or laws and policies that govern individual rights and freedoms, on health satisfaction. The authors examined the civil liberties afforded across 79 countries, finding that in countries with low to average levels of civil liberties women reported less health satisfaction than men, an effect that was mediated by a lack of individual autonomy among women. In countries with high levels of civil liberties, individual autonomy was high for both men and women, and although women still reported lower health satisfaction than men, this effect was not mediated by low autonomy.

SDT researchers have also examined the impact of sociopolitical systems on well-being using the *capabilities* approach (Nussbaum, 2000; Sen, 2005), which outlines the social and material conditions essential for human flourishing, or the ability to achieve valued functioning and goals. Nussbaum's 10 capabilities include, among others, the ability and freedom to experience and express emotions, political and material control over one's environment, and bodily integrity (i.e., freedom of movement and freedom from fear of violence). Research by DeHaan, Hirai, and Ryan (2015) found that the impact of these capabilities on well-being was mediated by the relative satisfaction (or lack thereof) of basic psychological needs.

Similar to and building off the capabilities research is the primary goods approach (Rawls, 1971/2009), which focuses on a just political system that fairly distributes conditions required for citizens to freely pursue the good life (Bradshaw et al, 2021). These primary goods, which include basic rights and liberties, freedom of movement, and social basis for self-respect, among others, are posited to be essential, or *primary*, in establishing the social conditions needed for both community and individual well-being and flourishing. Such primary goods may be codified into law, yet even when this is the case people vary in the extent to which they can readily access such goods. For example, despite laws in the United States requiring a fair trial by a jury of one's peers, individuals may vary in their actual and/or perceived access to a qualified lawyer and impartial judge or jury due to their stigmatized identity.

Bradshaw et al. (2021) examined the relation between perceptions of primary goods, basic psychological needs, and well-being across multiple countries and identity groups. Similar to the capabilities research discussed above, basic psychological needs

substantially explained the relation between primary goods and well-being. In general, perceiving more primary goods was associated with greater well-being and reduced ill-being. The positive effects of primary goods on well-being were mediated by basic psychological need fulfillment, and the negative effects were mediated by need frustration. Examining marginalized groups specifically, the authors found that ethnic and sexual minorities had lower perceptions of primary goods than members of various religious and political groups, which drove decreased well-being via the lack of psychological need fulfillment.

Laws and policies are key institutional factors that impact primary goods and civil liberties and, in turn, well-being. Indeed, there is strong evidence of the association between discriminatory laws and the mental health of those targeted by them. For example, the rates of mental health disorders among LGB individuals living in U.S. states with many discriminatory state laws are significantly greater than among those living in states with fewer such laws (Hatzenbuehler, 2010).

Changing legislation has thus been identified as a key point of intervention in changing attitudes toward marginalized groups and improving the well-being of group members themselves. Ofosu et al. (2019) utilized data from Project Implicit to examine the relation between antigay attitudes and changes in state and federal same-sex marriage legislation within the United States over a 12-year period. The authors used geolocation data to determine from which state implicit and explicit bias measures were completed, as well as what the legal status of same-sex marriage was at the time those attitudes were reported. Examining approximately 1 million responses, they were able to look at regional trends in implicit and explicit attitudes over time relative to changes in legislation in each state and nationally. Results indicated that, indeed, variations in states' policies toward same-sex marriage predicted antigay implicit and explicit bias. While antigay bias was on the decline in the United States prior to legalization of same-sex marriage, the slope of this decline became steeper after legalization. However, whether legalization was passed at the state or national level moderated this effect. Specifically, in states that did not pass their own legislation, increases in antigay bias followed same-sex marriage legalization at the federal level. This work highlights that the link between legislation and changing attitudes depends in part on the source of that legislation and the extent to which it is perceived to reflect local norms rather than norms imposed by an outside group (Ryan & DeHaan, this volume).

### Economic Conditions Thwarting Autonomy

Political and economic systems vary in the extent to which they provide economic and social safety nets. Such conditions generally thwart the autonomy of citizens as they limit opportunities to take risks and pursue opportunities for growth and additionally prevent them from leaving low-paying and need-thwarting work environments. Moreover, because those with stigmatized identities may face additional barriers due to their race,

gender, physical abilities, or other stigmatized identities, they are likely to be systematically disadvantaged by the lack of these supports.

Poverty itself is a stigmatized identity and one that is associated with poor health and well-being via need-thwarting, especially in regions with greater economic inequality (Di Domenico & Fournier, 2014). Socioeconomic status (SES) thus impacts well-being both through a reduction of actual resources as well as through social comparison processes, both of which thwart need satisfaction. Again, the extent to which the stigma associated with the identity (in this case low SES or poverty) is internalized impacts well-being through the thwarting of psychological needs. For example, Jackson et al. (2015) demonstrated that when individuals internalized their experimentally manipulated low social status, they reported greater thwarting of their basic psychological needs. In other words, internalization of low status moderated the effect of status on basic need satisfaction, such that the need-thwarting effect of low status was amplified when internalized. Internalizing high social status, however, was positively associated with need fulfillment.

Hirsch et al. (2019) recently investigated the relationship between financial stigma (i.e., stigmatization of working-class and poor individuals) and well-being, examining the contribution of both internalized and perceived stigma. Although the authors did not examine SDT variables specifically, they found that both perceived and internalized financial stigma had negative impacts on participants' self-rated subjective well-being and ability to function in everyday life over and above the effects of poverty itself, and that thwarted belongingness needs mediated these relationships. In other words, both experiencing financial stigmatization by others and internalizing it oneself thwarted participants' sense of belonging, which in turn contributed to both lower subjective well-being and ability to function in daily living (Hirsch et al., 2019).

### Culture, Goals, and Prejudice

Broader culture and proximal socializing agents impact the types of goals people adopt. While the pursuit and achievement of intrinsic goals is associated with improved well-being, the pursuit and attainment of extrinsic goals has not been shown to facilitate well-being and may even increase ill-being (e.g., Kasser & Ryan, 1996; Niemiec, Ryan, & Deci, 2009). Extrinsic goal pursuit also has important (negative) social consequences. Indeed, research has demonstrated an association between the pursuit of extrinsic goals and ethnic/racial prejudice (Duriez et al., 2007). Specifically, Duriez et al. found that extrinsic goal pursuit was associated with social dominance orientation (a trait measure of support for hierarchical social structures) and greater racial prejudice. Moreover, interpersonal competition mediated both of these relations. In other words, extrinsic goal pursuits were found to elicit interpersonal competition, which in turn fostered prejudice and social dominance orientation.

This finding also represents a potential target for prejudice-reduction intervention: intrinsic/extrinsic motivation and goal orientation are developed from childhood, and

introducing programs that encourage parents to promote intrinsic goal pursuits may therefore aid in the reduction of prejudice among future generations. Supporting this, a subsequent study by Duriez (2011) found that children whose parents motivate them to achieve extrinsic goals are more likely to be ethnically prejudiced than those whose parents promote more intrinsic means of motivation as pathways to goal achievement. This relationship was accounted for by social dominance orientation and right-wing authoritarianism. In sum, this study established that parental extrinsic goal promotion leads children to become more materialistic and competitive, leading them to view others as pawns to social-climb and therefore to lose empathy for others.

The goals pursued by members of stigmatized groups themselves have important implications for their own health and well-being as well. In a recent study using an experience-sampling design, Luxon et al. (2021) found that on days that LGB participants reported pursuing the intrinsic goal of helping others, they reported fewer symptoms of depression and anxiety as well as fewer physical symptoms. Notably, the overall level of autonomy support experienced by LGB participants predicted the pursuit of intrinsic goals, highlighting yet another mechanism by which autonomy support can enhance the well-being of members of stigmatized groups.

## On Reducing Prejudice

Disparities in well-being are not inherent in the bodies of marginalized individuals but are the product of the stigmatizing social context. Changing the stigmatizing environment is thus key to improving the well-being of marginalized group members. Throughout this chapter we have discussed the importance of autonomy support in facilitating identity ownership, authenticity, and well-being. This research highlights increasing autonomy support as a key point of intervention to improve well-being, especially for members of stigmatized groups.

As discussed above, research also suggests that parents may play a particularly important role in the adoption and expression of stigmatizing attitudes. We saw that controlling parenting practices and contingent regard were associated with more contingent self-esteem and greater self-stigma. Autonomy support is therefore critical to preventing these outcomes. Indeed, we saw that autonomy support from parents was a key predictor of well-being following LGB identity disclosure (Ryan et al., 2015).

Parental autonomy support is also important in preventing the expression of prejudice and other negative attitudes. For example, Roth (2008) found that autonomy-supportive parenting (compared to conditionally regarding parenting) was associated with greater internalization of helping-oriented goals. More recently, Legate, Weinstein, and Przybylski (2019) examined over 1,000 parent-child dyads and found that parents who used more autonomy-supportive strategies had adolescents who engaged in less cyberbullying than parents who used controlling strategies to try to reduce bullying.

Similar effects of autonomy support on attitude and behavior toward others have been found in the classroom. Roth, Kanat-Maymon, and Bibi (2011) found that students of autonomy-supportive teachers evidenced greater internalization of the goal of being considerate to others. A two-year intervention study designed to enhance autonomy support in the classroom led to reduction in negative emotions among students and a reduction in classroom violence and bullying (Kaplan & Assor, 2012).

One of the many difficulties in reducing prejudice is the sensitivity of discussing the topic. The topic is rife with opportunities for disagreement, misunderstanding, and rejection, which can lead to the thwarting of autonomy and relatedness needs. Thus, disclosing prejudicial attitudes (even if not endorsed or desired) can be a source of anxiety and threat.

Itzchakov et al. (2020) examined whether high-quality (attentive, empathic, non-judgmental) listening in the context of discussing prejudicial attitudes can facilitate the reduction of these attitudes in the speaker. The goal of this approach is to reduce threat and support self-esteem, while not affirming prejudicial attitudes. Participants who experienced high-quality listening from a stranger with an unknown personal level of bias and view on the topic evidenced greater self-insight, openness to change, and less endorsement of prejudicial attitudes than participants in the moderate-quality listening condition. In a follow-up paper, Itzchakov and Weinstein (2021) examined whether high-quality listening reduces threats to self via the support of autonomy and relatedness need satisfaction. Results suggested that high-quality listening increased self-esteem via the satisfaction of autonomy and relatedness needs. Other recent work by Weinstein, Huo, and Itzchakov (2021) further suggests that high-quality listening may be particularly important in the context of adolescent self-disclosure. Although this study was not about disclosing a marginalized identity, the identified mechanism of increased autonomy and relatedness due to high-quality listening predicting well-being is likely to be relevant for these types of disclosures as well.

### Organizations and Broader Social Contexts

Organizations may be able to indirectly reduce prejudice by ensuring their policies are supportive of members' basic psychological needs (Legate & Weinstein, this volume). One study found that among nurses working in mental healthcare settings, those who had their basic psychological needs fulfilled were more intrinsically motivated to work and, in turn, were less likely to stigmatize their patients (Perlman et al., 2018). This study demonstrated an inverse association between basic psychological need fulfillment and stigmatization of mental illness, which was mediated by intrinsic motivation. If basic psychological need fulfillment ultimately leads to a reduction in the endorsement of stigma, it should hold that implementing measures that facilitate employees' basic psychological need fulfillment (e.g., autonomy-supportive management, flexible hours, opportunities for skill development) would be associated with reduced prejudice within the workforce.

When introducing programs and policies to reduce prejudice, organizations must take care to go beyond merely threatening punitive action for prejudiced behavior. Many schools and companies may be tempted to implement no-tolerance policies to discourage prejudice among their institutions, but without explaining the reasons behind these policies, they risk causing more harm than good. This is because threats of retribution rely solely on people's extrinsic motivation to avoid punishment, which is relatively ineffective at promoting long-term, self-determined behavioral change. Indeed, one study showed that individuals with more autonomous motivation to reduce their own prejudice had lower levels of both implicit and explicit prejudice than those with more controlled motives to be unprejudiced (Legault et al., 2007). Thus, antidiscrimination initiatives should strategically avoid punitive, shame-based tactics and instead promote autonomous engagement with antidiscrimination educational material.

## Conclusion

Stigma represents a social condition of prejudice that can directly thwart people's basic psychological needs for autonomy and relatedness. Stigma can also be internalized as self-stigma, harming personal development and full functioning. In this chapter we reviewed the growing body of SDT research on this topic which verifies the relation between stigma and well-being as mediated by basic psychological needs. This literature also points out how both interpersonal and institutional supports for autonomy and relatedness can reduce the extent of stigmatizing that occurs, as well as its harms.

Although much of the SDT research on stigma has focused on LGB samples, minoritized groups are not a monolith in terms of identity or experience. And although basic need support is expected to be essential to the well-being of all individuals, what this particular support or lack thereof looks like may vary depending on the specific barriers and social contexts faced by members of different stigmatized groups. Insofar as our modern world has become increasingly global and multicultural, these issues of stigma, prejudice, and inclusion will only become more salient in both research and public discourse, making more nuanced SDT research on these topics even more relevant. Most needed are studies of both interpersonal and policy-based interventions to reduce prejudice, primarily by enhancing need-supportive conditions for persons of all identities.

## References

Al-Khouja, M., Weinstein, N., & Legate, N. (2021). Long-term mental health correlates of social supportive relationships in a lesbian, gay, and bisexual sample. *Psychology & Sexuality, 12*, 180–192.

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of parents' conditional regard: A self-determination theory analysis. *Journal of Personality, 72*, 47–88.

Bradshaw, E. L., DeHaan, C. R., Parker, P., Curren, R., Duineveld, J., Di Domenico, S. I., & Ryan, R. M. (2021). The perceived conditions of living well: Positive perceptions of primary goods linked with basic psychological needs and wellness. *Journal of Positive Psychology*. Advance online publication. doi:10.31234/osf.io/c8sj4

Brown, C., Rider, G. N., Sieving, R. E., McMorris, B. J., Eisenberg, M. E., & Porta, C. M. (2021). "My parents may influence my feelings about it but that's also something that I can change myself": Transgender and gender diverse youth perspectives on parental messages about sexuality. *Journal of GLBT Family Studies*, *17*, 501–515.

Center for American Progress. (2010). Gay and transgender youth homelessness by the numbers. Retrieved from https://www.americanprogress.org/issues/lgbt/news/2010/06/21/7980/gay-and-transgender-youth-homelessness-bythe-number

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Athanasios, M., Ryan, R., Sheldon, K. M., Dorens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, *39*, 216–236.

Chirkov, V. I. (2011). Dialectical relationships among human autonomy, the brain, and culture. In V. I. Chirkov, R. M. Ryan, & K. M. Sheldon (Eds.), *Human autonomy in cross-cultural contexts: Perspectives on the psychology of agency, freedom, and well-being* (pp. 65–92). Springer.

Chirkov, V. I., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology, 84*, 97–110.

Cole, S. W. (2006). Social threat, personal identity, and physical health in closeted gay men. In A. Omoto & H. S. Kurtzman (Eds.), *Sexual orientation and mental health: Examining identity and development in lesbian, gay, and bisexual people* (pp. 245–267). American Psychological Association.

Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In S. Fiske, D. Gilbert, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 504–553). McGraw Hill.

David, E. J. R., Schroeder, T. M., & Fernandez, J. (2019). Internalized racism: A systematic review of the psychological literature on racism's most insidious consequence. *Journal of Social Issues, 75*, 1057–1086.

DeCaro, D. A., Janssen, M. A., & Lee, A. (2015). Synergistic effects of voting and enforcement on internalized motivation to cooperate in a resource dilemma. *Judgment and Decision Making*, *10*, 511–537.

Deci, E. L., & Ryan, R. M. (1995). Human autonomy. In M. H. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 31–49). Springer.

DeHaan, C. R., Hirai, T., & Ryan, R. M. (2015). Nussbaum's capabilities and self-determination theory's basic psychological needs: Relating some fundamentals of human wellness. *Journal of Happiness Studies*, *17*, 2037–2049.

Di Domenico, S. I., & Fournier, M. A. (2014). Socioeconomic status, income inequality, and health complaints: A basic psychological needs perspective. *Social Indicators Research, 119*, 1679–1697.

Duriez, B. (2011). Adolescent ethnic prejudice: Understanding the effects of parental extrinsic versus intrinsic goal promotion. *Journal of Social Psychology*, *151*, 441–454.

Duriez, B., Vansteenkiste, M., Soenens, B., & De Witte, H. (2007). The social costs of extrinsic relative to intrinsic goal pursuits: Their relation with social dominance and racial and ethnic prejudice. *Journal of Personality, 75*, 757–782.

Erikson, E. H. (1959). Identity and the life cycle: Selected papers. *Psychological Issues, 1*, 1–171.

Fletcher, L., & Everly, B. A. (2021). Perceived lesbian, gay, bisexual, and transgender (LGBT) supportive practices and the life satisfaction of LGBT employees: The roles of disclosure, authenticity at work, and identity centrality. *Journal of Occupational and Organizational Psychology, 94*, 485–508.

Ghavami, N., Fingerhut, A., Peplau, L. A., Grant, S. K., & Wittig, M. A. (2011). Testing a model of minority identity achievement, identity affirmation, and psychological well-being among ethnic minority and sexual minority individuals. *Cultural Diversity and Ethnic Minority Psychology, 17*, 79–88.

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Simon and Schuster.

Goldman, B. M., & Kernis, M. H. (2002). The role of authenticity in healthy psychological functioning and subjective well-being. *Annals of the American Psychotherapy Association, 5*, 18–20.

Gonsalkorale, K., & Williams, K. D. (2007). The KKK won't let me play: Ostracism even by a despised outgroup hurts. *European Journal of Social Psychology, 37*, 1176–1186.

Hatzenbuehler, M. L. (2010). Social factors as determinants of mental health disparities in LGB populations: Implications for public policy. *Social Issues and Policy Review*, *4*, 31–62.

Hill, D. J., Li, D., Wang, J., & Liew, J. (2021). Cultural values, intergenerational transmission of internalized racism, education, and career goals in Chinese American families. *Journal of Career Development*. https://doi.org/10.1177/08948453211026973

Hirsch, J. K., Sirois, F. M., Visser, P. L., Brooks, B. D., Kohls, N., Offenbächer, M., & Toussaint, L. (2019). Perceived stigma and health-related quality of life in the working uninsured: Does thwarted belongingness play a role? *Stigma and Health, 4*, 1–10.

Hughes, D., Rodriguez, J., Smith, E. P., Johnson, D. J., Stevenson, H. C., & Spicer, P. (2006). Parents' ethnic-racial socialization practices: A review of research and directions for future study. *Developmental Psychology, 42*, 747–880.

Itzchakov, G., & Weinstein, N. (2021). High-quality listening supports speakers' autonomy and self-esteem when discussing prejudice. *Human Communication Research, 47*, 248–283.

Itzchakov, G., Weinstein, N., Legate, N., & Amar, M. (2020). Can high quality listening predict lower speakers' prejudiced attitudes? *Journal of Experimental Social Psychology*, *91*, 104022.

Jackson, B., Richman, L., LaBelle, O., Lempereur, M., & Twenge, J. (2015). Experimental evidence that low social status is most toxic to well-being when internalized. *Self and Identity, 14*, 157–172.

Jones, E. E., Farina, A., Hastorf, A. H., Markus, H., Miller, D. T., & Scott, R. A. (1984). *Social stigma: The psychology of marked relationships*. Freeman.

Jung, C. G. (1959). *The basic writings of C. G. Jung* (V. de Laszlo, Ed.). Modern Library.

Kaplan, H., & Assor, A. (2012). Enhancing autonomy-supportive I-Thou dialogue in schools: Conceptualization and socio-emotional effects of an intervention program. *Social Psychology of Education, 15*, 251–269.

Kase, C. A., & Mohr, J. J. (2021). Within-person predictors and outcomes of daily sexual orientation self-presentation among plurisexual women. *Journal of Counseling Psychology, 68*, 156–167.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin, 22*, 280–287.

Kernis, M. H., & Goldman, B. M. (2006). A multicomponent conceptualization of authenticity: Theory and research. *Advances in Experimental Social Psychology, 38*, 283–357.

Kurzban, R., & Leary, M. R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin, 127*, 187–208.

Legate, N., DeHaan, C. R., Weinstein, N., & Ryan, R. M. (2013). Hurting you hurts me too: The psychological costs of complying with ostracism. *Psychological Science, 24*, 583–588.

Legate, N., Ryan, R. M., & Rogge, R. D. (2017). Daily autonomy support and sexual identity disclosure predicts daily mental and physical health outcomes. *Personality and Social Psychology Bulletin, 43*, 860–873.

Legate, N., Ryan, R. M., & Weinstein, N. (2012). Is coming out always a "good thing"? Exploring the relations of autonomy support, outness, and wellness for lesbian, gay, and bisexual individuals. *Social Psychological and Personality Science*, *3*, 145–152.

Legate, N., Weinstein, N., & Przybylski, A. K. (2019). Parenting strategies and adolescents' cyberbullying behaviors: Evidence from a preregistered study of parent-child dyads. *Journal of Youth and Adolescence, 48*, 399–409.

Legate, N., Weinstein, N., & Ryan, R. M. (2021). Ostracism in real life: Evidence that ostracizing others has costs, even when it feels justified. *Basic and Applied Social Psychology, 43*, 226–238.

Legate, N., Weinstein, N., Ryan, W. S., DeHaan, C. R., & Ryan, R. M. (2019). Parental autonomy support predicts lower internalized homophobia and better psychological health indirectly through lower shame in lesbian, gay and bisexual adults. *Stigma and Health*, *4*, 367–376.

Legault, L., Green-Demers, I., Grant, P., & Chung, J. (2007). On the self-regulation of implicit and explicit prejudice: A self-determination theory perspective. *Personality and Social Psychology Bulletin, 33*, 732–749.

Li, F., Wang, Y., & Xing, J. (2021). Two sources of autonomy support and depressive symptoms among Chinese gay men: The sequential mediating effect of internalized homonegativity and rumination. *Journal of Affective Disorders, 280*, 373–380.

Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology, 27*, 363–385.

Lipsky, S. (1987). *Internalized racism*. Rational Island Publishers.

Lustenberger, D. E., & Jagacinski, C. M. (2010). Exploring the effects of ostracism on performance and intrinsic motivation. *Human Performance, 23*, 283–304.

Luxon, A. M., Legate, N., & Weinstein, N. (2021). Fluctuations in goal pursuits and health in a lesbian, gay, and bisexual sample across a 2-week diary study. *Psychology of Sexual Orientation and Gender Diversity*.

Lynch, M. F., La Guardia, J. G., & Ryan, R. M. (2009). On being yourself in different cultures: Ideal and actual self-concept, autonomy support, and well-being in China, Russia, and the United States. *Journal of Positive Psychology, 4*, 290–304.

Maccio, E. M., & Ferguson, K. M. (2016). Services to LGBTQ runaway and homeless youth: Gaps and recommendations. *Children and Youth Services Review, 63*, 47–57.

Mak, W. W., Poon, C. Y., Pun, L. Y., & Cheung, S. F. (2007). Meta-analysis of stigma and mental health. *Social Science & Medicine, 65*, 245–261.

McHale, S. M., Crouter, A. C., Kim, J., Burton, L. M., Davis, K. D., Dotterer, A. M., & Swanson, D. P. (2006). Mothers' and fathers' racial socialization in African American families: Implications for youth. *Child Development, 77*, 1387–1402.

Megías, Á., González-Cutre, D., Beltrán-Carrillo, V. J., Gomis-Díaz, J. M., Cervelló, E., & Bartholomew, K. J. (2018). The impact of living with morbid obesity on psychological need frustration: A study with bariatric patients. *Stress and Health: Journal of the International Society for the Investigation of Stress, 34*, 509–522.

Mohr, J., & Fassinger, R. (2000). Measuring dimensions of lesbian and gay male experience. *Measurement and Evaluation in Counseling and Development, 33*, 66–90.

Molina, K. M., & James, D. (2016). Discrimination, internalized racism, and depression: A comparative study of African American and Afro-Caribbean adults in the US. *Group Processes & Intergroup Relations, 19*, 439–461.

Newcomb, M. E., & Mustanski, B. (2011). Moderators of the relationship between internalized homophobia and risky sexual behavior in men who have sex with men: A meta-analysis. *Archives of Sexual Behavior, 40*, 189–199.

Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The path taken: Consequences of attaining intrinsic and extrinsic aspirations in post-college life. *Journal of Research in Personality, 43*, 291–306.

Nussbaum, M. C. (2000). *Women and human development: The capabilities approach*. Cambridge University Press.

Ofosu, E. K., Chambers, M. K., Chen, J. M., & Hehman, E. (2019). Same-sex marriage legalization associated with reduced implicit and explicit antigay bias. *Proceedings of the National Academy of Sciences, 116*, 8846–8851.

Pachankis, J. E. (2007). The psychological implications of concealing a stigma: A cognitive-affective-behavioral model. *Psychological Bulletin, 133*, 328–345.

Page-Gould, E., Mendoza-Denton, R., & Tropp, L. R. (2008). With a little help from my cross-group friend: Reducing anxiety in intergroup contexts through cross-group friendship. *Journal of Personality and Social Psychology, 95*, 1080–1094.

Perlman, D., Brighton, R., Patterson, C., Moxham, L., Taylor, E. K., Sumskis, S., & Heffernan, T. (2018). Stigmatization and self-determination of preregistration nurses: A path analysis. *International Journal of Mental Health Nursing, 27*, 422–428.

Pudney, E. V., Himmelstein, M. S., & Puhl, R. M. (2019). The role of weight stigma in parental weight talk. *Pediatric Obesity, 14*, e12534.

Puhl, R. M., & Latner, J. D. (2007). Stigma, obesity, and the health of the nation's children. *Psychological Bulletin, 133*, 557–580.

Qin, D. B., Way, N., & Mukherjee, P. (2008). The other side of the model minority story: The familial and peer challenges faced by Chinese American adolescents. *Youth & Society, 39*, 480–506.

Rawls, J. (2009). *A theory of justice*. Harvard University Press. (Original work published 1971)

Ritsher, J. B., & Phelan, J. C. (2004). Internalized stigma predicts erosion of morale among psychiatric outpatients. *Psychiatry Research, 129*, 257–265.

Robinson, O. C., Lopez, F. G., Ramos, K., & Nartova-Bochaver, S. (2013). Authenticity, social context, and well-being in the United States, England, and Russia: A three country comparative analysis. *Journal of Cross-Cultural Psychology, 44*, 719–737.

Rogers, C. R. (1963). The actualizing tendency in relation to "motives" and to consciousness. In M. Jones (Ed.), *Nebraska Symposium on Motivation* (pp. 1–24). University of Nebraska Press.

Roth, G. (2008). Perceived parental conditional regard and autonomy support as predictors of young adults' self- versus other-oriented prosocial tendencies. *Journal of Personality, 76*, 513–534.

Roth, G., & Assor, A. (2012). The costs of parental pressure to express emotions: Conditional regard and autonomy support as predictors of emotion regulation and intimacy. *Journal of Adolescence, 35*, 799–808.

Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and academic consequences of parental conditional regard: Comparing conditional positive regard, conditional negative regard, and autonomy support as parenting practices. *Developmental Psychology, 45*, 1119–1142.

Roth, G., Kanat-Maymon, Y., & Bibi, U. (2011). Prevention of school bullying: The important role of autonomy-supportive teaching and internalization of pro-social values. *British Journal of Educational Psychology, 81*, 654–666.

Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, *63*, 397–427.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., Deci, E. L., Grolnick, W. S., & La Guardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Theory and method* (2nd ed., pp. 795–849). John Wiley & Sons.

Ryan, R. M., Domenico, S. I. D., Ryan, W. S., & Deci, E. L. (2017). Pervasive influences on wellness and thriving: Cultural, political, and economic contexts and the support of basic psychological needs. In F. Guay, H. W. Marsh, D. M. McInerney, & R. G. Craven (Eds.), *Self: Driving positive psychology and well-being* (pp. 199–231). Information Age.

Ryan, W. S., Legate, N., & Weinstein, N. (2015). Coming out as lesbian, gay, or bisexual: The lasting impact of initial disclosure experiences. *Self and Identity*, *14*, 549–569.

Ryan, W. S., Legate, N., Weinstein, N., & Rahman, Q. (2017). Autonomy support fosters lesbian, gay, and bisexual identity disclosure and wellness, especially for those with internalized homophobia. *Journal of Social Issues*, *73*, 289–306.

Ryan, W. S., & Ryan, R. M. (2019). Toward a social psychology of authenticity: Exploring within-person variation in autonomy, congruence, and genuineness using self-determination theory. *Review of General Psychology*, *23*, 99–112.

Sedikides, C., Slabu, L., Lenton, A., & Thomaes, S. (2017). State authenticity. *Current Directions in Psychological Science, 26*, 521–525.

Sen, A. (2005). Human rights and capabilities. *Journal of Human Development, 6*, 151–166.

Sheldon, K. M., Ryan, R. M., Rawsthorne, L. J., & Ilardi, B. (1997). Trait self and true self: Cross-role variation in the Big-Five personality traits and its relations with psychological authenticity and subjective well-being. *Journal of Personality and Social Psychology, 73*, 1380–1393.

Soenens, B., & Vansteenkiste, M. (2011). When is identity congruent with the self? A self-determination theory perspective. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 381–401). Springer.

Vansteenkiste, M., Ryan, R., & Deci, E. (2008). Self-determination theory and the explanatory role of psychological needs in human well-being. In L. Bruni, F. Comim, & M. Pugno (Eds.), *Capabilities and happiness* (pp. 187–223). Oxford University Press.

Weinstein, N., Huo, A., & Itzchakov, G. (2021). Parental listening when adolescents self-disclose: A preregistered experimental study. *Journal of Experimental Child Psychology, 209*, 105178.

Weinstein, N., Legate, N., Al-Khouja, M., & Şengül, Ş. (2021). Relations of civil liberties and women's health satisfaction around the globe: The explanatory power of autonomy. *Journal of Health Psychology*, *26*, 321–331.

Weinstein, N., Legate, N., Ryan, W. S., Sedikides, C., & Cozzolino, P. (2017). Autonomy support for non-conflictual and conflictual identities: Effects on ownership and well-being. *Journal of Counseling Psychology, 64*, 584–599.

Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2012). The index of autonomous functioning: Development of a scale of human autonomy. *Journal of Research in Personality*, *46*, 397–413.

Weinstein, N., Ryan, W. S., DeHaan, C. R., Przybylski, A. K., Legate, N., & Ryan, R. M. (2012). Parental autonomy support and discrepancies between implicit and explicit sexual identities: Dynamics of self-acceptance and defense. *Journal of Personality and Social Psychology*, *102*, 815–832.

Williams, K. D. (2009). Ostracism: A temporal need-threat model. *Advances in Experimental Social Psychology, 41*, 275–314.

Williams, K. D., & Jarvis, B. (2006). Cyberball: A program for use in research on interpersonal ostracism and acceptance. *Behavior Research Methods, 38*, 174–180.

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology, 40*, 560–567.

# The "What" and the "Why" of Pro-Environmental Deeds: How Values and Self-Determined Motivation Interact to Predict Environmentally Protective Behavior

Lisa Legault

## Abstract

Self-determined pro-environmental *motivation* is arguably the most important motivational resource for protecting the environment and supporting a sustainable lifestyle. At the same time, pro-environmental *behavior* evolves from multiple goals, values, and cues beyond self-determined motivation. This chapter reviews the state of research on self-determination and values as they relate to pro-environmental behavior. It sketches a framework to promote more widespread pro-environmental behavior by integrating motivation, values and goals, and social support. By understanding the manner in which values and motivation interact in predicting pro-environmental behavior, it becomes possible to identify sources of motivational conflict that lead to environmentally unsound choices. Through a process of aligning individuals' values and motivation, strategies for intervention begin to emerge.

**Key Words:** self-determination, values, pro-environmental behavior, intrinsic goals, extrinsic goals

Three decades of research have highlighted and validated the importance of self-determined motivation in promoting pro-environmental behavior (PEB; e.g., Pelletier, 2002; Pelletier, Baxter, & Huta, 2011). The question now is not whether self-determination is vital to pro-environmental and sustainable behavior, but whether any other force—or combination of forces—is more vital. Because PEB is varied, complex, and often determined by multiple factors, it may be too simplistic to draw straight lines between any singular motivational construct and environmentally sustainable choices and actions (Masson & Otto, 2021). Thus, while overall connections between autonomous motivation and PEB (e.g., Lavergne et al., 2010) and between intrinsic goals or values and PEB (e.g., Brown & Kasser, 2005) are important, researchers would be judicious to study and promote PEB using a more nuanced and integrated framework that combines motivation, values/goals, and social facilitation. In this chapter, I review self-determination theory (SDT) research

linking motivation and values to PEB in hopes of understanding when and why they play essential roles. In addition, I show how SDT can help identify conditions under which values and motivation align to predict PEB, and when they conflict. By shedding light on these seeming discrepancies and working to resolve them, SDT can advance research toward more informed pro-environmental interventions and policies in the face of urgent and rapid climate change.

## Using SDT to Understand and Predict PEB

Human beings, in all their bewildering inconsistency, continue to simultaneously exacerbate and serve as the possible antidote to the world's most pressing ailments, including global climate change, environmental devastation, and food and water depletion. These serious environmental problems harm the biosphere and threaten to drain the basic nutrients for human life. Although destruction and consumption are wholly *human* ills that can be mitigated by human reparative behavior (Dietz et al., 2009), humans' PEBs are improving at a slower pace than required to stop climate change (Intergovernmental Panel on Climate Change, 2014). Many different PEBs are urgently needed, such as the adoption of renewable resources like solar power, the adoption of sustainable solutions like electric vehicles, the use of resource-efficient goods and services, and the implementation of environmentally protective habits like saving energy and water, recycling, and reusing materials. This urgency begs the question of how to best motivate individuals to adopt PEB. Should people be mandated to comply with PEB in order to reduce the rate of environmental destruction as quickly and widely as possible? Or should people be supported and educated over time to promote the internalization of self-determined pro-environmental motivation (PEM)? The answer to this question first requires recognition that the route from environmental *motivation* to environmental *behavior* is not always clear.

## PEM Does Not Always Lead to PEB (or: PEB Is Not Always Caused by PEM)

A pressing question in environmental psychology concerns *why people engage in* PEB. Stern (2000) defines PEB according to its positive impact on the environment and environmental systems, ecosystems, and the biosphere. As in any behavioral domain, the promotion of PEB requires a thorough understanding of the factors that predict it (e.g., De Groot & Steg 2010). SDT research on PEM, however, has not been concerned with understanding PEB per se but rather with the question of *why people are motivated to do things for the environment* (as well as how they can be encouraged to feel more self-determined in their PEM). The finding that PEM typically predicts PEB to a moderate degree (e.g., De Groot & Steg, 2010; Osbaldiston & Sheldon, 2003), although meaningful, does not capture the wide variability in PEB, and as such, the distinction between PEB and PEM is important to understand if research is to help address environmental degradation, depletion, and climate change in a flexible, wide-reaching, and timely way.

PEM, therefore, is undoubtedly best understood in SDT terms, as reflecting the degree to which PEBs stem from personally endorsed care and concern for the environment or from the meaning and joy derived from doing things for the environment. Whereas some people may want to engage in environmentally friendly practices because they genuinely care about environmental sustainability, others may feel a sense of pressure or obligation to keep up with environmental behavior. In contrast, PEBs can take a wide variety of forms and can range considerably in their multidimensionality (Masson & Otto, 2021; Steg 2016). Sometimes PEBs result from singular self-determined motivation to help the environment, and at other times they are multiply determined, even in seemingly paradoxical ways. That is, PEBs can reflect the output of different (and sometimes competing) goals, motives, and cues, some of which reflect PEM and some of which do not. For instance, the decision to donate time or money to an environmental organization is most likely strongly and uniquely determined by one's level of self-determined PEM (e.g., Sheldon et al., 2016). After all, there is little reason to perform such sacrifice if one does not care about the cause. In contrast, the decision to purchase an environmentally sound electric vehicle might stem from self-determined PEM or, perhaps more likely, the desire to signal image and status (e.g., Noppers et al., 2014). The complex etiology and multi-categorizability of different types of PEBs is important to consider because PEB can sometimes be parenthetical to PEM; indeed, sometimes the motivation underlying PEB may not even be *environmental* per se, as in the decision to purchase an electric vehicle to signal wealth or the adoption of solar panels because one's neighbors have done so or even the saving of water and reduction of consumption in order to preserve the future health of others, which reflects *prosocial* rather than pro-environmental motivation. In short, there exist many practical and important reasons for performing environmentally protective behaviors—some of which may even be altruistic—that don't involve pro-environmental concern in itself (Howell, 2013). The PEM-PEB connection thus suffers from a double paradox. On one hand, there exists a classic gap between environmental intent and action (Kollmuss & Agyeman, 2002) where even pro-environmentalists sometimes behave in environmentally harmful ways. On the other hand, there is the finding that many highly impactful PEBs are performed for decidedly nonenvironmental reasons. From the perspective of SDT-informed education and intervention, this distinction between motivated concern for the environment and having a positive behavioral impact on the environment is important, because it means that encouraging PEM is not the same thing as encouraging PEB. And although self-determined PEM is never *un*helpful, it is important to consider that there may be other avenues (both practical and prosocial) toward more widespread internalization of sustainable behavior.

## A Review of the Importance of PEM in PEB

Pelletier and colleagues have made an enormous contribution to understanding the role of self-determined motivation in PEB (e.g., Green-Demers, Pelletier, & Ménard, 1997;

Lavergne et al., 2010; Pelletier et al., 1998, 1999; Pelletier & Sharp, 2008). Their work has shown consistently that those with a more autonomous or self-determined motivation to engage in PEB are more likely to actually do so, relative to those with external motivation or amotivation. In other words, when PEM is volitional and based on the personal importance of helping the environment, PEB is more frequent and lasting compared to when the underlying motivation is controlled—that is, driven by social pressure or external concern (e.g., engaging in PEB to gain prestige or approval from others; Green-Demers et al., 1997; Pelletier et al., 2011). Similarly, the more individuals view themselves as ecologically minded, the more self-determined their environmental motivation and behavior (Van der Werff, Steg, & Keizer, 2013). Research on self-reported household energy saving behavior even suggests that self-determined PEM is a more important predictor of PEB than other psychological factors, including behavioral intentions, subjective norms, perceived behavioral efficacy, and past behavior (Webb et al., 2013).

This basic effect of self-determined motivation on PEB has been validated across various environmental behaviors, including recycling behavior and purchasing decisions (e.g., Pelletier et al., 1998; Villacorta, Koestner, & Lekes, 2003), interest in environmental issues (e.g., Seguin, Pelletier, & Hunsley, 1999), household energy-saving behavior (Joachain & Klopfert, 2014; Webb et al., 2013), lowered preference for materialistic goods (Kasser et al., 2007), and commitment to environmental activism (Sheldon et al., 2016). Moreover, researchers have attested to this basic connection in a variety of settings, including school (Legault & Pelletier, 2000), home (Webb et al., 2013), and work (e.g., Graves, Sarkis, & Zhu, 2013; Pelletier & Aitken, 2014).

One reason the quality of motivation matters in predicting PEB is that many PEBs are difficult and unpleasant. It takes effort and tenacity to make wise environmental decisions and sacrifice immediate comfort (e.g., driving to work) for environmental ideals (e.g., cycling or taking public transit to reduce overall fossil fuel emissions). Accordingly, research suggests that self-determined environmental motivation is more likely to predict the performance of difficult over easy PEBs. Early work on this idea showed that as environmental behaviors increased in perceived difficulty (i.e., recycling vs. purchasing environmentally sound products vs. learning about how to protect the environment), self-determined PEM became an increasingly important predictor (Green-Demers et al., 1997). More recently, Aitken, Pelletier, and Baxter (2016) found that self-determined PEM predicted taking public transportation when it was difficult to do so. In contrast, when transportation behavior was perceived to be easy, motivation type did *not* predict transportation frequency. Similarly, environmental activism, which involves high commitment in the face of frustration and uncertainty, is most strongly predicted by self-determined forms (especially integrated and intrinsic) of environmental motivation (Sheldon et al., 2016). Research in tourism and outdoor recreation has shown that self-determined motivation to protect nature can override the harmful effect of environmental constraints and barriers to PEB. For instance, if lodging and accommodations do not

provide recycling services for guests or if campgrounds do not sell biodegradable soap, those with self-determined PEM are more likely to seek out environmentally sound solutions (Moghimehfar & Halpenny, 2016). Thus, self-determination in PEM is particularly important when PEBs are difficult or unpleasant or face obstacles.

Self-determined motivation is also important in predicting PEB because it better equips people to deal with motivational inconsistencies common to environmental behaviors. Because PEBs can result from competing goals and often involve trade-offs between personal comfort and environmental sustainability, people sometimes fail to behave in line with their environmental concerns (Kollmus & Agyeman, 2002). Research by Lavergne and Pelletier (2016) suggests, however, that those with self-determined PEM are in fact less likely to encounter attitude-behavior discrepancy, relative to those with a controlled motivation toward the environment. Moreover, when such inconsistencies do occur, those with self-determined PEM are more likely to reduce this discomfort by using active behavioral modification strategies, whereby they double-down on their pro-environmental efforts in order to align their behavior with their motivation. By contrast, those with a controlled motivation toward the environment are more likely to use the environmentally unsound strategy of cognitive restructuring, such that they reduce the importance of their pro-environmental concern to align with their less than sustainable behavior (Lavergne & Pelletier, 2015). This body of research helps to show that greater self-determination can help close the attitude-behavior gap, both by reducing the frequency of attitude-behavior inconsistencies and by promoting behavior modification to manage discrepancies when they occur.

### Facilitating Self-Determined PEM

Given the importance of self-determined PEM, it is necessary to understand the psychological mechanisms and social and structural factors that support it. SDT research suggests that self-determined PEM is brought about through motivationally supportive climates. For instance, individuals demonstrate more self-determined motivation to help the environment when their basic psychological needs for autonomy, competence, and relatedness are met (Cooke, Fielding, & Louis, 2016). Similarly, adolescents are more self-determined in their PEM when their parents are autonomy-supportive and show self-determined PEM themselves (Grønhøj & Thøgersen, 2017) and when their peers support their freedom to make decisions about the environment (Villacorta et al., 2003). Importantly, citizens feel more autonomously motivated to do things for the environment when they perceive their government to be autonomy-supportive rather than controlling in the implementation of environmental policies (Lavergne et al., 2010). This self-determined PEM, in turn, links to increased frequency of PEB, whereas controlled environmental motivation and amotivation do not (Lavergne et al., 2010). Other researchers have shown that people are more likely to engage in PEB when they identify with others who do so (Bamberg, Rees, & Seebauer, 2015), highlighting the importance of PEM-congruent contexts. Furthermore,

evidence suggests that environmental education can both promote self-determined PEM (Legault & Pelletier, 2000) and reduce environmental amotivation (Darner, 2012).

*An Intervention Workshop to Increase Self-Determined PEM*

Despite clear evidence of the importance of interpersonal and educational contexts in promoting self-determined PEM, interventions focused on enhancing self-determined PEM are few. However, a recent randomized field experiment (Legault et al., 2020) offers initial encouragement. Legault et al. used principles of autonomy support and identified regulation to target students' self-determined motivations to save water and electricity while living in smart-metered apartments on campus. Students were randomly assigned to attend an intervention seminar where they were provided with information on various rationales for engaging in energy conservation, including climate change, environmental destruction, financial and economic concerns, energy security concerns, humanitarian concerns, and health concerns. After the information session, participants selected the reasoning they most strongly endorsed and wrote about its significance to them. Then, over the next three months, their electricity and water use was sensor-recorded at each fixture and faucet in their apartment. During this time, participants received reminders of their self-endorsed pro-environmental reasoning. A control condition comprised students living in the same type of smart housing who did not receive the intervention. At the end of the three month period and after accounting for baseline differences in water use, those who had received the self-determination intervention used 20% less water than those who did not receive the intervention – a significant and meaningful difference (Legault et al., 2020).

In sum, SDT research on PEB has accrued a convincing body of evidence to suggest that self-determined motivation is important in understanding, predicting, and causing PEB—especially when PEB is constrained or challenging. Despite this clear evidence, however, PEM by itself does not appear to be the whole story in understanding and predicting the diversity and complexity of environmental behavior. PEBs are multifarious and have multiple internal and external inputs. Some have argued that human values or life goals may play an even more central role in PEB than motivation (De Groot & Steg, 2010; see also Hurst et al., 2013).

## The Role of Goals and Values in PEB

PEB is not self-interested in the same way as other self-focused motivational pursuits, like personal health, education, work, religion, relationships, sports, or personal development. Rather, PEBs are often performed *in service of* environmental protection. Like altruistic or prosocial behavior, deep pro-environmental concern goes beyond both personal and contextual motivation; concern and care for the environment is profoundly connected to broader goals and values. At the same time, PEB is equally likely to arise from cues, contexts, and beliefs that are not rooted in pro-environmental concern. That is, PEBs can

be instrumental to the pursuit of non-PEB goals and values. Because goals and values have the ability to capture such a range of PEBs, they have received extensive attention from environmental psychologists (e.g., Schultz & Zelezny, 1999; Steg, 2016; Stern & Dietz, 1994).

### The Importance of Intrinsic and Biospheric Goals

Where PEM ranges in its degree of self-determination, values are more expansive "transsituational *goals* . . . which serve as guiding principles" (Schwartz, 1992, p. 21). Although Schwartz (1992, 1994) describes 10 basic and universal human values, the fundamental duality between the self-transcendent values of universalism and benevolence (i.e., concern for the welfare of others) and the self-enhancement values of hedonism, achievement, and power has received the most attention in the environmental domain. In addition, environmental psychology has expanded this prosocial/pro-self conceptualization to include environmental values, including the desire to protect the earth's resources, to preserve nature, and to feel harmony with nature and other species.

All told, four value clusters appear to be important for understanding environmental behavior because they shed light on what people prioritize (De Groot & Steg, 2008; Steg & de Groot, 2012). *Altruistic values* predispose people to focus on ways to benefit others. *Biospheric values* attune people to the needs of nature and the environment. *Egoistic values* drive the pursuit for personal wealth and status, and *hedonic values* prioritize personal comfort, ease, and pleasure. Research suggests that altruistic and biospheric values, which prioritize service to the collective, positively predict pro-environmental intentions and behaviors (Cameron, Brown, & Chapman, 1998; Gärling et al., 2003; Joireman et al., 2001), although biospheric values more strongly so (De Groot & Steg, 2010; Steg & de Groot, 2012; or see Steg, 2016 for a review). In contrast, egoistic and hedonic values are, in general, negatively associated with PEB, probably because PEBs are often personally costly or arduous (e.g., Nordlund & Garvill, 2002; Steg, Perlaviciute et al., 2014; Stern & Dietz, 1994).

SDT research on goals and values contributes to this picture. For instance, those who hold intrinsic goals of community and self-expression are more likely to espouse pro-ecological attitudes and support for sustainability than those who emphasize extrinsic goals related to image, fame, and wealth (Sheldon, Nichols, & Kasser, 2011). And when reminded of their intrinsic values, individuals are more willing to pay to protect the environment compared to those reminded of their extrinsic values and those in a neutral condition (Ku & Zaroff, 2014). In contrast, those who hold extrinsic values make more selfish rather than pro-ecological decisions (i.e., in a resource dilemma; Sheldon & McGregor, 2000) and have larger ecological footprints than those who place a low priority on materialism (Brown & Kasser 2005). Indeed, materialism and the preference for extrinsic values were consistently linked to less PEB in a meta-analysis ($r = -0.24$ across nine studies; Hurst et al., 2013).

*Do Intrinsic and Biospheric Values Cast a Wider Net of PEBs Than Self-Determined Motivation?*

Because of their ability to predict a wide variety of PEBs, some work has shown that the values model can explain independent variance in PEB beyond that explained by self-determined motivation (De Groot & Steg, 2010). This may be because PEBs themselves are widely variable and multiply categorizable, meaning that the *intention* that results in the PEB and even sometimes the motivation to adopt a pro-environmental lifestyle in general is not always driven by self-determined PEM per se. Thus, although in general the biospheric component is the strongest predictor of PEB (Steg, 2016; Steg & de Groot, 2012), intrinsic goals are also uniquely important in predicting PEB, suggesting that many PEBs arise from non-biospheric concerns. Said differently, pro-environmental choices and actions often serve *prosocial* rather than *pro-environmental* goals. In an exploratory mixed-methods study investigating the values, motivations, and routes to engagement among those adopting lower-carbon lifestyles, Howell (2013) found that the most commonly reported reasons for engaging in environmentally friendly lifestyles involved intrinsic goals—including social justice, human rights, community, and personal integrity—not concern about the state of the environment per se. A major theme drawn from participants' reports was a worry about others who would be systematically disadvantaged or harmed by climate change. Thus, while biospheric values and ecological concerns were important, they were not the *most important* in determining a low-carbon lifestyle; rather, altruistic and intrinsic values were. In terms of determining PEB, these intrinsic goals were also rated more highly than the desire to be in nature or to have positive experiences in nature. Similarly, in the aforementioned motivational intervention to promote energy and water conservation in student residences (Legault et al., 2020), participants were provided with six classes of rationales for engaging in conservation behavior (several of which concerned environmental protection; one of which reflected financial savings; one of which concerned personal and public health; and one of which concerned the well-being and growth of future generations). The most important rationale capturing students' desire to engage in PEB was intrinsic/altruistic rather than biospheric and pro-environmental—it was to preserve the welfare of future generations.

Although neither prosocial nor pro-environmental in nature, *frugality* is another value and goal that seems to drive PEB because it entails general restraint and respect for resources (Fujii, 2006; Kasser, 2002). While frugality is not based in morality/prosociality per se, it does demand significant self-control in acquiring and using economic goods and services (Goldsmith & Flynn, 2015) and links to a simple and sustainable lifestyle (Howell, 2013). Interestingly, research has shown that waste reduction is connected to frugality rather than environmental concern (Gatersleben et al., 2019). Similarly, Thøgersen (2018) notes that both frugality and pro-environmental concern explain unique variance in energy-saving behavior. Moreover, when comparing environmental concern with

frugality and ease of use, Fujii (2006) finds ease of the PEB predicts most PEBs, but only frugality is associated with gas and electricity reduction. Frugality and low materialism, therefore, seem to be important for reducing one's carbon footprint—but out of restraint and simplicity rather than biospheric values or self-determined motivation toward the environment (Howell, 2013).

Thus, when predicting PEB, intrinsic and biospheric values are unique and separable in their importance, and together may provide a wider understanding of PEB than self-determined PEM alone. This observation highlights two avenues for future work in SDT: (1) to include the measurement of ecological and frugality goals in addition to intrinsic and extrinsic goals when studying different PEBs and (2) to expand the link between motivation and PEB to include both prosocial and practical motivations rather than focusing only on PEM. These findings also suggest that climate change mitigation and pro-environmental messaging should aim for a broader promotion of human rights, as well as social and environmental justice, rather than a narrow focus on environmental protection alone.

### The Seemingly Paradoxical Importance of Extrinsic Goals

Evidence suggests that people engage in cost-benefit analysis when making environmental decisions, and how these costs and benefits are weighted influences behavior (Steg, 2016). In general, those with extrinsic goals make more harmful environmental decisions because personal comfort is prioritized and PEBs are often personally costly or effortful/difficult (Lindenberg & Steg, 2007). Nonetheless, researchers must acknowledge that many studies have found positive associations between certain PEBs and either extrinsic goals or controlled PEM (e.g., Koo & Chung, 2014). Indeed, sometimes environmental choices that are egoistic or status-motivated result in very positive environmental consequences. For instance, when people want to enhance their status and image, they are more likely to adopt sustainable innovations, like purchasing electric vehicles (Schuitema et al., 2013) or installing rooftop solar panels (Legault et al., 2022). And for those motivated to demonstrate their status, pro-environmental adoptions become increasingly attractive as they become increasingly expensive and more publicly conspicuous (Griskevicius, Tybur, & Van den Bergh, 2010), further demonstrating that certain pro-environmental deeds are driven by materialistic and egoistic values.

In a recent study of more than 800 single-dwelling homeowners, Legault et al. (2022) evaluated the predictive strength of values and self-determined motivation in determining whether homeowners decided to install rooftop solar panels on their homes, which is among the most environmentally beneficial residential behaviors. Results showed that extrinsic values were among the strongest unique predictors of rooftop solar adoption, even among those with high levels of environmental amotivation (Legault et al., 2022.). This finding may not be so surprising considering the U.S. Green Building Council markets solar adoption mainly by emphasizing economic

incentives rather than pro-environmental care (Holowkal, 2017). Similarly, others have found that willingness to adopt green information technology (e.g., smart devices to save resources in the home) was more strongly connected to external goals, that is, those concerned with self-image, than with internal motivations to help the environment (Koo & Chung, 2014). In many cases, PEBs serve to signal economic status and the ability to make monetary "sacrifices" for green initiatives (Steg, 2016). These findings underscore the need to better understand when extrinsic factors protect and when they harm the environment. From a SDT perspective, it is likely that materialistic values positively link to specific PEBs only when those PEBs serve extrinsic goals, but that these values do not translate to other PEBs or to the adoption of an ecologically sound lifestyle overall. In our investigation of the motivational profiles of solar panel adopters, although extrinsic values predicted solar panel adoption specifically, they did not link to general pro-environmental habits (Legault et al., 2022).

To underscore, although research tends to draw straight lines between either values and PEB or motivation and PEB, these simple explanations fail to consider the diversity of PEBs. Indeed, meta-analyses suggest these bivariate links are modest to moderate (e.g., Hurst et al., 2013). Although some PEBs may be so effortful and definitively pro-environmental that they can be achieved only through highly self-determined motivation to protect the environment (e.g., Green-Demers et al., 1997), other PEBs are rooted in many possible explanations, including intrinsic and extrinsic goals, as well as situational facilitation and constraint (Gaspar, 2013). Environmental values and motivations rarely exist in isolation; hence it is useful to consider the ways in which they interact in predicting PEBs. By uncovering sources of misalignment between values and motivation, it becomes more feasible to develop strategies to promote PEB because points of mismatch might suggest avenues for intervention.

## The Need to Consider Both Goals and Motivation When Predicting PEB

According to SDT, the motivational content of goals (the "what") is distinguishable from the motivation for pursuing them (the "why"; Deci & Ryan, 2000). Thus, although it is common and typical for intrinsic values or goals to generate more self-determined motivation and for extrinsic values or goals to elicit more controlled motivation, there is nonetheless a theoretical distinction between values and the motivational processes by which those values are sought (Deci & Ryan, 2000; Martela et al., 2019). The implication here is that goals and motivation might sometimes match (e.g., intrinsic goal of valuing environmental protection to save future generations *and* self-determined motivation to do things for the environment, like recycling and reusing goods) and sometimes conflict (e.g., intrinsic goal of valuing environmental protection to save future generations *and* amotivation regarding the usefulness or feasibility of a specific behavior).

*When Values and Motivation Align*

Values give rise to motivations. Individuals espousing intrinsic and biospheric values are more likely to be self-determined to do things for the environment. De Groot and Steg (2010) examined interrelations among egoistic, altruistic, and biospheric value orientations and all six types of PEM (i.e., intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation, and amotivation). They found that the more participants were altruistically and biospherically oriented, the more they were self-determined to do things for the environment, and conversely, more egoistic values were linked to less self-determined forms of environmental motivation. Similarly, Baxter and Pelletier (2020) distinguished between motivation and intrinsic/extrinsic goal orientation in predicting sustainable behavior in a resource dilemma, where the objective was to catch and sell as many fish as possible while also preserving the health of the fish population. They found that when participants demonstrated self-determined PEM *and* intrinsic/prosocial goals of sustainability, they showed the most desire to maintain or grow the fish population. In our lab's research on the link between values and motivation, more socially liberal values (e.g., social justice) predicted more self-determined PEM, whereas more socially conservative values predicted controlled environmental motivation and amotivation. In turn, self-determined but not controlled motivation predicted PEB (Sherman et al., 2016).

Thus, when values and motivation align such that intrinsic and biospheric goals match behavioral opportunities to express self-determined PEM, PEB is likely. As Steg (2016) notes, people are likely to consistently and repeatedly act in pro-environmental ways when they strongly endorse biospheric values and their PEM can express itself unfettered by competing contextual factors.

*When Values and Motivation Alternate in Importance*

Values and goals are likely to affect motivation toward and endorsement of pro-environmental choices; those with altruistic and biospheric values will often engage in PEB—even if it involves some personal sacrifice—because it helps others or the environment. Similarly those with self-determined motivation toward PEB are particularly likely to engage in effortful PEB because they are environmentally concerned. Conversely, those with strong hedonic and egoistic values will undertake PEB when it is easy, pleasurable, financially beneficial, or when it signals or enhances their status but not if it is personally uncomfortable or unconnected to extrinsic goals (Steg & de Groot, 2012).

Recently, Masson and Otto (2021) extended this basic framework to suggest that the extent to which values versus self-determined motivation predicts PEB may depend on the extent to which they *match* the specific goal expression of the environmental behavior in question. In other words, whether values versus level of self-determined PEM predicts a given PEB depends on the different pro-environmental and personal

goals linked to or required by that behavior. For instance, when choosing a lightbulb or a vehicle, environmental conservation might be one of many personal and environmental goals connected to that choice, in addition to safety, quality, status, functionality, and so on (Otto, Kaiser, & Arnold, 2014). As Masson and Otto (2021) propose, personal values might provide a large number of reasons (in different domains) to perform a given behavior, but PEM has one major aim: to reflect the level of self-determination in pro-environmental striving. Thus, when a given environmental behavior is multiply determinable, that is, when it has the potential to be explained by any number of personal goals or values (as in the decision to purchase an electric vehicle or install solar panels), then values might be better predictors of decision-making. In contrast, when the behavior in question is more narrowly understood as stemming from pro-environmental concerns, as in the decision to engage in environmental activism or the desire to read books on sustainability, then the level of self-determined motivation is more likely to be a stronger predictor of behavior. In other words, if the behavioral domain invokes many possible motivations, environmental motivation will become less important overall. If the behavioral domain is purely environmental, then environmental motivation will play a stronger role than will broader values. All told, self-determined motivation toward the environment is most predictive of PEB when it is closely guided by its pro-environmental end-state.

In support of these ideas, Masson and Otto (2021) found that self-determined motivation rather than values predicted environmental activism, as measured by frequency of boycotting companies that harm the environment, searching for information about environmental issues, pointing out environmentally damaging behavior to others, and donating to an environmental organization. In contrast, pro-environmental mobility behavior—defined as the tendency to use public transit or walk instead of drive—which could be construed as pro-environmental but also may be contingent on various alternate goals like health or frugality, was predicted by low extrinsic goal prioritization, but was unrelated to self-determined motivation. When Green-Demers and colleagues (1997) and Aitken and colleagues (2016) found that self-determined PEM linked to difficult but not easy PEBs, it may be because difficult PEBs are more quintessentially pro-environmental (e.g., when public transit use is difficult, it requires environmental motivation, but when it is easy, people may do it for lots of reasons).

### When Values, Motivation, and Behavior Are Misaligned: The Need for Social Support

As suggested in Table 55.1, when environmental goals and motives align, PEB should follow from congruent motivational processes (Baxter & Pelletier, 2020; Steg, 2016). Misfit arises when values or goals are not reflected in PEM or PEB (e.g., Kollmuss & Agyeman, 2002; Kormos & Gifford, 2014). Indeed, PEBs can activate multiple goals and motives at a given time, and these may or may not be compatible (Lindenberg & Steg, 2007). These theoretical discrepancies illuminate potential behavioral and situational sources,

**Table 55.1** Theoretical Sources of Goal-Motive Fit and Discrepancy in Pro-Environmental Behavior

| | Intrinsic Goals (e.g., community) | Extrinsic Goals (e.g., money, image) | Biospheric Goals (e.g., protecting nature) |
|---|---|---|---|
| Self-determined pro-environmental motivation | Mostly congruent (High PEB) | Misfit (Less reliable PEB) Solution: Reduce extrinsic costs of PEB | Congruent (High PEB) |
| Non-self-determined pro-environmental motivation | Misfit (Low PEB) Solution: Activate prosocial motivation and align with PEM | Congruent (High PEB but only for specific PEBs that serve extrinsic goals) | Misfit (Low PEB) Solution: Nudge motivation to match values through social support |
| Amotivation toward the environment | Misfit (Low PEB) Solution: Activate prosocial motivation and align with PEM | Somewhat congruent (Low PEB) Solution: Connect PEB to extrinsic goals (PEB will remain goal-based) | Misfit (Low PEB) Solution: Nudge motivation to match values through social support |

*Note:* Sources of misfit likely originate from the behavioral characteristics of the PEB in question (i.e., is it multiply predictable from different types of goals/values?) as well as situational cues and contextual supports versus impediments. Intrinsic and biospheric goal misfit (in gray) highlight the need to align environmental behavioral intentions and cues with underlying values. Extrinsic goal misfit (in dark gray) suggests the need to either reduce egoistic and hedonic costs associated with the PEB or de-emphasize the value of the extrinsic gain attached to the PEB.

and thereby possible avenues for pro-environmental interventions. In particular, these inconsistencies emphasize the need to align values, goals, and motivations in specifically tailored ways depending on the nature of the motivational conflict.

For instance, when individuals prioritize intrinsic values but their motivation toward the environment is not self-determined, they likely require support in reframing the PEB as prosocial rather than solely pro-environmental. In line with this idea, Unsworth and McNeill (2017) asked individuals to connect specific PEBs, including sustainable energy use and commuting behavior, to their personal goals—even if those goals were unrelated to climate change or the environment. When participants engaged in this reflective exercise, they showed greater intentions to save energy and take public transit compared to those exposed to a persuasion attempt based on climate change threat.

In contrast, when biospheric and ecological concerns are generally high, but specific environmental motivations are impoverished or lack self-determination, this suggests that social support or facilitation is needed to illuminate the connection between ecological concerns and the ecological relevance of the behavior. If alternate immediate goals and motives interfere with more deeply held biospheric values, then it may simply be a matter of strengthening the preexisting environmental concern. This might be done by communicating that the PEB is valued or integral to biospheric ideals (e.g., Graves et al., 2013). Alternatively, this type of motivational struggle might be solved by decreasing the value of

competing extrinsic or hedonic motives or reducing the effort or extrinsic cost of the pro-environmental choice by making the PEB easier or more enjoyable (e.g., Steg, Bolderdijk et al., 2014).

The case of extrinsic goal conflict is somewhat less clear. Research shows that when individuals prioritize extrinsic values, PEB is likely only to the extent that it serves their egoistic and hedonic motives, and not when it is personally costly (Lindenberg & Steg, 2007). Thus, when the specific motivational requirements of the PEB in question are easy and pleasurable or when they signal wealth and image, then values and motives align and PEB will be maintained for as long as extrinsic values can be expressed or gratified. On the other hand, it is very unlikely that those with strong extrinsic goals will engage in environmentally sound behavior for the environment's sake, such as when it requires self-determined environmental motivation and concern. In these cases, interventions, messaging campaigns, social figures, and policymakers are faced with limited options. They might simply link the PEB to egoistic and hedonic priorities. Although this practice is very common in green marketing (e.g., Holowkal, 2017), it also reduces the likelihood that environmentally sustainable behavior will fully develop (Ryan & Deci, 2020). Conversely, they might attempt to activate intrinsic or biospheric values, assuming those value structures are extant to begin with (a much more challenging endeavor since values are hard to change; Stern & Dietz, 1994). A more sustainable option might be to reduce the degree to which the PEB infringes on personal gain and comfort (e.g., Steg et al., 2014).

*Person-Intervention Fit*

Empirical research corroborates the importance of aligning interventions and contextual cues to an individual's type of motivation (e.g., Ferguson & Sheldon, 2010). Recently, Hicklenton, Hine, and Loi (2019) demonstrated that when organizations espouse intrinsic, extrinsic, or biospheric values that match employees' own values, the employees feel more satisfied and committed compared to when employer-employee values do not match. When it comes to PEB, Tagkaloglou and Kasser (2018) suggest that motivational fit can help people engage in collective environmental activism, an arguably difficult and effortful PEB requiring sustained involvement in groups and networks that seek to make environmental progress. The authors assigned participants to undergo motivational interviewing (Miller & Rollnick, 2013)—which consisted of a single personalized counseling session to strengthen and internalize their motivation to engage in collaborative activism—or a more directive instruction on how to engage in activism. They then measured how much progress participants had made on their activism goals seven weeks later.

As depicted in Figure 55.1, an interesting interaction emerged, where the effect of motivational interviewing on goal progress depended on participants' baseline level of environmental care and concern. For those who cared about the environment (which, as
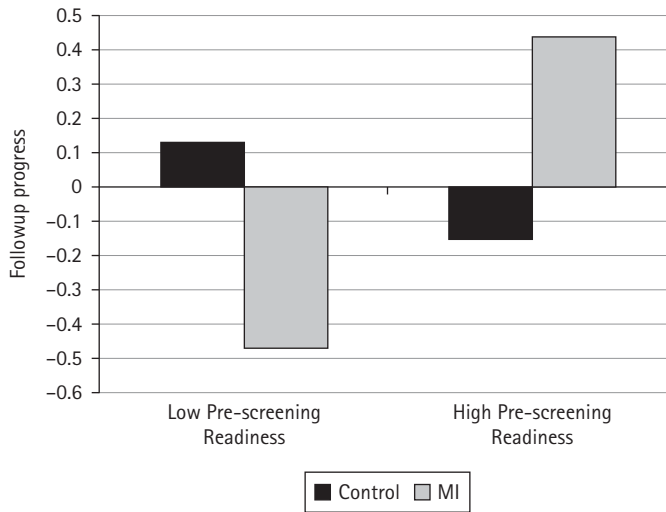
**Figure 55.1** Effect of motivational interviewing (MI) and directive instruction (Control) on environmental activism goal progress for those high and low in environmental readiness to change

*Note.* Figure reproduced with permission from the authors (Tagkaloglou & Kasser, 2018).

the authors noted, reflected *readiness to change*), the motivational interviewing resulted in more activism progress than did the directive instruction. But for those with low environmental concern, the opposite result emerged; that is, the directive approach worked better than the motivational interviewing. Thus collaborative environmental activism, which represents a particularly self-determined PEB, increased when underlying values matched the motivational approach; greater environmental values led to greater environmental activism through the support of self-determined motivation. In contrast, those with little biospheric concern made no progress on their goals when they were motivated using motivational interviewing—presumably because they had no self-determined environmental motivation to begin with. These participants fared better when the motivational approach matched their low environmental concern.

In sum, analysis of the interrelations among values and self-determined PEM is a fruitful way to understand how to motivate PEM. When people hold biospheric or intrinsic values, the promotion of PEB is a matter of emphasizing or connecting values to behavior through pro-environmental or prosocial motivation, respectively. In contrast, extrinsic goals and non-self-determined motivation tend to predict specific PEBs only when those PEBs serve to express or uphold materialistic ideals. When PEBs require effort, personal sacrifice, or self-determination to be integrated into an environmentally sound lifestyle, appealing to environmental or prosocial goals and concerns may be unproductive for those who hold extrinsic values. Empirical findings underscore the importance of using social support and motivational interventions that align with individuals' underlying goals in order to maximize PEB.

## Conclusion

Why do people engage in PEB, and how can they be encouraged to do more to protect the environment? Analysis of the evidence presented here suggests that our most valuable motivational resource for environmental protection is self-determined motivation that springs from biospheric goals (e.g., Baxter & Pelletier, 2020). However, many people prioritize intrinsic and extrinsic values over biospheric values. Whereas intrinsic values can also predict a sustainable lifestyle through the motivational pursuit of prosocial and prudent rather than strictly pro-environmental goals, extrinsic values and controlled environmental motivation pose a threat to widespread environmental protection. Given that values change slowly and unreliably, as well as the fact that PEBs are multi-motivational—often reflecting pro-environmental, pro-self, and prosocial goals and values—there cannot be a one-size-fits-all approach to increasing PEB. Instead, social figures, societal structures, and motivational interventions would be well-served to tailor messaging and support to align motivational strategies with underlying values in order to maximize PEB in the face of rapid environmental destruction.

## References

Aitken, N. M., Pelletier, L. G., & Baxter, D. E. (2016). Doing the difficult stuff: Influence of self-determined motivation toward the environment on transportation proenvironmental behavior. *Ecopsychology*, *8*(2), 153–162.

Bamberg, S., Rees, J., & Seebauer, S. (2015). Collective climate action: Determinants of participation intention in community-based pro-environmental initiatives. *Journal of Environmental Psychology*, *43*, 155–165.

Baxter, D., & Pelletier, L. G. (2020). The roles of motivation and goals on sustainable behaviour in a resource dilemma: A self-determination theory perspective. *Journal of Environmental Psychology*, *69*, 101437.

Brown, K. W., & Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Social Indicators Research*, *74*(2), 349–368.

Cameron, L. D., Brown, P. M., & Chapman, J. G. (1998). Social value orientations and decisions to take proenvironmental action. *Journal of Applied Social Psychology*, *28*(8), 675–697.

Cooke, A. N., Fielding, K. S., & Louis, W. R. (2016). Environmentally active people: The role of autonomy, relatedness, competence and self-determined motivation. *Environmental Education Research*, *22*(5), 631–657.

Darner, R. (2012). An empirical test of self-determination theory as a guide to fostering environmental motivation. *Environmental Education Research*, *18*(4), 463–472.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268.

De Groot, J. I., & Steg, L. (2008). Value orientations to explain beliefs related to environmental significant behavior: How to measure egoistic, altruistic, and biospheric value orientations. *Environment and Behavior*, *40*(3), 330–354.

De Groot, J. I., & Steg, L. (2010). Relationships between value orientations, self-determined motivational types and pro-environmental behavioural intentions. *Journal of Environmental Psychology*, *30*(4), 368–378.

Dietz, T., Gardner, G. T., Gilligan, J., Stern, P. C., & Vandenbergh, M. P. (2009). Household actions can provide a behavioral wedge to rapidly reduce US carbon emissions. *Proceedings of the National Academy of Sciences, 106*(44), 18452–18456.

Ferguson, Y. L., & Sheldon, K. M. (2010). Should goal-strivers think about "why" or "how" to strive? It depends on their skill level. *Motivation and Emotion*, *34*(3), 253–265.

Fujii, S. (2006). Environmental concern, attitude toward frugality, and ease of behavior as determinants of pro-environmental behavior intentions. *Journal of Environmental Psychology*, *26*(4), 262–268.

Gärling, T., Fujii, S., Gärling, A., & Jakobsson, C. (2003). Moderating effects of social value orientation on determinants of proenvironmental behavior intention. *Journal of Environmental Psychology, 23*, 1–9.

Gaspar, R. (2013). Understanding the reasons for behavioral failure: A process view of psychosocial barriers and constraints to pro-ecological behavior. *Sustainability*, *5*(7), 2960–2975.

Gatersleben, B., Murtagh, N., Cherry, M., & Watkins, M. (2019). Moral, wasteful, frugal, or thrifty? Identifying consumer identities to understand and manage pro-environmental behavior. *Environment and Behavior*, *51*(1), 24–49.

Goldsmith, R. E., & Flynn, L. R. (2015). The etiology of frugal spending: A partial replication and extension. *Comprehensive Psychology, 4*, 2165–2228. doi:10.2466/09.20.CP.4.4

Graves, L. M., Sarkis, J., & Zhu, Q. (2013). How transformational leadership and employee motivation combine to predict employee proenvironmental behaviors in China. *Journal of Environmental Psychology*, *35*, 81–91.

Green-Demers, I., Pelletier, L. G., & Ménard, S. (1997). The impact of behavioural difficulty on the saliency of the association between self-determined motivation and environmental behaviours. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, *29*(3), 157–166.

Griskevicius, V., Tybur, J. M., & Van den Bergh, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology, 98*, 392–404.

Grønhøj, A., & Thøgersen, J. (2017). Why young people do things for the environment: The role of parenting for adolescents' motivation to engage in pro-environmental behaviour. *Journal of Environmental Psychology*, *54*, 11–19.

Hicklenton, C., Hine, D. W., & Loi, N. M. (2019). Does green-person-organization fit predict intrinsic need satisfaction and workplace engagement? *Frontiers in Psychology*, *10*, 2285.

Holowkal. T. (2017). *Top four benefits of installing solar panels on your home*. U.S. Green Building Council, April. https://www.usgbc.org/articles/top-four-benefits-installing-solar-panels-your-home.

Howell, R. A. (2013). It's not (just) "the environment, stupid!" Values, motivations, and routes to engagement of people adopting lower-carbon lifestyles. *Global Environmental Change*, *23*(1), 281–290.

Hurst, M., Dittmar, H., Bond, R., & Kasser, T. (2013). The relationship between materialistic values and environmental attitudes and behaviors: A meta-analysis. *Journal of Environmental Psychology, 36*, 257–269.

Intergovernmental Panel on Climate Change. (2014). *Climate change 2014: Synthesis eeport*. IPCC.

Joachain, H., & Klopfert, F. (2014). Smarter than metering? Coupling smart meters and complementary currencies to reinforce the motivation of households for energy savings. *Ecological Economics*, *105*, 89–96.

Joireman, J. A., Lasane, T. P., Bennet, J., Richards, D., & Solaimani, S. (2001). Integrating social value orientation and the consideration of future consequences within the extended norm activation model of proenvironmental behaviour. *British Journal of Social Psychology, 40*, 133–155.

Kasser, T. (2002). *The high price of materialism*. MIT Press.

Kasser, T., Cohn, S., Kanner, A. D., & Ryan, R. M. (2007). Some costs of American corporate capitalism: A psychological exploration of value and goal conflicts. *Psychological Inquiry*, *18*, 1–22.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, *8*(3), 239–260.

Koo, C., & Chung, N. (2014). Examining the eco-technological knowledge of Smart Green IT adoption behavior: A self-determination perspective. *Technological Forecasting and Social Change, 88*, 140–155.

Kormos, C., & Gifford, R. (2014). The validity of self-report measures of proenvironmental behavior: A meta-analytic review. *Journal of Environmental Psychology*, *40*, 359–371.

Ku, L., & Zaroff, C. (2014). How far is your money from your mouth? The effects of intrinsic relative to extrinsic values on willingness to pay and protect the environment. *Journal of Environmental Psychology*, *40*, 472–483.

Lavergne, K. J., & Pelletier, L. G. (2015). Predicting individual differences in the choice of strategy to compensate for attitude-behaviour inconsistencies in the environmental domain. *Journal of Environmental Psychology*, *44*, 135–148.

Lavergne, K. J., & Pelletier, L. G. (2016). Why are attitude-behaviour inconsistencies uncomfortable? Using motivational theories to explore individual differences in dissonance arousal and motivation to compensate. *Motivation and Emotion*, *40*(6), 842–861.

Lavergne, K. J., Sharp, E. C., Pelletier, L. G., & Holtby, A. (2010). The role of perceived government style in the facilitation of self-determined and non self-determined motivation for pro-environmental behavior. *Journal of Environmental Psychology*, *30*(2), 169–177.

Legault, L., Bird, S., Hotaling, C., & Heintzelman, M. (2022). *Are solar adopters proenvironmental, prosocial, or pro-self? Toward a broader understanding of the motivational underpinnings of residential solar panel adoption.* Unpublished manuscript.

Legault, L., Bird, S., Powers, S. E., Sherman, A., Schay, A., Hou, D., & Janoyan, K. (2020). Impact of a motivational intervention and interactive feedback on electricity and water consumption: A smart housing field experiment. *Environment and Behavior*, *52*(6), 666–692.

Legault, L., & Pelletier, L. G. (2000). Impact of an environmental education program on students' and parents' attitudes, motivation, and behaviours. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, *32*(4), 243.

Lindenberg, S., & Steg, L. (2007). Normative, gain and hedonic goal frames guiding environmental behavior. *Journal of Social Issues*, *63*(1), 117–137.

Martela, F., Bradshaw, E. L., & Ryan, R. M. (2019). Expanding the map of intrinsic and extrinsic aspirations using network analysis and multidimensional scaling: Examining four new aspirations. *Frontiers in Psychology*, 10, 2174 https://doi.org/10.3389/fpsyg.2019.02174

Masson, T., & Otto, S. (2021). Explaining the difference between the predictive power of value orientations and self-determined motivation for proenvironmental behavior. *Journal of Environmental Psychology*, *73*, 101555.

Miller, W. R., & Rollnick, S. (2013). *Motivational interviewing: Helping people change* (3rd ed.). Guilford Press.

Moghimehfar, F., & Halpenny, E. A. (2016). How do people negotiate through their constraints to engage in pro-environmental behavior? A study of front-country campers in Alberta, Canada. *Tourism Management*, *57*, 362–372.

Noppers, E. H., Keizer, K., Bolderdijk, J. W., & Steg, L. (2014). The adoption of sustainable innovations: Driven by symbolic and environmental motives. *Global Environmental Change*, *25*, 52–62.

Nordlund, A. M., & Garvill, J. (2002). Value structures behind pro-environmental behavior. *Environment and Behavior*, *34*, 740–756.

Osbaldiston, R., & Sheldon, K. M. (2003). Promoting internalized motivation for environmentally responsible behavior: A prospective study of environmental goals. *Journal of Environmental Psychology*, *23*(4), 349–357.

Otto, S., Kaiser, F. G., & Arnold, O. (2014). The critical challenge of climate change for psychology. *European Psychologist*, 9(2), 96–106.

Pelletier, L. G. (2002). A motivational analysis of self-determination for pro-environmental behaviors. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 205–232). University of Rochester Press.

Pelletier, L. G., & Aitken, N. (2014). Encouraging environmental actions in employees and in the working environment: A self-determination theory perspective. In M. Gagné (Ed.), *The Oxford handbook of work engagement, motivation, and self-determination theory* (pp. 314–334). Oxford University Press.

Pelletier, L. G., Baxter, D., & Huta, V. (2011). Personal autonomy and environmental sustainability. In V.I Chirkov, R. Ryan, & K.M. Sheldon (Eds.), *Human autonomy in cross-cultural context: Perspectives on the psychology of agency, freedom, and well-being*(pp. 257–277). Springer.

Pelletier, L. G., Dion, S., Tuson, K., & Green-Demers, I. (1999). Why do people fail to adopt environmental protective behaviors? Toward a taxonomy of environmental amotivation 1. *Journal of Applied Social Psychology*, *29*(12), 2481–2504.

Pelletier, L. G., & Sharp, E. (2008). Persuasive communication and proenvironmental behaviours: How message tailoring and message framing can improve the integration of behaviours through self-determined motivation. *Canadian Psychology/Psychologie canadienne*, *49*(3), 210–217.

Pelletier, L. G., Tuson, K. M., Green-Demers, I., Noels, K., & Beaton, A. M. (1998). Why are you doing things for the environment? The Motivation toward the Environment Scale (MTES) 1. *Journal of Applied Social Psychology*, *28*(5), 437–468.

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, *61*, 101860.

Schuitema, G., Anable, J., Skippon, S., & Kinnear, N. (2013). The role of instrumental, hedonic and symbolic attributes in the intention to adopt electric vehicles. *Transportation Research Part A: Policy and Practice, 48*, 39–49.

Schultz, P. W., & Zelezny, L. C. (1999). Values as predictors of environmental attitudes: Evidence for consistency across 14 countries. *Journal of Environmental Psychology, 19*, 255–265.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (pp. 1–65). Academic Press.

Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, *50*(4), 19–45.

Seguin, C., Pelletier, L. G., & Hunsley, J. (1999). Predicting environmental behaviors: The influence of self-determined motivation and information about perceived environmental health risks. *Journal of Applied Social Psychology*, *29*(8), 1582–1604.

Sheldon, K. M., & McGregor, H. A. (2000). Extrinsic value orientation and "the tragedy of the commons". *Journal of Personality*, *68*(2), 383–411.

Sheldon, K. M., Nichols, C. P., & Kasser, T. (2011). Americans recommend smaller ecological footprints when reminded of intrinsic American values of self-expression, family, and generosity. *Ecopsychology*, *3*(2), 97–104.

Sheldon, K. M., Wineland, A., Venhoeven, L., & Osin, E. (2016). Understanding the motivation of environmental activists: A comparison of self-determination theory and functional motives theory. *Ecopsychology*, *8*(4), 228–238.

Sherman, A. K., Rowe, A. J., Bird, S., Powers, S., & Legault, L. (2016). Motivational orientation explains the link between political ideology and proenvironmental behavior. *Ecopsychology*, *8*(4), 239–249.

Steg, L. (2016). Values, norms, and intrinsic motivation to act proenvironmentally. *Annual Review of Environment and Resources*, *41*, 277–292.

Steg, L., Bolderdijk, J. W., Keizer, K., & Perlaviciute, G. (2014). An integrated framework for encouraging pro-environmental behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology*, *38*, 104–115.

Steg, L., & de Groot, J. I. M. (2012). Environmental values. In S. Clayton (Ed.), *The Oxford handbook of environmental and conservation psychology* (pp. 81–92). Oxford University Press.

Steg, L., Perlaviciute, G., Van der Werff, E., & Lurvink, J. (2014). The significance of hedonic values for environmentally relevant attitudes, preferences, and actions. *Environment and Behavior*, *46*(2), 163–192.

Stern, P. C. (2000). New environmental theories: Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues, 56*(3), 407–424.

Stern, P. C., & Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues, 50*, 65–84.

Tagkaloglou, S., & Kasser, T. (2018). Increasing collaborative, pro-environmental activism: The roles of motivational interviewing, self-determined motivation, and self-efficacy. *Journal of Environmental Psychology, 58*, 86–92.

Thøgersen, J. (2018). Frugal or green? Basic drivers of energy saving in European households. *Journal of Cleaner Production, 197*, 1521–1530.

Unsworth, K. L., & McNeill, I. M. (2017). Increasing pro-environmental behaviors by increasing self-concordance: Testing an intervention. *Journal of Applied Psychology*, *102*(1), 88–103.

Van der Werff, E., Steg, L., & Keizer, K. (2013). It is a moral issue: The relationship between environmental self-identity, obligation-based intrinsic motivation and pro-environmental behaviour. *Global Environmental Change*, *23*(5), 1258–1265.

Villacorta, M., Koestner, R., & Lekes, N. (2003). Further validation of the Motivation toward the Environment Scale. *Environment and Behavior*, *35*(4), 486–505.

Webb, D., Soutar, G. N., Mazzarol, T., & Saldaris, P. (2013). Self-determination theory and consumer behavioural change: Evidence from a household energy-saving behaviour study. *Journal of Environmental Psychology*, *35*, 59–66.

# The Social Conditions for Human Flourishing: Economic and Political Influences on Basic Psychological Needs

Richard M. Ryan *and* Cody R. DeHaan

## Abstract

In this chapter we review recent conceptualizations and research regarding the impact of political and economic systems on people's thriving through their effects on basic needs for autonomy, competence, and relatedness. Self-determination theory (SDT) particularly stresses how thriving requires both access to *resources* (e.g., education, healthcare) and *freedoms* (e.g., rights for identity choice, freedom from discrimination). Illustrating this are studies using economic and philosophical models of capabilities and social primary goods, the positive effects of which are largely mediated by SDT's basic needs. The chapter also includes discussion of how governments create compliance by either controlling or autonomy-supportive means, with differing effects. SDT supplies a critical and comparative perspective on both economic and political policies and practices using its criteria of meeting human needs.

**Key Words:** self-determination theory, pervasive influences, political systems, economic systems, capabilities, primary goods, freedom, individualism, human rights

> We must lay hold of the fact that economic laws are not made by nature.
> They are made by human beings.
>
> —*Franklin D. Roosevelt (1932)*

Self-determination theory (SDT) is centrally concerned with meeting human needs and addressing the social conditions that facilitate or hinder human flourishing. Typically, SDT research has focused on *proximal environments* such as organizations, schools, sport teams, clinical settings, and close relationships where variations in support versus thwarting of people's basic psychological needs produce variations in wellness and optimal functioning. Across diverse proximal contexts the importance of autonomy support in facilitating basic psychological need satisfactions has been well established, as has the salience of harms caused by controlling environments.

Yet clearly more distal macro-conditions of people's lives—the cultures, political systems, and economic environments in which they are embedded—impact their basic needs, and thus their wellness and capacities for thriving. Accordingly, the impact of these *pervasive contexts* (Ryan et al., 2019) is being increasingly studied within SDT, with a focus on how they influence human well-being and flourishing, and indicators of it including vitality, happiness, life satisfaction, health, and meaning.

Remarkably, despite the obviousness of the claim that the macro-conditions of societies—their political and economic systems—affect basic human needs and wellness, there is scant research on the psychological and behavioral processes through which this occurs. This reflects a general bias among behavioral scientists, who look to immediate environments for the causes of behavior, as well as the focus of behavioral economists, who often have a narrow "maximization" view on human motives and needs as intervening processes. Further, it reflects a more general aversion of behavioral scientists to appear biased or value-driven, too often rending economic and political issues as "taboo topics" (Kasser et al., 2007). An advantage of applying SDT in this realm, however, is that it has clear criteria for evaluating contexts in its conceptualization of basic need satisfactions, which political and economic systems impact in ways that support or inhibit societal flourishing.

Economic and political contexts are pervasive in that they broadly facilitate or suppress opportunities and motivations across populations. Economic and political conditions help shape beliefs and goals, from the educational aims embraced by policymakers, parents, and teachers, to the everyday attitudes people adopt toward outgroups and the vulnerable. These systemic influences lead people to feel more or less threatened or secure, more or less empowered or alienated, more or less enabled or helpless, more or less unified or polarized. People's personal worlds are in these ways embedded within their political/economic climate, as they influence their ideals, delimit their horizons, and feed or discourage different aspirations, often impacting need satisfaction in ways the embedded person does not perceive. Yet because pervasive environments are the "waters we swim in" (Ryan & Deci, 2017), it becomes difficult for any individual to reliably assess the water quality around them.

In fact, people often adapt to and reflect their political or economic environments. For example, Basabe and Valencia (2007) reported on the relations between a government's Liberal Development Score (an index combining ratings of human rights, freedoms, and economic development) and the values for autonomy, egalitarianism, and respect for diversity held by its citizens. Their results showed that the less a government afforded its people rights and freedoms, the less its people personally embraced these values. This shows how the atmosphere created by a regime is often mirrored in its populace. This is also why, to gain compliance without the use of blunt domination, most states attempt to promote an ideological framework that connects with citizens and justifies its style and aims.

We shall begin by discussing both the direct and indirect effects of pervasive contexts on people's psychological need satisfactions and frustrations and why establishing that meditational linkage is important for both theory and policymaking. We then review emerging empirical evidence concerning how people's access to economic resources and capabilities affects their wellness and flourishing by promoting or obstructing experiences of autonomy (volition, choice), competence (effectance and growth), and relatedness (sense of belonging and of mattering), specifically highlighting the *capabilities approach* (Nussbaum, 2000; Sen, 2000). After that we turn to political matters, including the impact of perceived rights and freedoms using the *primary goods* model of Rawls (2001) to examine how perceived access to rights impacts people's need satisfactions and frustrations. We then discuss relations of governmental authority to citizens' motivations to comply and their internalization of regulations, laws, and practices. Governments can rely to various degrees on external control, as well as strategies for promoting internalization to create adherence, with differing effects. Summarizing our general model, we suggest that a thriving citizenship requires macro-features associated with both freedom for expression and from discrimination and resources that help equalize opportunities and support those who cannot make use of them. We will then move on to additional critical questions surrounding group versus individual self-determination and future directions for researching pervasive environments and social change using SDT.

## Why a Basic Needs Approach?

SDT is in a unique position among psychological theories in its capacity to link macro-social conditions with individual flourishing. As an organismic theory it is focused on the requirements for people to be fully functioning, and thus among its central concerns are *basic needs* (see Vansteenkiste, Soenens, & Ryan, this volume). SDT sees full functioning as both described by and dependent upon the satisfaction of basic physical and psychological needs.

Particularly important is SDT's understanding of *psychological* needs and their functional importance. Economic theories have long understood that physical and material needs play an essential role in human functioning, and many approaches are concerned with how to distribute capital and material goods in ways that fulfill these physical needs, as well as satisfy wants (e.g., Piketty, 2014). Yet, while recognizing the material side of needs, SDT argues that human flourishing requires more than just "daily bread." A flourishing human is someone with a sense of aliveness, purpose, connection, and meaning. A flourishing life is *eudaimonic* (Ryan, Curren, & Deci, 2013), a life in which a person is actualizing their capacities and pursuing that which they value. Yet these processes of thriving and eudaimonia are dependent on what SDT describes as the basic needs for autonomy, competence, and relatedness. Stated simply, a person will not flourish without a sense of autonomy or ability to act in accord with their interests and values or to pursue what matters most to them. A person cannot thrive without a sense of competence and

capacity to achieve valued ends. And a person cannot be well without the social bonds and sense of belonging that give significance to living. Broad social conditions clearly impact all these essential and fertile need-relevant experiences.

To illustrate, consider evidence from Unanue et al. (2017) that examined predictors of life satisfaction among Chilean workers. They reported both cross-sectional and longitudinal data showing that job satisfaction plays a substantial role in predicting general life satisfaction. They further showed that this link was itself a function of experiencing SDT's basic psychological need satisfactions in one's life more broadly.

Even the positive effects of income and material resources on wellness are often indirect, having their effect through their more immediate impacts on psychological needs (Di Domenico & Fournier, 2014). This is because much of how material resources contribute to wellness is through their facilitation of opportunities for greater basic psychological need satisfaction. Conversely, much of the negative impacts of poverty and oppression accrue through the frustration of autonomy and competence, leading to stress, demoralization, and amotivation.

Beyond their role in the mediating positive effects of work environments, material resources, and other external factors on wellness, psychological need satisfactions are important to flourishing. SDT holds that a preponderance of variance in wellness and flourishing is accounted for by this small set of basic psychological needs. Although economic and political factors can directly and indirectly affect these needs, autonomy, competence, and relatedness are also affected by many other factors—including biological and other social influences—that ultimately shape flourishing.

Summarizing these themes, we suggest that economic and political environments directly and indirectly influence outcomes via basic psychological needs. We propose that needs are the mediators of the processes through which policies and social arrangements translate into human flourishing, providing an explanation of how these contexts exert their influence. By emphasizing the importance of nonmaterial satisfactions to wellness, SDT also helps to explain phenomena such as declining incremental effects of financial resources on wellness once basic income is achieved (Jebb et al., 2018). Moreover, our proposed mediation model provides testable criteria for new policies and practices, which can be evaluated for their effects on these variables (Martela & Ryan, 2021). Finally, because basic psychological needs can be satisfied through varied strategies and conditions, the model highlights the *equifinality* of fulfilling outcomes through different types of economic supports.

Just as economic conditions impact outcomes via basic needs, so do political conditions. At their best, political regimes provide citizens access to resources such as education and healthcare and support people's freedom and diversity. But the darker side of politics is that governments can also be oppressive and corrupt. They can funnel resources to those with power and deny freedom to or even persecute subgroups. These different sides of politics also impact people's wellness through the same pathways of satisfaction or frustration of basic needs for autonomy, competence, and relatedness.
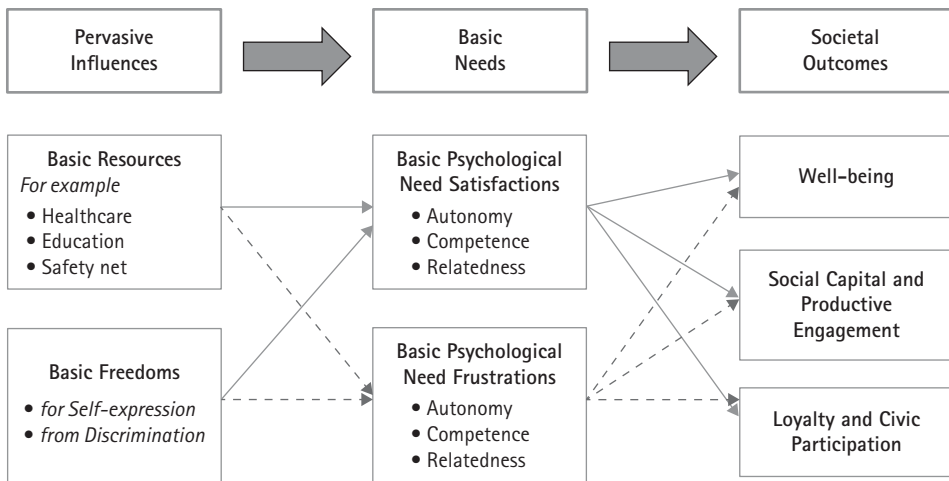
**Figure 56.1** Conceptual model for the relation of basic political and economic provisions and their relation to basic psychological need satisfaction and well-being outcomes

SDT provides a unique and critical perspective on both economic and political regimes precisely because of its specification of essential needs. The theory argues that any context can be evaluated with respect to its adequacy in affording psychological need satisfactions and avoiding the thwarting of these basic needs (Ryan & Deci, 2017). Prior research stemming from SDT has compared classrooms, teams, organizations, and intervention programs, as well as parents, teachers, coaches, and managers, for their relative success in meeting human needs. Having a clear set of criteria in basic needs puts SDT in a good position to be an evaluative tool for political economic systems and policies as well.

The general schema concerning how economic and political factors affect need satisfactions and frustrations and thus wellness and thriving is presented in Figure 56.1. In this macro-model, a flourishing citizenry requires two general forms of support: (1) an economic context in which resources are provided to enable pursuit of a meaningful life and mitigate unfair distributions of opportunities and (2) freedom for self-expression and identity choices and freedom from discrimination or exclusion from rights. To unpack and illustrate the general model, we next review research on each of these topics.

## Economic Issues and Basic Psychological Needs

In most modern contexts one's socioeconomic status (SES)—indicated by factors such as income, wealth, and occupational type—should provide a person with a sense of choice and discretion (autonomy), perceived capabilities to effect outcomes (competence), and abilities to connect with and care for others (relatedness). Income, that is, should be expected to facilitate basic psychological need satisfactions and, in turn, wellness. However, economic wealth is a socially complex variable, and its impact is not just about how much a person has, but also how wealth is distributed to others around one.

This was illustrated in research conducted by Gonzalez et al. (2014), who examined the influence of SES on both basic psychological needs and wellness in a sample of U.S. employees. Both physical and mental health outcomes were assessed, controlling for variables known to impact health such as age, physical activity levels, and smoking. Results showed that a substantial portion of the variance in both physical and mental health outcomes was accounted for by SDT's basic need satisfactions. Those with lower-status occupations reported fewer job satisfactions, more emotional exhaustion, and lower vitality, outcomes reflective of low basic need satisfaction. Yet an important finding was also that the lower one's SES, the more incremental gains in wealth or income positively impacted basic need satisfactions. The poorer one is, the more increases in income positively impact basic psychological need satisfactions, findings that are congruent with other research indicating that once above poverty levels, the relations between more wealth and more well-being become substantially weaker (Kasser, 2002). This is because, once basic obstacles to living are overcome, greater material wealth is less likely to directly enhance the basic psychological needs that, according to SDT, most strongly undergird well-being.

Di Domenico and Fournier (2014) further examined the links between household income, SES, and ratings of socioeconomic inequality in participants' geographic vicinity, as well as SDT's basic needs as predictors of health and wellness. Income and SES turned out to be significant and positive predictors of health and wellness outcomes, whereas inequality was a negative predictor. In line with the SDT perspective, basic psychological need satisfactions mediated these relationships, suggesting that the effects of these economic factors operate through their impacts on autonomy, relatedness, and competence fulfillment.

Looking more internationally, Weinstein et al. (2018) examined data from 79 countries and over 200,000 participants, finding that both country-level wealth (GDP) and individual wealth predicted greater autonomy. Steckermeier (2021) found that across samples from 33 European nations both individual perceived autonomy and societal conditions favoring opportunities and choice predicted greater individual life satisfaction. Also recently, Martela, Lehmus-Sun et al. (2021) used data from 27 European countries derived from the *European Social Survey* to examine the influence of socioeconomic position and basic psychological needs on subjective well-being. They found that across all 27 countries SDT's three basic psychological needs were strongly associated with indicators of happiness, life satisfaction, and meaning, and were negatively related to depressive symptoms. Basic needs explained significantly more variance in wellness outcomes than SES factors, highlighting the central importance of basic psychological needs. In short, evidence is confirming that a large portion of the benefits that derive from material resources do so via their effects on psychological need satisfactions.

*The Capabilities Approach and Its Mediation*

The importance of having access to material and societal resources is clear not just for survival but to pursue that which matters to and is valued by a person. The concept of *eudaimonia* (Ryan et al., 2013) describes such a life in which persons can develop and apply their abilities and virtues in pursuit of that which they find meaningful and of value (see Martela, this volume). In attempts to specify what societies must supply to foster eudaimonia, several philosophers have articulated what is known as the *capabilities approach*. Credited primarily to economist Sen (2000) and philosopher Nussbaum (2000), the thrust of this work has been to consider what social conditions and resources provide a sufficient foundation for individuals to be able to develop and exercise their human capacities and pursue a full and good life.

Sen (2000) specifically suggests that for people to attain happiness they must have *capabilities*, or the "freedom to achieve valued functionings," the term "functionings" referring to the activities or goals people realize. That is, he argues that governments can support the flourishing of citizens by providing the essential affordances and opportunities that allow citizens to pursue their valued aims freely and effectively. Sen does not, however, specify what functionings people should value, nor does he list the specific capabilities people need. Nonetheless, his writings suggest that factors such as access to sufficient economic resources (e.g., education, freedom from poverty) and behavioral freedoms (e.g., to travel, to express oneself) are among capabilities that would matter.

Also pursuing the issue of capabilities, Nussbaum (2000) takes a more direct approach. She specifically delineates the capabilities that she considers essential, deduced from her philosophical view of what comprises a good life. In one list she presented 10 such capabilities: (1) a reasonable life expectancy; (2) bodily health; (3) freedom of movement and freedom from fear of violence; (4) ability to use one's senses, imagination, and thought; (5) ability to experience and express emotions; (6) practical reasoning abilities; (7) affiliation, including the freedom to live with others and be respected for relational choices; (8) accessibility of other living species and nature; (9) opportunities for play; and (10) control over the environment, both political and material. Clearly this is a heterogeneous list, yet Nussbaum maintains that when people are afforded these general capabilities, they will have a greater likelihood of eudaimonia, whereas the absence of these affordances compromises development and flourishing.

Although Nussbaum's list of capabilities defining the "good life" has been criticized as not being empirically derived and potentially being arbitrary or elitist (e.g., see Kashdan, Bishwas-Diener, & King, 2008), some efforts have been made to empirically assess these capabilities and link them with measures of happiness or wellness. For example, Anand et al. (2009) developed a survey-based assessment of Nussbaum's 10 capabilities. Administering it to a nationally representative sample of U.K. residents, they showed that, as a group, these 10 capabilities were good predictors of subjective well-being.

SDT maintains that, insofar as they facilitate wellness and thriving, the impact of the capabilities on Nussbaum's list on wellness outcomes would be strongly mediated by SDT's basic psychological needs. That is, one reason these capabilities matter is that they facilitate the essential psychological satisfactions behind full functioning. Testing this, DeHaan, Hirai, and Ryan (2016) administered Anand et al.'s (2009) capabilities assessment along with SDT measures of basic need satisfactions in samples from the USA and India. Findings showed in both samples that Nussbaum's capabilities collectively predicted a range of wellness indicators, including lower stress and greater happiness, vitality, meaning, and life satisfaction. These capabilities were, as expected, robustly associated with basic psychological need satisfactions, and basic psychological needs substantially mediated their relations to indicators of well-being.

Lorgelly et al. (2015) used both interview data and psychometric considerations as a basis for refining Anand et al.'s (2009) capabilities measure. Noting this, Bradshaw et al. (2021) recruited participants from five countries that varied in terms of economic development and freedoms and administered the new Lorgelly et al. (2015) measure along with SDT measures of both need satisfaction and need frustration (Chen et al., 2015). Reanalyses of the Lorgelly et al. (2015) capabilities assessment revealed several clear subcomponents, including items that directly tapped into two important dimensions, namely *freedom of expression* and *freedom from discrimination*. These items were then used by Bradshaw et al. (2022) as key capabilities, as well as identifying a third factor that more directly reflected one's current well-being (and thus was not used as a predictor). Modeling results showed that perceived freedom of expression had positive and strong direct effects on well-being (i.e., life satisfaction and vitality) and moderate negative relations with indicators of ill-being (depression, anxiety). The effects of freedom from discrimination on well-being were also positive, albeit on average smaller, whereas in relation to ill-being the effects were negative and moderate in size. Most important for the current discussion, these associations between freedom of expression and freedom from discrimination and the varied well-being and ill-being outcomes were in all cases either partially or fully mediated by SDT's basic need satisfactions and frustrations.

In sum, capabilities are defined as the perceived freedoms, resources, and opportunities needed to achieve what one values. Sen remains neutral on what functionings should be valued, and thus what capabilities are essential, whereas Nussbaum (2000) provides specific, if perhaps arbitrary, lists. Yet however capabilities are defined, SDT would suggest that their benefits will accrue largely by their facilitation of basic needs, both physical (e.g., sustaining health) and psychological (e.g., sustaining the individual as a person). Thus a critical component of assessing capabilities and ensuring their provision has the desired effect is understanding how they support people's basic psychological needs (Martela & Ryan, 2021).

Given such findings, policy initiatives can specifically focus on needs as part of these capability provisions. Supporting autonomy might involve policies improving freedom

of movement or increasing vocational choice. As an example, Schüz et al. (2016) were looking at the compromised autonomy of older adults in Germany. Their research showed that the lower autonomy of this population was buffered by increased regional resources, which enhanced functionings via improved transportation and care services. As other examples, competence need support might entail educational and training opportunities, as in social policies granting access to higher education for poorer students. Relatedness might be aided by paid caregiver leave or childcare supports. As an example, Landry et al. (2008) compared Norwegian and Canadian mothers who differed in the social supports for maternity and childcare. They found that the tangible supports, and need satisfaction associated with it, explained Norwegian mothers' greater tendency to trust in development and support their child's autonomy. In such ways SDT begins to fill in the blanks in capabilities theories by providing testable pathways between specific policies and their psychological outcomes, as "aiming for the mediators" can reliably lead to wellness and flourishing.

## Freedoms, Human Rights, and Basic Need Satisfaction

Economic issues are completely intertwined with political regimes, which enforce and regulate monetary exchanges and apply economic policies. Furthermore, governments exert their influence by shaping cultural life, affording or restricting individuals' freedoms, providing access to resources such as education and transport, and protecting rights and ensuring safety.

Although both of this chapter's authors have their individual opinions about the ideal forms of governance, when applying a self-determination lens we assert that this must be left as an empirical question that can be assessed through application of the principles of SDT. In fact, today there is much debate about what represents the best forms and methods of governance. At one time many Western theorists envisioned an "end of history" (Fukuyama, 1992) in which the world would be moving predominantly toward liberal democracies engaged in a global capitalist economy. But several decades later we understand that that is far from inevitable, as democratic movements have fallen off their positive trajectory and are no longer on the increase across the globe (Economist Intelligence Unit, 2020). Instead, we see the rising of various alternatives to democratic capitalism as a core form of social organization. Governments such as China are moving in the direction of a more centralized state-controlled society, with deep surveillance and media controls, alongside strong nationalism. Nor are all current democracies necessarily beacons of freedom. Some have allowed obscene levels of wealth inequality to develop, alongside unequal access to political power. In others, the rise of populist leaders has revealed another vulnerability of democracies, as such leaders often hold sway by mobilizing fears of internal or external threats, thus alienating subsections of the population and coercing constituents into attitudes and behaviors that are based in threat (Fabian, Breunig, & De Neve, 2020).

In the eyes of some analysts, the advantages of liberal democratic market societies lie in the human capital they generate. For example, Phelps (2013) describes the dynamism of liberal societies as one that catalyzes human energies and innovations to produce greater flourishing. Welzel (2013) similarly argues that democracies generate greater social capital, as people more freely identify and exercise their capacities and talents. But at the same time, the failures of market-based democracies to fairly distribute wealth and power, or to regulate and constrain externalities such as carbon emissions and waste, bespeak the potential weakness of such systems and the potential utilities of centralized governmental systems. Even Fukuyama, who as we noted above had famously declared the end of history, more recently admitted, "[T]wenty-five years ago, I didn't have a sense or a theory about how democracies can go backward. And I think they clearly can" (quoted in Tharoor, 2017).

Amid these variations in the forms and styles of political economies, we thus highlight the need for and the importance of truly comparative analyses of government forms and facets in terms of basic need satisfactions. For example, does provision of civil liberties enhance the sense of autonomy and basic need satisfaction among citizens? Do societies that provide greater access to education and equality of opportunities enhance people's general sense of competence? Do economic safety nets and universal healthcare engender in society a greater sense of autonomy or relatedness? And does the ability of citizens to access luxuries or excess material goods provide meaningful boosts to need satisfactions and wellness? The features of political-economic regimes, at both macro and micro policy levels, can be evaluated empirically using the SDT framework.

### Primary Goods: How Human Rights Impact Basic Needs

One dimension along which governments strongly differ is in the rights and freedoms they afford their citizens. Perceiving that one has specific rights and freedoms undoubtedly impacts one's goals and aspirations, including the pursuit of what matters most to one. Yet how rights and freedoms translate into need satisfactions is just beginning to be explored.

To begin examining this connection between governmental affordances of rights and the basic need satisfactions underlying human flourishing, one recent approach has been to link SDT's variables with the features of social justice argued by Rawls (2001) as constituting a just society. In this well-known and highly influential view, justice entails free and equal access for all citizens to the conditions necessary to pursue their own personal conceptions of a good life. These conditions are referred to as *social primary goods*. Like Nussbaum (2000), Rawls (2001) proposed a specific list; in his case that there were five such goods: (1) basic rights and liberties, (2) freedom of movement and occupation, (3) access to positions of authority and responsibility, (4) sufficient income and wealth, and (5) the social bases of self-respect. Rawls also specified that to be considered *primary* these good must represent conditions that are generally necessary for people to develop and

pursue their conception of a good life. These goods are *social* in the sense that their affordance or deprivation can be altered by a society's laws and policies.

Rawls's (2001) own interests were focused on the affordance of primary goods within societies as represented in objective governmental and legal system rights and regulations. But as psychologists, we also think a focus on *perceived* primary goods is important. To act with volition and confidence people need to experience a sense of freedom and of opportunity, variables that are themselves psychological in nature. The experience of vitality is anchored in feeling able to act in accord with one's interests and values and believing that such action can have efficacy. Thus, although objective freedoms and opportunities undoubtedly influence motivation and wellness, they can fully do so only when people subjectively experience them as available.

Consider, for instance, a majority citizen of a country that legally allows freedom of movement and expression. To the extent that the person wishes to move about or to express certain viewpoints, these allowances will support a sense of autonomy. Also consider a minority citizen from the same country, who although "legally" having the same freedoms, fears being treated unequally under the law and facing consequences or harassment for those same behaviors. In such scenarios, it matters less what the legal provisions of the law are, and much more the perceived freedoms and rights—the ability to exercise those abilities and options in practice.

Central to SDT has been its emphasis on the *psychological mediation* of real-world events. In particular, the theory stresses that environments vary in their *functional significance* or the meaning of events to people in terms of their sense of autonomy, competence, and relatedness (Ryan & Deci, 2017). For example, we know that performance-contingent rewards can be offered in ways that will feel controlling to the individual or in ways that enhance a sense of accomplishment. It is not the reward per se that predicts this impact, but its meaning to the person, often as it is colored by its context (e.g., Reeve, this volume; Gagné, Nordgren, Selar, & Sverke, this volume). Similarly, citizens may not perceive the privileges and rights a society might formally offer in the same way. A gun advocate may see more restrictive gun laws as a threat to freedom; someone else might see it as increased security (e.g., Buttrick, 2020). Some will understand laws similarly but, as just explored, not trust they will be equally applied.

Bradshaw et al. (2021) hypothesized that perceiving primary goods as accessible would predict well-being and thriving, an association they also expected to be mediated by the satisfaction and frustration of basic psychological needs. To do so they administered a newly developed measure of *perceived primary goods*—or the extent to which a person experiences the five social primary goods specified by Rawls (2001) as being afforded to them—to adults from Australia, the United States, South Africa, India, and the Philippines. In a second study they similarly surveyed varied groups within the USA such as ethnic minority, sexual minority, political group, and religious communities. Results confirmed across these varied samples that perceptions of primary goods were

positively associated with wellness outcomes, and negatively linked with indicators of ill-being. These relations were in turn strongly mediated by SDT's three basic psychological needs, making it clear that perceived access to basic opportunities and liberties is meaningfully associated with wellness through its effects on autonomy, competence, and relatedness.

This recent evidence concerning both capabilities and primary goods is important in highlighting how societal attributes are associated with greater wellness or ill-being. These studies confirm not only the strong influences of perceptions of pervasive contexts but also their connection with autonomy, competence, and relatedness satisfactions and frustrations, which mediate their relations with outcomes. These studies provide additional support for the schema presented in Figure 56.1 by pointing to both the equality and the possibility of opportunity alongside the perception of freedom to act as being core affordances for need satisfaction and thus societal thriving.

## Governments, Regulations, and the Individual

Providing for capabilities and primary goods as well as regulating dangerous behavior and ensuring public safety are all tasks of government. The very job of governments is indeed the regulation, and sometimes the mobilization, of people's behavior for the common good. But to succeed at these tasks a government at minimum needs the compliance of its citizens, and more ideally their active cooperation and acceptance of the legitimacy and value of laws and social rules. As such there has always been an inherent dialectal tension between government as the overarching agent of society and its economic structures, and individuals' own sense of agency and attempts to thrive.

SDT speaks directly to this inherent antithesis as well as its ideal resolution or synthesis. On the one hand, government is the antithesis of the individual when it is in the role of controlling the citizen's attitudes and behaviors externally, as in authoritarian regimes. Such governments specifically engender what SDT describes as *external regulation* (be it from fear of punishment or desire for contingent privileges), which leads to reliance on controlling means of regulation such as surveillance, threat, or use of force (e.g., Fulbrook, 1995; Moghaddam, 2013). On the other hand, government and the individual are a synthesis or in unison when the government affords circumstances and enforces rules in ways that foster autonomous internalization, such that the individual endorses the actions of the government as legitimate. Here the compliance is volitional and allegiance authentic.

SDT argues that governments can affect where individuals fall in this internalization continuum via two general principles that we now turn to: one concerning the *process* through which a government secures compliance, another through which the *content* of government policies supports or thwarts human needs.

### The Process Aspect

To the extent law and regulation are seen as expressions of the public will and as legitimate—in other words, established fairly and with the support of the people—they are more likely to be autonomously internalized. To the extent they seem imposed and illegitimately enacted, compliance is more externally based and therefore shallow or fragile. Within democracies the cultivation of autonomous forms of internalization is particularly crucial, as such societies depend on collective acceptance of regulations. For authoritarian regimes more autonomous internalization is not always a central goal. Such governments, if organized and effective enough, can foster compliance via surveillance and force, especially if supported by elites who appear to comply (Moghaddam, 2013). However, the costs of such control in terms of the loss of social capital and energy can be high, as can the costs of control itself, because it appears that such control weakens internalization (Phelps, 2013).

For example, researching religious freedoms, Stavrova and Siegers (2014) examined data from more than 70 countries concerning the extent to which religious practices were externally regulated, socially pressured, or legally enforced. Findings revealed that in countries where there was *less* external control or pressure to follow a religion, religious individuals evidenced *deeper* forms of religious internalization, as manifest in greater charitable attitudes, less acceptance of moral breeches, and a higher intrinsic religious orientation. Such results suggest that controlling governmental enforcements can actually weaken autonomous internalization. This comports with expected findings from decades of research on rewards and controls. When control structures are placed on behavior that might have already been engaged in with some autonomy, later engagement with those behaviors is reduced when control structures falter (Deci & Ryan, 1980).

Importantly, compliance with demands in societies can often require engaging in behaviors that aren't inherently enjoyable nor that individuals would likely choose to do in the absence of a well-internalized reason to do so. Examples abound, such as the mundane behaviors of standing in line, wearing a seatbelt, and paying taxes. Most salient recently were government attempts to encourage or require mask wearing, social distancing, and other preventative behaviors in response to COVID-19. Martela, Hankonen et al. (2021) outlined the principles based on SDT for facilitating compliance with such preventative measures, which specified methods of supporting autonomy, providing a sense of purpose, and providing informational clarity and structure.

Experimental evidence has also converged with this set of recommendations. Legate and colleagues (2022) assembled data from 89 countries in which participants were assigned to one of three messaging conditions concerning social distancing: an autonomy-supportive message, a controlling message, or no message. Results partially supported hypotheses in that the controlling message increased defiance relative to autonomy-support and increased controlled motivation relative to no message.

Governments typically cannot rule merely by external regulation, at least not for long. For a regime to be successful at least some proportion of the population needs to be compliant and internalize and endorse the legitimacy of government rules and laws. Ryan and Deci (2017) discussed in detail the issue underlying perceived legitimacy, and we highlight a few of the issues here.

**Voice and choice.** To the extent people feel that there has been fairness in representation and that they have had their due voice in governmental processes, they will see government regulations and controls as more legitimate. In particular, having the experience of being an active and vocal member of a community enables satisfaction of basic psychological needs, as people feel freer to express their opinions, experience a shared sense of purpose in decision-making, and see the possibilities for their voice to affect outcomes. In addition, having inputs on decisions can facilitate the internalization of the rules and regulations that result from such deliberations. Related to this idea is the experience that "people like me" also have a voice and respect as a primary good.

**Rationales and communication.** For compliance to be volitional and sustainable, people must understand why regulations exist. One duty of governments is to explain the rationale behind regulations so as to recruit the volitional backing of citizens. For example, while requiring the wearing of a seatbelt might constrain a person's options in a car, that constraint can be autonomously endorsed if people understand the value and implications of the law for everyone's safety. Similarly, people are more autonomous in paying taxes when they see the money being well spent (Listokin & Schizer, 2012).

**Equal and fair enforcement.** Any rules or regulations that require compliance must be fairly applied. People are very sensitive to perceptions of unfairness. As an example, compliance with taxes is lower when people perceive that others do not pay their fair share (Mason, Utke, & Williams, 2020). In this way even punishments or sanctions can enhance legitimacy and autonomous compliance because they communicate that the law or rule will be equally applied (DeCaro, Janssen, & Lee, 2021). In fact, the combination of legitimate adoption of laws combined with clear but fair enforcement enhances an overall sense of legitimacy and willingness to comply.

*The Content Aspect*

SDT claims that internalization of regulations is facilitated by autonomy-supportive processes that enhance feelings of both autonomy and legitimacy in citizens (Ryan & Deci, 2017). Beyond the processes that convey legitimacy, the content of governmental regulations also impacts how well internalized they will be. SDT specifically claims that some regulations are more easily internalized to the extent that they are compatible with basic needs and values. Other behaviors simply cannot be fully internalized because they are inherently incompatible with basic need satisfaction.

People object when perceiving that a law infringes on their autonomy, which has been a source of polarization during pandemic restrictions. When they have not understood a

clear rationale for restrictions, there is reaction against government initiatives (Morbée et al., 2021). When laws deprive individuals of their affiliations (e.g., religious, ethnic, or cultural communities), they are unable to pursue those connections that are important to them, and they suffer for it. Laws that prevent individuals from accessing the resources or opportunities necessary for their growth and exercise of competencies dampen their experiences of mastery. When the contents of government regulations are need-thwarting, the result is limited internalization and lower voluntary compliance, which necessitates continued external controls to enforce adherence.

While we believe this is likely a main effect, we cannot a priori assume that a particular form of government is more or less need-thwarting than another, and thus more or less stable, without further study. For example, some authoritarian regimes present as a *communitarian parentalism*, justifying centralized and even authoritarian controls as working toward their people's current and future welfare, supplying a core reason for adherence, and varied forms of legitimacy and participation. This is essentially a *utilitarian* (benefiting the common good) rather than *basic human rights* (ensuring individual freedoms) justification, and it may help secure the adherence of the dominant group within the nation by promising societal betterment. Yet we again emphasize that it is an empirical question as to how well parentalistic regimes (i.e., those that assume authority for and control over a populace) are actually able to satisfy people's basic psychological needs relative to other forms of government, such as social democracies.

Taking an SDT perspective, we are skeptical such paternalistic forms will be optimal. The main reason to be skeptical lies in the very nature of human psychological needs, which include an inherent need for autonomy. Governments high in provisions of rights and freedoms, accordingly, have citizens who report higher autonomy need satisfaction, with the latter variable predicting greater trust in government institutions (e.g., Krivoshchekov & Gulevich, 2021). Parentalistic regimes, even benign ones, tend to curtail individual rights, and this also curtails the vitality and social capital that comes with freedoms for self-expression and diversity. Sen (2010, p. 18) makes a similar argument that "the freedom to choose our lives can make a contribution to our wellbeing, but going beyond the perspective of well-being, the freedom itself may be seen as important. Being able to reason and choose is a significant aspect of human life." His observation is one SDT has long argued and long provided evidence for.

Equally clear, however, is that the seeming opposite of communitarian parentalism in governments, namely *laissez-fare-style capitalist democracies,* pose their own issues from the standpoint of basic psychological needs (Kasser et al., 2007). As we have argued, such societies can, via consumerist cultures and the values they entail, foster the *pursuit of what doesn't matter* and fail to satisfy basic psychological needs even as "economic growth" occurs by poor distribution of resources. Power and money concentrated in the hands of a few can supersede the needs of the many, and the distributions of burdens and benefits of economies become uneven in ways that are deeply unhealthy for societies, as

well-documented by Wilkinson and Pickett (2010, 2020). As they put it, "We have seen how inequality affects trust, community life, and violence, and how—through quality of life—it predisposes people to be more or less affiliative, empathic or aggressive" (2010, p. 236). Beyond economic inequalities, many such democracies are also often struggling with multiculturalism and inclusion issues, divisions often aggravated by economic inequities (Stenner & Haidt, 2018).

In fact, world happiness data (e.g., Helliwell et al., 2021) as well as indexes of quality of life (e.g., OECD, 2020; UNDP, 2020) together point to the most need-satisfying cultures in the world being *neither* those with strong centralized control nor the most extreme "winner take all" capitalisms of the world. Instead, it appears that social-democratic regimes have the most basic need-satisfied and thriving of peoples. We suggest it is these cultures, consistent with the model in Figure 56.1, that are balancing best provision of freedoms with regulations supporting more just distributions of resources, thus leading to the most flourishing societies.

At this point, these comparisons remain largely speculative because of the absence of need indicators in so many representative comparative data sets (see Martela & Ryan, 2021). We underscore that from SDT's perspective the relative impact on basic human psychological needs of different forms of government or of government policies must always remain empirical questions and part of the theory's ongoing research agenda. Ideologies must give way to functional outcomes. What is central to the SDT position, however, is that the criteria by which governments and their policies would be judged should not be external variables such as economic growth or military dominance, but rather their ability to meet people's current and future needs, including those psychological needs essential to human thriving.

## Self-Determination of Groups versus Individuals and the Role of Government

As a psychological theory, SDT is focused on individual autonomy and well-being. Individuals, however, exist within groups, and both individuals and the groups with which they identify operate within the purview of governments (though notably in some theocracies, the government and a specific group may be the same).

The specific needs and rights of individuals, groups, and governments with respect to each other have long been a matter of debate among political and legal theorists (Appiah, 2005; Friedman, 1999). But it is especially salient within the multicultural settings that characterize much of the world today. There has been increasing demand for recognition and freedom for groups, both cultural and religious, to express their distinctive values and practices. A central question, then, is whether the advancement of freedoms and autonomy for collectives and groups also advances the autonomy of individuals.

Although affiliation with groups can have psychological benefits for identity and relatedness (Kachanoff, this volume; Ryan & Deci, 2003), the primary clash concerns the

fact that some groups, particularly cultural and religious segments within multicultural settings, may assert the rights, as part of their own claim to self-determination and cultural expression, to restrict the freedom of their members. In some cases, these restrictions are rooted in fear that allowing individual autonomy may disrupt or denigrate their traditional values.

Cohen-Almagor (2018) adds that many of the groups resisting individual autonomy stem from patriarchal cultures, and thus women are most vulnerable to being restricted, coerced, or discriminated against. Examples include arranged marriage, suttee, female infanticide, honor killings, and other norms and traditions that "are considered by liberal standards to be intrinsically wrong, wrong by their very nature" (p. 12). In this regard, Oshana (2014) argued that commitment to autonomy is also a commitment to feminism, and vice versa. In fact, a commitment to autonomy is a commitment to respect human rights of women, sexual minorities, and other vulnerable persons by allowing them to opt out of oppressive social arrangements.

It is important to emphasize, however, that there is no *inherent* contradiction between individual human rights and group rights; they can be in synchrony, providing that belonging does not require subordination. This is true even when group norms appear to be constraining or austere. As SDT specifically asserts (Ryan & Deci, 2017), people can willingly assent to external controls and demands, and even feel autonomy in following them. Allowing individuals to affiliate within groups that restrict their rights is thus conceivable.

However, from a basic needs viewpoint, participation, whatever its character, should not entail coercion and could be rejected by the individual should they so choose without harm or retaliation. In this sense, protecting individual rights and freedoms may entail restricting the "freedoms" of more illiberal, intolerant, or authoritarian groups in the protection of individual rights to self-identity. As principles of human rights must apply across all people in a society, this inherently places limits on the exercise of group beliefs and norms that entail control and coercion or causing harm to others.

Of course, in the organismic view of SDT the best of human groups would be those that supported their members' autonomy and in which members experience their participation as volitional: members would internalize, and ideally integrate, the group's norms and values; members would be part of their group out of choice rather than out of fear of societal exclusion, shunning, or intimidation. Groups characterized by such freedom of participation or withdrawal can then be tolerated, if not celebrated, within liberal societies and be free to promote their aims. In principle, as groups face the challenge of cultivating volition rather than mere adherence in members, they may have to adapt by being more responsive to the needs of all—in other words, evolve in the direction of meeting human needs.

From a policy standpoint, it must be accepted that people will either find themselves in or join groups that do not benefit their welfare. They may even sometimes do so from

poor judgment or from introjection and social pressures. Yet it would typically not be the role of government to prevent such misjudgments and affiliations. Nonetheless it would be the role of government to ensure that individual participation in any group is not based on coercive external regulation. Thus, where policy would limit the freedom of groups is in their capacity to externally control members without their assent, or to deny a person's ability to separate from a group.

As a psychological perspective, SDT is of course inherently and steadfastly focused on individual wellness. In fact, there is not any other locus for experience of wellness than individuals—all else is an abstraction. A group can be strong or powerful, but it can have no experience of wellness. Only the people within it can. It is in this sense that human experience must supply the ultimate metric for our social institutions. It's not about which collective entities prevail but rather how well the people within them flourish.

### Basic Psychological Needs and Future Social Change

SDT research thus far, although merely preliminary, highlights how systems that support freedoms and rights and that fairly distribute resources and opportunities are likely those that best enable individual flourishing. Clearly, experiencing these affordances of resources and freedoms can make a difference in the psychology of individuals—including their vitality, aspirations, industry, and optimism.

In our view, people's inherent need for autonomy supplies an ongoing undercurrent that ultimately flows in the direction of social change. This basic human propensity toward agency and autonomy imparts a directional influence on history. People will try to advance their options, freedoms, and rights to pursue what they value. But this tendency toward liberation is countered in history by forces that can often delay or sometimes overwhelm it, especially under conditions of threat, which all societies on earth will be increasingly facing given the trajectories of climate change. Where history will actually "end" is not clear.

Welzel (2013) argues in line with SDT that both natural selection and cultural innovations favor higher levels of personal control and autonomy. He sees this as leading to a constant pressure upward for more freedoms whenever these are seen as having utility. When the focus is on survival and managing external threats, however, expanding freedoms may be less salient and less pursued. This model helps explain why social change can be slow in impoverished countries, and why political leaders frequently attempt to instill an atmosphere of threat and control so as to keep insecurity high and a focus on emancipating freedoms low.

Social change, especially change involving freedom from traditional social roles or for inclusion of diverse peoples, can pose a threat to a status quo of privilege or power. Perceiving their culture as eroding, people may turn toward identity politics and populist authoritarian leaders, movements that promise to contain threat and restore a sense of meaning and control (Womick et al., 2021). From an SDT standpoint these are essentially

compensatory basic need dynamics, in which perceived thwarts to autonomy and competence lead to identification with a group or leader to reestablish a sense of control and affiliation (see Fabian, Breunig, & De Neve, 2020). Stenner (2005) similarly suggests that perceived threats to identity, status, and cultural values interact with authoritarian predispositions to catalyze such dynamics. These predispositions, in turn, often emerge amid the controlling styles of parents that can contribute to authoritarian propensities (e.g., Duriez, Soenens, & Vansteenkiste, 2007; Staub, 2005). This is only to say that social changes in the direction of better meeting of human needs face many sources of resistance.

If there is ever an ultimate solution to the problem of human needs, it will lie in our collective creation of the means for satisfying them. But because of the nature of our human needs, any solution must be one that allows for human autonomy and its diversifying propensities, founded ideally upon a combination of basic opportunities and freedoms. These too will have to be reshaped toward richer and more need-satisfying nonconsumptive pursuits and opportunities, with an aim of protecting the environment for all. As we have seen, SDT research shows that the incremental gain in need satisfactions grows smaller with increasing individual wealth, but larger with well-distributed societal wealth. SDT research also supports the view that well-being is not enhanced by materialism (Bradshaw, this volume). Flourishing societies will emerge when the focus is on bounties such as time affluence, access to education and skill development, and freedom to pursue what matters to one. Making need satisfaction rather than consumption and economic growth the target is essential to global and especially to future generations' need satisfaction, to work toward a planetary climate now in which all might live and thrive.

## References

Anand, P., Hunter, G., Carter, I., Dowding, K., Guala, F., & Van Hees, M. (2009). The development of capability indicators. *Journal of Human Development and Capabilities*, *10*(1), 125–152. https://doi.org/10.1080/14649880802675366

Appiah, A. K. (2005). *The ethics of identity*. Princeton University Press.

Basabe, N., & Valencia, J. (2007). Culture of peace: Sociostructural dimensions, cultural values, and emotional climate. *Journal of Social Issues*, *63*(2), 405. https://doi.org/10.1111/j.1540-4560.2007.00516.x

Bradshaw, E. L., DeHaan, C., Parker, P. D., Curren, R., Duineveld, J. J., Di Domenico, S. I., & Ryan, R. M. (2021). The perceived conditions for living well: Positive perceptions of primary goods linked with basic psychological needs and wellness. *Journal of Positive Psychology*.

Bradshaw, E.L., Ryan, R.M., DeHaan, C., Duineveld, J. J., Di Domenico, S. I., (2022). *Freedom of expression, and freedom from discrimination as capabilities*. {Unpublished manuscript} Australian Catholic University, North Sydney.

Buttrick, N. (2020). Protective gun ownership as a coping mechanism. *Perspectives on Psychological Science*, *15*(4), 835–855. https://doi.org/10.1177/1745691619898847

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Durize, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion, 39*, 216–236. https://doi.org/10.1007/s11031-014-9450-1

Cohen-Almagor, R. (2018). Between individual rights and group rights. *Academicus International Scientific Journal*, *9*(18), 9–25. https://doi.org/10.7336/academicus.2018.18.01

DeCaro, D. A., Janssen, M. A., & Lee, A. (2021). Motivational foundations of communication, voluntary cooperation, and self-governance in a common-pool resource dilemma. *Current Research in Ecological and Social Psychology*. Advance online publication. https://doi.org/10.1016/j.cresp.2021.100016

Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13, pp. 39–80). Academic Press.

DeHaan, C. R., Hirai, T., & Ryan, R. M. (2016). Nussbaum's capabilities and self-determination theory's basic psychological needs: Relating some fundamentals of human wellness. *Journal of Happiness Studies*, *17*(5), 2037–2049. https://doi.org/10.1007/s10902-015-9684-y

Di Domenico, S. I., & Fournier, M. A. (2014). Socioeconomic status, income inequality, and health complaints: A basic psychological needs perspective. *Social Indicators Research*, *119*, 1679–1697. https://doi.org/10.1007/s11205-013-0572-8

Duriez, B., Soenens, B., & Vansteenkiste, M. (2007). In search of the antecedents of adolescent authoritarianism: The relative contribution of parental goal promotion and parenting style dimensions. *European Journal of Personality*, *21*(4), 507–527. https://doi.org/10.1002/per.623

Economist Intelligence Unit. (2020). *The Democracy Index 2020: In sickness and in health?* https://www.eiu.com/n/campaigns/democracy-index-2020/

Fabian, M., Breunig, R., & De Neve, J. E. (2020). *Bowling with Trump: Economic anxiety, racial identification, and well-being in the 2016 presidential election*. Brookings Institution. https://www.brookings.edu/research/bowling-with-trump/

Friedman, L. M. (1999). *The horizontal society*. Yale University Press.

Fukuyama, F. (1992). *The end of history and the last man*. Free Press.

Fulbrook, M. (1995). *Anatomy of a dictatorship: Inside the GDR, 1949–1989*. Oxford University Press.

Gonzalez, M. G., Swanson, D. P., Lynch, M., & Williams, G. C. (2014). Testing satisfaction of basic psychological needs as a mediator of the relationship between socioeconomic status and physical and mental health. *Journal of Health Psychology*, *21*(6), 972–982. https://doi.org/10.1177/1359105314543962

Helliwell, J. F., Layard, R., Sachs, J., and De Neve, J.-E., Aknin, L. B., & Wang, S. (Eds.). (2021). *World happiness report 2021*. Sustainable Development Solutions Network. https://worldhappiness.report/ed/2021/

Jebb, A. T., Tay, L., Diener, E., & Oishi, S. (2018). Happiness, income satiation and turning points around the world. *Nature Human Behaviour*, *2*(1), 33–38. https://doi.org/10.1038/s41562-017-0277-0

Kashdan, T. B., Biswas-Diener, R., & King, L. A. (2008). Reconsidering happiness: The costs of distinguishing between hedonics and eudaimonia. *Journal of Positive Psychology*, *3*(4), 219–233. https://doi.org/10.1080/17439760802303044

Kasser, T. (2002). *The high costs of materialism*. MIT Press.

Kasser, T., Cohn, S., Kanner, A. D., & Ryan, R. M. (2007). Some costs of American corporate capitalism: A psychological exploration of value and goal conflicts. *Psychological Inquiry*, *18*(1), 1–22. https://doi.org/10.1080/10478400701386579

Krivoshchekov, V., & Gulevich, O. (2021). Do autonomous people tend to trust political institutions more? Multi-level evidence from European countries. October 1. https://doi.org/10.31234/osf.io/ghrwe

Landry, R., Whipple, N., Mageau, G., Joussemet, M., Koestner, R., Di Dio, L., Gringas, I., Bernier, A., & Haga, S. M. (2008). Trust in organismic development, autonomy support, and adaptation among mothers and their children. *Motivation and Emotion*, *32*(3), 173–188. https://doi.org/10.1007/s11031-008-9092-2

Legate, N., Ngyuen, T. V., Weinstein, N., Moller, A., Legault, L., Vally, Z., ... Ogbonnaya, C. E. (2022). A global experiment on motivating social distancing during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences, 119*(22). Chicago.

Listokin, Y., & Schizer, D. M. (2012). I like to pay taxes: Taxpayer support for government spending and the efficiency of the tax system. *Tax Law Review*, *66*, 179.

Lorgelly, P. K., Lorimer, K., Fenwick, E. A., Briggs, A. H., & Anand, P. (2015). Operationalising the capability approach as an outcome measure in public health: The development of the OCAP-18. *Social Science & Medicine*, *142*, 68–81. https://doi.org/10.1016/j.socscimed.2015.08.002

Martela, F., Hankonen, N., Ryan, R. M., & Vansteenkiste, M. (2021). Motivating voluntary compliance to behavioural restrictions: Self-determination theory-based checklist of principles for COVID-19 and other emergency communications. *European Review of Social Psychology*. Advance online publication. https://doi.org/10.1080/10463283.2020.1857082

Martela, F., Lehmus-Sun, A., Parker, P. D., Pessi, A. B., & Ryan, R. M. (2021). *Needs and wellbeing across Europe: Basic psychological needs predict both wellbeing and ill-being better than socio-economic position.* Paper presented at IPPA 2021. http://ippa-wc-2021.p.asnevents.com.au/tracks/3724/abstract/72800

Martela, F., & Ryan, R. M. (2021). In selecting measures for a comprehensive assessment of well-being, it is essential to include indicators of psychological need satisfaction. *Preventive Medicine Reports*, *23*, 101474. https://doi.org/10.1016/j.pmedr.2021.101474

Mason, P. D., Utke, S., & Williams, B. M. 2020. Why pay our fair share? How perceived influence over laws affects tax evasion. *Journal of the American Taxation Association, 42*(1), 133–156. https://doi.org/10.2308/atax-52598

Moghaddam, F. M. (2013). *The psychology of dictatorship*. American Psychological Association.

Morbée, S., Vermote, B, Waterschoot, J., Dieleman, L., Soenens, B. Van den Bergh, O., Ryan, R. M., Vanhalst, J., De Muynck, G.-J., & Vansteenkiste, M. (2021). Adherence to COVID-19 measures: The critical role of voluntary motivation on a short- and long-term basis. *Motivation Science, 7*(4), 487–496. https://doi.org/10.1037/mot0000250.

Nussbaum, M. (2000). Women's capabilities and social justice. *Journal of Human Development*, *1*(2), 219–247. https://doi.org/10.1080/713678045

OECD. (2020). *How's life? 2020: Measuring well-being*. https://doi.org/10.1787/9870c393-en

Oshana, M. (2014). A commitment to autonomy is a commitment to feminism. In A. Veltman & M. Piper (Eds.), *Autonomy, oppression, and gender* (pp. 141–62). Oxford University Press.

Phelps, E. S. (2013). *Mass flourishing*. Princeton University Press.

Piketty, T. (2014). *Capital in the 21st century*. Harvard University Press.

Rawls, J. (2001). *Justice as fairness: A restatement*. Harvard University Press.

Roosevelt, F. D. (1932). *Presidential nomination address*. Democratic National Convention, Chicago, July 2. https://publicpolicy.pepperdine.edu/academics/research/faculty-research/new-deal/roosevelt-speeches/fr070232.htm

Ryan, R. M., Curren, R. R., & Deci, E. L. (2013). What humans need: Flourishing in Aristotelian philosophy and self-determination theory. In A. S. Waterman (Ed.), *The best within us: Positive psychology perspectives on eudaimonic functioning* (pp. 57–75). American Psychological Association. https://doi.org/10.1037/14092-004

Ryan, R. M., & Deci, E. L. (2003). On assimilating identities to the self: A self-determination theory perspective on internalization and integrity within cultures. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (pp. 253–272). Guilford Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press. https://doi.org/10.1521/978.14625/28806

Ryan, R. M., Ryan, W. S., Di Domenico, S. I., & Deci, E. L. (2019). The nature and the conditions of human autonomy and flourishing: Self-determination theory and basic psychological needs. In R. M. Ryan (Ed.), *The Oxford handbook of human motivation* (2nd ed., pp. 89–110). Oxford University Press.

Schüz, B., Westland, J. N., Wurm, S., Tesch-Römer, C., Wolff, J. K., Warner, L. M., & Schwarzer, R. (2016). Regional resources buffer the impact of functional limitations on perceived autonomy in older adults with multiple illnesses. *Psychology and Aging*, *31*(2), 139–148. https://doi.org/10.1037/pag0000064

Sen, A. (2000). *Development as freedom*. Anchor Books.

Sen A. (2010). *The idea of justice*. Penguin Books.

Staub, E. (2005). The roots of goodness: The fulfillment of basic human needs and the development of caring, helping and nonaggression, inclusive caring, moral courage, active bystandership, and altruism born of suffering. In G. Carlo & C. P. Edwards (Eds.), *Moral motivation through the life span* (pp. 33–72). University of Nebraska Press.

Stavrova, O., & Siegers, P. (2014). Religious prosociality and morality across cultures: How social enforcement of religion shapes the effects of personal religiosity on prosocial and moral attitudes and behaviors. *Personality and Social Psychology Bulletin, 40*(3), 315–333. https://doi.org/10.1177/0146167213510951

Steckermeier, L. C. (2021). The value of autonomy for the good life: An empirical investigation of autonomy and life satisfaction in Europe. *Social Indicators Research*, *154*(2), 693–723.

Stenner, K. (2005). *The authoritarian dynamic*. Cambridge University Press.

Stenner, K., & Haidt, J. (2018). Authoritarianism is not a momentary madness, but an eternal dynamic within liberal democracies. In C. Sunstein (Ed.), *Can it happen here? Authoritarianism in America* (pp. 175–220). Harper-Collins.

Tharoor, I. (2017). The man who declared the "end of history" fears for democracy's future. *Washington Post*, February 9. https://www.washingtonpost.com/news/worldviews/wp/2017/02/09/the-man-who-declared-the-end-of-history-fears-for-democracys-future/

Unanue, W., Gómez, M. E., Cortez, D., Oyanedel, J. C., & Mendiburo-Seguel, A. (2017). Revisiting the link between job satisfaction and life satisfaction: The role of basic psychological needs. *Frontiers in Psychology, 8*, 680. https://doi.org/10.3389/fpsyg.2017.00680

UNDP. (2020). *The next frontier: Human development and the anthropocene*. United Nations Development Programme. http://hdr.undp.org/sites/default/files/hdr2020.pdf

Weinstein, N., Legate, N., Al-Khouja, M., & Sengul, S. (2018). Relations of civil liberties and women's health satisfaction around the globe: The explanatory power of autonomy. *Journal of Health Psychology*, *26*(3), 321–331. https://doi.org/10.1177/1359105318810074

Welzel, C. (2013). *Freedom rising: Human empowerment and the quest for emancipation*. Cambridge University Press.

Wilkinson, R., & Pickett, K. (2010). *The spirit level: Why equality is better for everyone*. Penguin Books.

Wilkinson, R., & Pickett, K. (2020). *The inner level: How more equal societies reduce stress, restore sanity and improve everyone's well-being*. Penguin Books.

Womick, J., Eckelkamp, J., Luzzo, S., Ward, S. J., Baker, S. G., Salamun, A., & King, L. A. (2021). Exposure to authoritarian values leads to lower positive affect, higher negative affect, and higher meaning in life. *PLoS ONE 16*(9), e0256759. https://doi.org/ 10.1371/journal.pone.0256759

# Epilogue

# Acting as One: Self-Determination Theory's Scientific and Existential Import

Richard M. Ryan *and* Edward L. Deci

## Abstract

Research in self-determination theory, amply detailed across the chapters of this *Handbook*, attests to the universal human propensities toward growth and integration, as well as the social conditions that can either facilitate or hinder their expression. Beyond the influences of social contexts, we as individuals can also actively craft our development, or balk at that existential responsibility. People have inherent capacities to reflect upon, and to accept or reject, values and aims and in so doing they affect their own and others' well-being and vitality. This human capacity for autonomy develops most robustly within need-supportive social contexts, whereas controlling and need thwarting environments often bring out the more defensive and compensatory "dark sides" of human nature. By creating more autonomy, competence, and relatedness supportive environments in families, schools, organizations, and cultures, the overarching aim of SDT is to help foster a more humane world within which all can flourish.

**Key Words:** self-determination theory, autonomy, basic psychological needs, intrinsic motivation

We begin this epilogue by celebrating the authors of this volume, whose chapters collectively explore the universal phenomena of self-organization and autonomy in human functioning. Across these varied contributions is a common recognition of basic human motivational propensities to actively learn, assimilate, connect, and integrate. From birth, people work to try new ways to engage their surroundings, stretching capacities and abilities. They volitionally attend to, emulate, and internalize the social practices and values around them, helping to explain the coordination, adherence, and cooperativeness of people within societies everywhere. People also seek to understand and make sense of their lives, striving toward meaning and purpose. These intrinsically active human propensities bring with them the psychological satisfactions of autonomy, competence, and relatedness essential to eudaimonia—experiencing well-being as an outgrowth of living well.

Evidence throughout this *Handbook* demonstrates these active, integrative processes and the centrality of basic psychological need satisfactions at every stage of development

and in nearly every area of human endeavor. They are manifest in behaviors from early childhood exploration and curiosity to late-life wisdom and generativity. They are relevant across cultures, bespeaking the universality of our active human propensity to internalize and, where possible, identify with and integrate ambient social practices and values. They are critical to optimal functioning and sustained engagement across applied domains as diverse as school, work, sport, and the arts. Even in personal relationships, responsiveness to these basic needs explains the quality of connection and intimacy between people, and thus their willingness to trust, rely, care, and share. At a macro level, these needs speak to how the affordances of societies and governments can support or thwart people's active, growth-oriented nature. All these ideas have been taken up in this volume and given both conceptual shape and quantitative form.

One of the privileges we have had in studying human needs, motivations, and autonomy is that, beyond the scientific puzzles they present and even beyond the practical knowledge their study has yielded, these are topics of personal significance. The questions we ask in SDT concerning why we do what we do, what kind of "freedoms" we really have, and what kind of life should be pursued are ones asked by individuals everywhere. By speaking directly to people's motives and values, and the functional importance of pursuing what matters to a good life, self-determination theory (SDT) thus carries not only scientific but existential import.

Among the formulations of SDT that especially reflects this existential import is the mere assertion that we as individuals can exercise autonomy (even if we often flee from it). People can be volitional and engage in behaviors they reflectively value. They can also refuse actions contrary to their values or interests. Taking this distinction seriously has long freed SDT from the paradigm blindness of behavioral and reductionistic approaches that do not differentiate between volitional and controlled motivations. Indeed, SDT research suggests that the more psychologically healthy and integrated the individual, the more they are able to self-regulate their actions and feel a sense of choice or self-endorsement in enacting them. Yet people can also be inauthentic and controlled; they can be pushed or seduced into actions by forces external to the self, leading them to compartmentalize or overrun their own abiding values or sensibilities. Phenomenally, this distinction between autonomous and controlled actions is palpable to individuals, even before they can articulate it, as well as having clear behavioral consequences.

SDT highlights that each of us can act in accord with our reflective values, exercising our capacities for self-determination. Important in deploying these capacities is SDT's distinction between freedom and autonomy. We may have freedom to do many things, but that freedom should be *constrained* by our autonomy. In exercising autonomy one is directing and guiding one's vitality and efforts to actions that are self-endorsed, not just drifting toward things one might be free to do. Notably, this distinction places a weight of responsibility on each of us, since autonomy entails an internal endorsement of one's actions.

This leads to another thing worth celebrating that research throughout this volume reveals: the positive and prosocial human nature that emerges when people are under need-supportive conditions and able to act with autonomy. Under such conditions people tend to show their best nature, in terms of both engagement and prosociality. For instance, even when people are "free" to do harm to others, they will (typically) choose not to do so or feel distress when they do. Such findings are part of what makes the science of SDT a (sometimes) optimistic perspective. SDT both hypothesizes and has evidence for the idea that when people are supported to be their authentic selves, they will typically endorse prosocial actions and values and find satisfaction in doing so.

But there is also a dark side; SDT's "dual process" view holds that need frustration (especially if severe or chronic) and controlling contexts can foster aggression, prejudice, dishonesty, as well as other antisocial dispositions, attitudes, and behaviors. Again, evidence in different chapters shows how counterproductive behaviors, reactance, defensiveness, passivity, and compensatory motives are all potential outcomes of need-thwarting social conditions. Researching the mechanisms of need frustration that activate this darker side of our natures is equally as important to SDT's mission as its "positive psychology."

Just as this *Handbook* was being completed, a meta-analysis was published providing some confirmation of SDT's broad hypothesis of a (conditionally) positive human nature (Donald et al., 2021). More specifically it tested the idea that when people can act with autonomy, their tendency is to be prosocial. On the darker side, it was hypothesized that antisocial behaviors would most often be associated with controlling contexts and motivations. Both hypotheses were supported. Clearly these are sweeping associations, for which moderating conditions and contexts will matter. But the general point is that when people have support for the needs intrinsic to their human nature, when they can be autonomous and empowered, they are more prone to show their humanity.

We are, after all, a tale of two natures, diverging as a function of the basic need supports and satisfactions we experience. When our families, social groups, institutions, religions, economies, and governments move in a direction of supporting basic human needs, both physical and psychological, not only will humans have greater well-being, but we suggest they will also be more prone to care for each other and the larger concerns we collectively face. Increasing our integrative span to include the planetary threats that imperil the wellness of all future generations will require massive changes in internalization and valuing across the globe. Integrating such change within, we can connect as individuals with each other and with all these future selves whose possibilities for life we are supporting. In an organismic perspective, we are at our best when we acting as one within ourselves, and as one within a larger whole.

Finally, in closing this *Handbook* we reflect on the more than four decades since the two of us committed to undertake the task of creating a formal, empirically supported, yet person-centered theory of human motivation and thriving. It has been a challenging, surprising, and deeply fulfilling endeavor for us both. Especially satisfying have been

opportunities to collaborate with so many creative and skilled fellow scholars within the SDT community, both those represented as authors in this *Handbook* and the hundreds of others working within the framework around the world. We hope they benefit from this volume and from these advancements in SDT, using it to more effectively create social and environmental conditions in which all can flourish.

## Reference

Donald, J. N., Bradshaw, E. L., Conigrave, J. H., Parker, P. D, Byatt, L. L., Noetel, M., & Ryan, R. M. (2021). Paths to the light and dark sides of human nature: A meta-analytic review of the prosocial benefits of autonomy and the antisocial costs of control. *Psychological Bulletin, 147*(9), 921–946. https://doi.org/10.1037/bul0000338

# INDEX

*For the benefit of digital users, indexed terms that span two pages (e.g., 52–53) may, on occasion, appear on only one of those pages.*

Tables and figures are indicated by *t* and *f* following the page number

behavior(s) (*cont.*)
   pro-environmental (*see*
      pro-environmental
      behavior(s) [PEB])
   pro-relationship, in
      interdependence
      theory, 176–77
   prosocial, and eudaimonic
      living, 316–17
   psychoanalytic view of, 423–24
   as reflecting true self, 161–65
   regnant cause of, 11
   relatedness-supportive, 65
   relatedness-thwarting, 65
   rigid patterns of, need
      frustration and, 824–25
   social constructionist view
      of, 423–24
behavior change. *See also*
      health behavior change;
      motivation and behavior
      change techniques
      (MBCTs)
   autonomy support and, 22
   determinants of, 742
   dual process models and, 795
   integrated regulation and, 73
   international development and,
      1053–56
   mindfulness and, 189
   motivational approach
      for, 943–50
   motivational interviewing
      and, 948
   need-supportive strategies
      for, 943–50
   SDT and complementary
      techniques in, 793–94
   techniques, in interventions,
      718, 752–53, 793–94
behaviorism/cognitive
      behaviorism, 23, 1053
behavior regulation. *See*
      regulation
Behavior Regulation in Exercise
      Questionnaire, 72–73
beliefs, internalization, cross-
      cultural research on,
      1028–29
beneficence, 112, 316–17, 430–31
   as candidate need, 1031
   in healthcare, 837
benevolence, 17, 19
   frustration, 880, 887

and prejudice reduction in
      workplace, 947
as psychological need, 880, 887
satisfaction, 880, 887
in society, 891, 892
tax compliance and, 891
wealth aspirations and, 146
and workplace, 880, 887, 892
bifactor models in SDT, 442,
      444–47, 444*f*
   anchor items and, 446
   as atheoretical/methodological
      test of discriminant
      validity, 445
   and construct validity, 444–45
   general factor (G-factor) in,
      444*f*, 444, 445, 446
   subscales factors (S-factors) in,
      444, 446
   as test of theoretical
      structure, 445
Big Five traits
   and causality orientations
      theory, 129, 133
   change in, 133–34
   and life outcomes, 133–34
   need-based experiences
      and, 100
   and subjective vitality, 219
binding problem, 295
biomedical ethics, 979. *See also*
      medical ethics
   advances in, 837
   autonomy in, 839
bipolar I disorder, transdiagnostic
      role of basic psychological
      needs in, 827
borderline personality disorder,
      transdiagnostic role of
      basic psychological needs
      in, 821–22, 825, 827
brain. *See also* anterior cingulate
      cortex (ACC); medial
      prefrontal cortex (MPFC)
   anatomic differences related
      to need satisfaction,
      260*t*, 267
   choice provision and, 261–62
   and episodic memory
      integration, 283–84
   functional activation in need
      satisfaction, 854
   in integrative processes,
      272–73, 295, 296, 303–5

and intrinsic motivation, 260*t*,
      262–63, 264*f*, 296, 854
markers of need-based
      experiences in, 102–3
in memory processing,
      277, 304
process-specific alliances
      in, 304–5
psychophysiological
      relationships and, 296–98
reward processing in, 259–61,
      262, 267
self-involving processing in,
      263, 267
in self-referential
      cognition, 297–98
and self-representation, 283–84
system 1 (first mind), 348, 349,
      353, 354, 356
system 2 (second mind), 348–
      49, 354, 355
brain mapping, 305
*Breaking Bad,* protagonist's
      internal conflict between
      eudaimonia and extrinsic
      pursuits in, 970–71
bulimia-spectrum disorders,
      psychotherapy for,
      empirical work on, 809–10
bullying
   classroom, autonomy-
      supportive teaching and,
      604–5, 1124
   need frustration and, 95
burnout
   job demands/resources
      and, 884–85
   leadership style as buffer
      against, 926–27
   transdiagnostic role of basic
      psychological needs
      in, 821–22

# C
capability(ies)
   assessment of, 1155–56
   definition of, 1155, 1156
   economic perspective on, 1155
   effect on outcomes via basic
      needs, 1156
   essential, 1155
   philosophical perspective
      on, 1155
   as predictors of well-being, 1155

impairment of, 826–27

of laws and government regulations, process aspect, 949–50, 1160

and loss nonengagement, 76–77

and musical development in childhood, 642

and "needs-as-motives" process, 69–70

need satisfaction/support and, 64–66, 93, 300–1

need-thwarting behaviors and, 65–66

of nonengagement, 75–76

in organismic integration theory, 55–59, 56t, 593–94, 702–3

passion and, 389–90, 398

and physical activity, 746, 747–48

in physical education, 725

in preschoolers' development, 462–65

process of, 55–59, 56t, 745–46

in protection domain, 522–23

in reciprocity domain, 517

social context and, 56–58

socialization domains and, 510, 515

and sport, 704

of stigma, 1107–11, 1112–13

students', autonomy-supportive teaching and, 596

and volition, 509–10, 514

and well-being, 67–68

internalizing problems, in emerging adulthood, 580–81

internal locus of control and autonomous motivation, 862–63

definition of, 862–63

International Classification of Functioning, Disability, and Health (ICF), 686–87

international cooperation. *See* international development

international development. *See also* capability(ies) approach

activities of, 1051

basic needs approach, 1052, 1072

and behavior change, 1053–56, 1065–66

and capability-building, 1053

and capacity-building, 1053, 1054, 1060–62

effect of incentives in, 1056–58

eudaimonic versus hedonic approach in, 1055–56, 1065–66

human development (capability) focus for, 1075–76

need-supportive incentives and, 1057–58

need-thwarting incentives and, 1057–58

practicality in, 1060

psychological considerations and, 1052, 1052n.1

SDT in practice in, 1060–62

self-determination theory and, 1052, 1053–56, 1060–62

Smallholder Horticulture Empowerment Project (SHEP), 1060–62

undermining effect and, 1054, 1056–58

universality of basic needs and, 1058–60

international development research, 1056–62

challenges for, 1062–65

ethical challenges of, 1064

future directions for, 1062–65

multivariate, 1063–64

in poorest areas, 1064

psychological measurement scales used in, 1062–64

qualitative, 1063–64

quantitative, 1064

SDT-based, 1056–66

internet banking, SDT applied to, 987

internet gaming disorder

need frustration and, 95–96

transdiagnostic role of basic psychological needs in, 821–22

Interpersonal Behaviors Questionnaire (IBQ), 65–66

interpersonal context, 39–40

and language learning, 622f, 623–24, 629

and physical activity, 747–48

in sport, 714–16

interpersonal control

in dual-process model, 46–47

motivating style and, 41–42, 42t

interpersonal therapy (IPT), for depressed outpatients, empirical work on, 806–8

intervention dose, of SDT interventions, 785, 790

interventions. *See also* healthcare interventions

for aspirational orientations, 154–55

assessment, by health economists, 789–90

for autonomy support, 542, 695

autonomy-supportive, in physical activity, 748–49, 750–51

with autonomy-supportive language and self-enactable techniques, 753–54

classification of SDT-based techniques, 752–53

for coaches, 716–17, 718

content refinement, 790–92

cross-cultural research and, 1041, 1044–46

digital technology and, 753–54, 778, 788–89

fidelity assessments, 792–93

in health professions education, 677–78, 679–80

implementation-stage SDT-informed, 789–90

intercultural, 1065–66 (*see also* international development)

mechanisms for changing behavior, 753

motivation and behavior change techniques in, 718, 752–53, 786–87

need-supportive, in sport, 716–17

need-supportive strategies in, balance of, 790–92

for parental autonomy support, 504, 542

for parents, 504

in physical activity (SDT-based), 748–49, 750–54, 779–80

in physical education, 730–31

students', 596, 605–6, 609–11
taxonomy of, 13–14
trans-contextual model of, 751
types of, and outcomes, 66–67
young children's, parental autonomy support and, 539
Motivation, Engagement, and Thriving in User Experience. *See* METUX
motivational climate, and physical activity, 747–48
motivational crowding, 1056–58. *See also* undermining effect
motivational interviewing, 22, 801–2
and behavior change, 948
and environmental activism, 1143–44, 1144*f*
motivational tailoring, 249–51
motivation and behavior change techniques (MBCTs), 718, 752–53, 786–87
classification of, 786–87, 790–91
complementary behavior change techniques and, 793–94
definition of, 786
need-indifferent, 786–87, 791
need-supportive, 786, 790–91
need-thwarting, 786–87
Motivation for Therapy Scale, 72–73
motivation regulation
and context for physical education, 728
measurement, 727–28
Motivation toward the Environment Scale, 72–73
motive disposition theory, 102
and goal pursuit, 350
and self-determination theory, 350
motives. *See also* eudaimonic motives
achievement and affiliation, need-based experiences and, 100
deficit, 17
hedonic, 316
pleasure-oriented, 316
relaxation-oriented, 316

system 2 (second mind) and, 348–49
multicollinearity, 439, 440–41
multidimensionality, bifactor modeling applied to, 444–47
Multidimensional Self-Esteem Inventory, 1027
Multidimensional Work Motivation Scale, 675–76, 678, 876
Multiphase Optimization Strategy (MOST), 792
music
adaptive function of, 640
and aging, 643–44
definition of, 639–40
as developmental resource for adolescents, 643
diversity of, 640
in early childhood development, 641–42
evolution of, 640
gender and, 658
goal contents theory and, 657
in higher education, 649–53
in human life, 639–41
infants and, 641–42
and intrinsic motivation, 638–39, 640–41, 644
and introjected regulation, 657
as leisure activity/hobby, 653–54
lifespan perspective on, 641–44
and low-value school subject, 647–49
and need frustration, 639
and need satisfaction, 638–39, 640–41, 644
and pleasure, 640–41
as preceding language, 640
prenatal perception of, 641
research on, 657
self-determination theory and, 657
self-regulatory functions of, 640–41, 643
specialized learning of, 638, 644
universality of, 640
musical development, 641–44
in adolescence and adulthood, 642–43
in infancy and early childhood, 641–42

musical enculturation
in adolescence, 642–43
in childhood, 642
musical instrument, learning to play, 645–46
music career
autonomous motivation and, 649–51, 650*f*
intentions for, 653
portfolio, 653
music education
autonomy and, 647–48
in conservatories, 649
in higher education environments, 649–53
learning an instrument in, 645–46
motivation and, 645–46
need satisfaction and, 647–48
parental involvement in, 646
and passion, 652–53
and perfectionism, 651–52
in school settings, 647–49, 648*f*
self-determination in, 647–48
social contexts of, 639, 644–56
and stress, 651–52
students' valuing of, 647–49
studio teachers in, 649–51
teachers' role in, 646, 648–51
for toddlers, 642
and well-being, 651–52
music learning. *See* music education
music practice, 654–56
cultural values and, 654–55
deliberate, 655
and flow, 655–56, 658
motivation and, 654–56, 658
and need frustration, 650*f*, 655–56
and need satisfaction, 650*f*, 654–56
and performance outcomes, 656, 658
quality of, 655–56, 658
time spent at, 650*f*, 654–56, 658
music therapy, in aging populations, 643–44

**N**

narrative/storytelling
authenticity in, SDT framework for, 973
in education and training, 974–75

interventions and, 862
motivation and, 867
SDT-based interventions
and, 850–51
and well-being, 867–68
oral health-related quality of life
(OHRQL), 867–68
oral hygiene/oral hygiene
behavior, 862
autonomous motivation and,
862–63, 864*f*
SDT-based intervention and, 782
SDT model of change applied
to, 863, 864*f*
organismic integration theory
(OIT), 13–14, 54–77, 62*f*,
85, 140, 260*t*, 293–94, 316,
702–5, 745, 905, 1013. *See
also* internalization
advances in/future directions
for, 69–77
behavior regulation in, 59–64,
62*f*
and digital games, 985
and health behaviors, 840
in healthcare, 851–53
and healthcare
interventions, 840
influence of, 128*t*, 129
propositions of, 54–69, 56*t*
and self-concordance, 349
support for, 68–69
and technology, 979
organismic metatheory, 5–8,
101, 425. *See also* basic
psychological needs
as person-centered, 6
as psychologically focused, 6
organismic valuing process
(OVP), 292–93, 354
organization, of living beings, 6
organizational psychology, 22–23
organizations, prejudice reduction
in, 1124–25. *See also*
prejudice reduction in
workplace
ostracism
effect on ostracizer, 1117–19
effect on target, 1116–17
group-conscious approach to,
1097–98
and need frustration, 1117
and need thwarting, 1116–19
and physical health, 1117
and solitude, 405–6

outcomes, regulation-specific
effects and, 439–40
outdoor spaces. *See also* nature
and vitality, 225, 229
out-group(s)
empathy for, integrative
emotion regulation
and, 206
prosocial behaviors toward,
mindfulness and, 191
outness. *See* sexual identity
disclosure
overweight. *See also* obesity
parental stigmatization of,
1110–11
ownership, 294

## P

parental autonomy support, 15–
16, 67–68, 207–9, 509, 511,
529–30, 930
in adolescence and emerging
adulthood, 468–72, 496
benefits/consequences of, 529–
30, 1109
and children's agency, 540, 541
and children's emotion
regulation, 827–28
and children's motivation
and development, 492,
493–94, 493*f*
and children's volitional
functioning, 540, 541
in conversation, 533–35, 540
cultural context and,
500, 511–12
and diverse populations, 502–4
and domain-specific behaviors,
497–98 (*see also*
domains-of-socialization
framework)
in early childhood, 529–30,
531–39
and help provision, 535–37,
540
in infancy, 460–62
and informational feedback,
540, 541
interactions with
other parenting
dimensions, 496–99
interventions fostering,
504, 542
lack of, and nonsuicidal self-
injury, 581

and mitigation of internalized
stigma, 1112
in play, 517, 518, 531–33, 542
positive effects on child
outcomes, 539
for preschoolers, 462–65
and prevention of prejudice
and other negative
attitudes, 1123
and pro-environmental
motivation, 1134–35
in rule-breaking
context, 498–99
and scaffolding, 519, 540
and socialization, 537–39
and structure, 498, 540
with toddlers, 496
types of/facets of, 495–96
parental conditional regard
and academic achievement,
554–55, 556
in academic domain,
behavioral and
psychological effects on
children, 557–58
academic overstriving, parental
conditional regard
and, 556
adolescents and, 557–58
and anger suppression, 554–55
and anxiety in young
children, 556–57
childhood, projection onto
relationships, 563
child's temperament and, 564
and child temperament, 564
and contingent self-
worth, 562–63
decreased use of, parental
authentic inner compass
and, 563
emotional costs of, 554–56, 561
and emotion dysregulation,
556, 557–58
and fear suppression, 554–55
and internalization, 554–55
and motivation, 554–55
negative effects of, 1109–11
and negative emotion
suppression, 554–55,
556, 557–58
and prosociality in young
adults and, 554
and psychological
control, 564–65

internalized stigma and, 1112–13
interplay of psychological and physical needs in, 770–71
memory and, 277–78
motivation types and, 67–68
music students', 651–52
need-based experiences and, contextual differences in, 99–100
need satisfaction and, cross-cultural research on, 1041, 1058
need satisfaction as catalyst of, 88–89, 132
need satisfaction in networked memories and, 280–81
need satisfaction or frustration and, 68, 69–77, 761–62, 770–71
oral health and, 867–68
pervasive influences on, institutional level processes and, 1119–23
physical needs and, 761–62
prosociality and, 316–17, 430–31
relational, mutuality of need fulfillment in, 165–72
safety and, 1058
screen time and, 1000–01, 1002
self-concordance and, 352–53
self-determination theory related to, research evidence, 849–54, 849f
self-stigma and, 1112–13
social identity and, 1090
social media and, 1002–03
sociopolitical systems and, 1120–21
solitude and, 406
stigma and, 1111–16, 1119–23
stigmatized identity's effects on, autonomy support and, 1111–16
students', 591–92, 598, 609–11
sustainability-related questions about, 1079
teachers', 602–5, 609–11
technology design and, 982, 989 (*see also* technology design, well-being-supportive)
vocational commitment in emerging adulthood and, 576–77
at work, 876–78

Wellbeing Design Card Deck, 991–92, 992f
Wellbeing Supportive Design Workshop, 991–92
wellness. *See also* well-being
    in emerging adulthood, 577–78
    eudaimonia and, in emerging adulthood, 578–82
    healthcare practitioner, 854–55
    income and, 1152
    material resources and, 1152
    nonmaterial need satisfaction and, 1152
    students', 593–99
    teachers', 602–5
white supremacy, 1081
whole-body interaction, SDT applied to, 987
willpower, as limited versus unlimited resource, 224
women, discrimination against, 1165
word-learning task, young children's, parental autonomy support in, 537
work/workplace
    authenticity in, LGBTQ individuals and, 1115–16
    autonomous motivation in, 1084
    benevolence and, 880, 887
    competence in, and mindfulness, 191–92
    culture/climate, and prejudice reduction, 940–41, 943
    diversity initiatives in, 940
    employee motivation in, leaders and, 920–21
    meaningfulness and, 1081, 1084
    memory related to, need satisfaction in, and outcomes, 278
    need frustration and, 90, 876, 879–80
    need fulfillment in, and prejudice reduction, 1124
    need satisfaction and, 88–89, 227–28, 876, 879–80, 892–93, 1060
    need support in, 882–84, 1077–78
    need-supportive leadership and, 882–84
    outcomes, internalization and, 67

prejudice in, 939–40
    prejudice reduction in (*see* prejudice reduction in workplace)
    relatedness at, mindfulness and, 190
    self-concordance at, leadership style and, 354
    social issues and, 1081–84
    workers' vitality in, 227–28
Work Climate Questionnaire, 931
Work Climate Scale, 931
Work Climate Survey, 1027
work engagement, need satisfaction and, 884–85
Work Engagement Scale, 1027
work/workplace motivation
    antecedents of need satisfaction/frustration in, 877f, 880–85
    compensation and, 876, 877f, 880, 881–82
    interpersonal relationships/leadership and, 876, 877f, 880, 882–84
    intrinsic, leadership and, 925
    job design and, 876, 877f, 880, 884–85
    money and, 901–14
    normative profiles of, 448
    pay distribution and, 903
    performance-based incentives and, 905–6, 908–11
    processes, leadership and, 925
    quality, overview of, 876–79, 877f
    research on, future directions for, 911–12
    self-determination theory applied to, 875–80, 877f, 885–93
work performance
    appraisal of, for pay considerations, 911, 912, 913–14
    financial incentives and, 903–4
    indirectly instrumental incentives and, 905–6
    leadership style and, 922–23
    need satisfaction and, 884–85, 904
    performance-based incentives and, 905–6
    prosociality and, 880