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RELATIONSHIP BETWEEN EMOTION REGULATION, MOOD STATES WITH RISKY DRIVING BEHAVIOR

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CERTIFICATE OF APPROVAL

It is certified that the Research Thesis titled "Relationship between Emotion Regulation, Mood States with Risky Driving Behavior" carried out by Syeda Nayab Zahra, Reg. No. BSP201064, under the supervision of Dr. Sabahat Haqqani, Capital University of Science & Technology, Islamabad, is fully adequate, in scope and in quality, as a Research Thesis for the degree of BS Psychology.

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Relationship between Emotion Regulation, Mood States with Risky Driving Behavior

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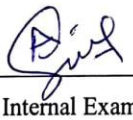

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Head of Department
Dr. Sabahat Haqqani

Dedication

To my supervisor Dr Sabahat Haqqani

For being my ideal

To my Parents and brother Ali Shah

For their motivation, support, and prayers

To my friends

For contributing their constant efforts and time toward my work and support

DECLARATION

It is declared that this is an original piece of my own work, except where otherwise acknowledged in text and references. This work has not been submitted in any form for another degree or diploma at any university or other institution for tertiary education and shall not be submitted by me in future for obtaining any degree from this or any other University or Institution.

Syeda Nayab Zahra

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Abstract

This research study delves into the intricate relationship between emotional regulation, mood states, and risky driving behavior among Pakistani drivers. Using a correlational research design, the study explores the impact of emotional regulation and mood states on driving behavior and the influence of demographic factors such as age and gender. The sample population consisted of 300 drivers aged 18 and above, and data analysis involved measures of skewness, kurtosis, and Kolmogorov-Smirnov tests to assess the distribution of data. The findings indicate a significant association between emotional regulation, mood states, and risky driving behavior, shedding light on the potential for interventions targeting emotional regulation skills to mitigate unsafe driving practices and improve road safety. Ethical considerations were paramount throughout the study, ensuring confidentiality, consent acquisition, and adherence to ethical standards in line with the guidelines of the American Psychological Association. The study's limitations and future implications underscore the need for further research and the development of strategies to enhance emotional regulation skills and manage mood states to prevent negative impacts on driving behavior

Keywords: Emotional Regulation, Mood states, Risky driving behavior

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Chapter 01

Introduction

Road traffic accidents rank as the eighth most prevalent cause of death globally. Over a span of ten years, approximately 1.24 million individuals lost their lives due to such accidents, while 20 to 50 million people endure various forms of harm, resulting from them (WHO, 2013). Road traffic incidents have a substantial impact on the health and mortality rates of the general population, leading to significant personal consequences. They remain a persistent public health issue worldwide, imposing significant burdens on individuals. Car crashes causes the death causalities of more than 1.25 million people annually and an additional fifty million suffer injuries. More than 60% of traffic-related injuries have been proven to be caused directly by risky driving behavior (RDB) (Mekonnen et al., 2019). RDB is a primary cause of preventable road accidents, increasing the chances of collisions and crashes resulting in harm to the driver, passengers, and other road users, and property damage (Hayley et al., 2017).

The issue of traffic accidents is increasingly becoming a worldwide concern, and there are several factors responsible for this concerning trend. Primarily, risky driving habits and challenges in managing emotions play a significant role in contributing to the problem. (Garrity & Damick 2001). Numerous factors contribute to these accidents, emerging research suggests that individual emotional regulation and mood states may play a significant role in determining driving behavior and, consequently, the likelihood of engaging in risky driving practices. Risk factors for road traffic injuries were widely explored in literature. The literature extensively delves into the risk factors associated with road traffic injuries. Common contributors to these injuries encompass a rising prevalence of motor vehicles, social deprivation, demographic elements, inadequate transport planning, and the structure of land use and road networks. Furthermore, individual risk factors contributing to road traffic injuries may include young

males, excessive speed, and alcohol or drug consumption (whether medicinal or recreational), fatigue, and impaired eyesight of road users. (Branche et al., 2008; Dalal et al., 2013).

Emotion regulation is essential to human functioning and has been linked with diminished self-control as well as maladaptive behaviors (Arnau et al., 2012). Emotion regulation (ER), is a conscious attempt by an individual to observe and manage his or her emotional state. Those having strong emotional regulation capacities display a well-developed ability to manage their emotions, hence allowing them to make prudent judgments. On the other hand, problematic regulation may lead to emotionally reactive individuals who find it difficult to control their emotions (Gross & Thompson 2007). Emotion regulation strategies that are maladapted, such as suppression or rumination, have been shown to be related with stress levels and the occurrence of negative moods on drivers (Dahlen et al., 2005). Understanding the effects these regulation strategies have on emotional well-being is critical in developing interventions for designing intervention programs that empower people to adopt healthier coping mechanisms and safe driving practices.

As opposed to emotions, mood may be described as a state of mind that lasts from several minutes up until days. Unlike emotions, moods are usually not bound to the external environment and show their varying intensities. Mood states, which are persistent emotional tendencies, have a significant impact on the person's thought processes and actions as well as overall functioning (Hassen et al., 2011). Analyzing the frequency of dangerous driving practices with 12 months, it becomes apparent that engaging in any of five risky behaviors including speeding, alcohol use while behind a steering wheel, seat belt non-use practice neglects safety consideration for fatigue or rules flouting results in emerging as an early warning sign related to unsafe patterns (Hassen et al., 2011).

Research underscores a significant association between mood conditions, such as anger and irritation, and impaired cognitive functioning, leading to a higher likelihood of engaging

in dangerous driving practices (Berger & Motl, 2000). This connection highlights the delicate relationship between mood states and driving performance. By stressing the importance of addressing and managing mood-associated elements, it is emphasized that such efforts can contribute to improving safer road practices. Understanding the influence of mood on driving behavior is critical for developing interventions that enhance emotional health, ultimately contributing to road safety.

Transitioning to the specific mood states experienced by drivers, these play a crucial role in determining driving behavior. For instance, individuals with heightened anxiety may exhibit cautious driving behaviors, whereas those under the influence of anger may display aggressive and impulsive actions on the road (Lajunen & Parker, 2001; Trógolo, Deffenbacher, & Harel, 2003). Unsafe driving behaviors, influenced by negative emotions and a lack of emotional regulation, increase the chances of accidents and injuries. Consequently, drivers struggling to manage their emotions or experiencing negative moods become more prone to engaging in unsafe driving behaviors, thus elevating the risk of accidents (Dahlen et al., 2005).

Recent studies further illuminate the connection between emotions and driving attitudes and behaviors. Anxiety, for example, has been linked to a need for excitement and risky driving behavior (Oltedal & Rundmo, 2006). Additionally, negative emotions experienced while driving are associated with a heightened perception of danger, whereas positive emotions are linked to a decreased perception of risk (Hu et al., 2013). Investigating these differential impacts becomes essential for tailoring interventions to address specific challenges related to emotion regulation and mood faced by drivers.

This research seeks to explain the complex connection between emotion, mood states and an individual's tendency for dangerous driving behaviors. In this light, the research aims to address these various dimensions from across a comprehensive framework. These attempts are aimed at improving road safety by providing information on how emotions can be utilized

to counter accidents caused through dangerous driving practices. This research seeks to contribute to the existing literature by providing a thorough examination of the intricate relationship between emotion regulation, mood states, and risky driving behavior. By synthesizing findings from diverse studies in psychology this study aim to offer a comprehensive overview of the underlying mechanisms that link emotional processes to driving outcomes. Additionally, this exploration shed light on potential avenues for intervention and prevention strategies tailored to address specific emotion regulation and mood-related challenges faced by drivers. Current study synthesizes existing literature on emotional regulation, mood states, and driving behavior, giving important insights for policymakers, researchers, and practitioners. It is important to study the relationship among these variables to ensure safe driving and develop emotional regulation skills.

In the subsequent sections, this study delve into the empirical evidence supporting the association between emotion regulation and mood states with risky driving behavior, examining key findings from relevant studies. Furthermore, this study show the practical implications of these findings for road safety interventions and propose avenues for future research to deepen our understanding of this complex relationship. Through this comprehensive investigation, this study contribute valuable insights that can inform the development of targeted interventions aimed at fostering safer driving practices and reducing the incidence of road accidents.

Literature Review

The current review aims to clarify the complex interplay of cognitive, emotional and behavioral processes in driving with a focus on explaining how emotion regulation as well as mood states induce risky driving behavior. This literature review reveals the multidimensional nature of relationships between emotional regulation and mood as well as risky driving behavior by exploring their nexus. Emotional regulation, one of the key psychological elements, at times beyond cognitive control, can autonomously impact driving actions therefore, it plays a central role in the management and control of emotions which act to influence an individual's mood states hence affecting their driving patterns (Maldonado et al., 2020). The holistic understanding of this complex relationship is essential to the development and implementation of interventions aimed at promoting safe driving practices, preventing risky behaviors while on the road, as well averting potential losses because they are related. This review summarizes relevant studies, analyzing available evidence in order to shed light on the intricate dynamics underlying mechanism of interaction between emotional regulation, mood states and risky driving.

Navon and Taubman (2020) focus on the emotional control to driving behavior connection. Poor emotional control leads to bad judgement, impulsiveness and lack of self-control all contributing in risky driving behaviors. In accordance, studies show that people who find it difficult to manage their emotions are more likely to engage in reckless driving behaviors such as speeding, drunk driving and disregarding seat belt usage (Lajunen et al., 2010). In addition, emotional control problems were found to be correlated with errors, lapses and aggressive breaches in driving (Seibokaite et al., 2017).

Additional research shows that emotional control significantly affects a number of risk driving behaviors, including speeding, distraction, sleepiness and attitudes for taking risks. One research using multiple regression analysis sought to determine the relationship between

driving behaviors and emotion management problems. According to the results, an inverse relationship was revealed between challenges related to emotion regulation and considerate driving while positive correlations were noted in aggressive agitated dissociative and risk-taking driving (Trogolo et al., 2014). These results highlight the complex relationships between emotional control and various aspects of driving behavior, which suggests that targeted interventions to address challenges in controlling emotions would improve road safety.

Recent studies have revealed a strong relationship between lack of emotion control and the popularity of unsafe driving behavior, as well as negative patterns of driver behaviors (Sani et al., 2017). In addition, an interesting finding in the study proposed by Mekonnen et al., (2019) amplifies the observed driving problems, emphasizing that impulsivity emotion regulation and driving behavior is a complex interplay. As such, these insights offer a deeper perspective on the psychic influences of driving behavior and suggest an approach to promote efficient road safety measures. Aggression, impulsive behavior and engaging in risky behaviors are consistently researched as being increased among those struggling with emotion regulation (Magar et al., 2008). Emotion dysregulation has demonstrated strong associations with aggressive tendencies, encompassing physical aggression, anger, and hostility. The capacity to control emotions is crucial for optimal human functioning. Poor regulation of emotions is closely connected to deficient self-regulation, which, in turn, contributes to maladaptive behaviors like substance abuse, binge eating, and a propensity for risk-taking. In summary, the ability to regulate emotions plays a pivotal role in both emotional and behavioral aspects of human functioning, influencing the likelihood of engaging in maladaptive behaviors (Garafalo et al., 2020). Understanding the complex relationships between emotion regulation, self-regulation and behavioral outcomes is critical to designing effective interventions that improve emotional functioning and lead to better health behaviors.

Various studies show that emotional regulation capabilities are highly dynamic and strongly reflect age group differences. With age, there is a visible change in the emotional regulation abilities of persons. However, the lack of emotional clarity as well as difficulties in finding suitable methods for emotion regulation remains a common phenomenon among young people. This intergenerational gap includes a lack of goal-directed behavior among the younger population. The findings show that emotional navigation and effective strategies of emotion regulation usually increase over the years (Orgeta, 2009). On the other hand, in emotional regulation older adults show a different pattern. Also, there is a consistency in the literature as researches showed that older persons were able to use effective strategies for regulating their emotions They not only demonstrate a stronger emotional regulation, but they also seem to have lower levels of negative emotions. This age-related bifurcation further indicates that emotional development across the lifespan is not static, and therefore intervention efforts targeting positive emotions regulation ought to consider various factors associated with different stages of life (Carstensen et al., 2004; Zimmermann & Iwanski, 2015).

These conclusions are followed by a conclusion that certain demographic factors including age and gender play an important role in explaining the variance of driving behavior as well as accident risk. Young male drivers, in particular are more susceptible to car accidents compared with female ones (Lardelli-Claret et al., 2011; NHTSA, 2013). This gender difference is striking, with male drivers more often involved in high-speed car accidents that end up sending the vehicle off the road leading to a very serious effect (Rhodes et al., 2005). As these crashes, with higher-than-average fatality and injury rates per collision (Rhodes et al., 2015), require a detailed risk analysis of young male drivers. A probable cause of these gender differences could be aging. Processing negative and frightening stimuli in the brain areas decreases with age as individuals grow older (Cacioppo et al., 2011). This drop could lead to a more careful and restrained kind of driving among the elderly. Moreover, older drivers show

improved cognitive control and better belief for controlling emotions internally (Mather & Knight 2005; Gross et al.1997).

In addition, studies demonstrate just how complex is the relationship between emotional regulation impulsivity and risky behavior among adolescents (DeWitt et al., 2014; Orgeta, 2009; Schreiber et al., 2013). Scott et al., 2019) points out the significant role of emotions in determining young individual's driving aspects. Poor emotional and behavioral functioning continues to be associated with a higher prevalence of accidents (Cerniglia et al., 2015; Navon & Taubman, 2020). These complex relationships require a holistic understanding of emotional regulation, impulsivity and age on driving performance.

The impact of events, particularly those involving negative emotions, on drivers has been a subject of interest for researchers (Nesbit & Conger, 2012; Bogdan et al., 2016; Sullman et al., 2017). Several studies (Abdu et al., 2012; Eherenfreund-Hager et al., 2017; Jeon et al., 2014; Mesken et al., 2007; Roidl et al., 2014; Taubman-Ben-Ari, 2012) have extensively investigated the relationship between emotions and driving behavior. According to research both sadness and anger led to slower detection of road objects by participants (Jallais et al., 2014). In a study, a connection between aggressive driving and emotions such as hostility, agitation, anxiousness, and wrath were found (Kovacsova et al., 2016). Moreover, research indicated that negative emotions had an adverse effect on overall cognition and, specifically, on driving safety (Zimasa et al., 2016). Previous studies have mostly examined how certain negative emotions, such sadness, rage, or aggression, affect driving behavior. However, accurately identifying the exact emotion experienced by a driver who is attentively navigating heavy traffic can be challenging. The causes of emotions are evident, and their duration is typically short, allowing for clear observation of the entire emotional cycle (Hu et al., 2013; Zhang et al., 2022).

Studies conducted by Deffenbacher et al., (2002), Gonzalez-Iglesias et al., (2012), and King & Parker, (2008) reported that aggression feeling is a central factor in encouraging risky behavior when driving. Scientific findings highlight the importance of driving anger as a critical element in understanding unsafe driving behaviors. Consistent evidence indicates that an elevated level of rage is associated with the occurrence of perilous driving behaviors, leading to an escalation in motor vehicle collision rates and their subsequent negative consequences. Essentially, the presence of driving anger emerges as a key factor influencing both unsafe driving actions and the resulting adverse outcomes (Lucidi et al., 2019).

The impacts of adverse driving are not limited to the act itself. Individuals less vulnerable to anger also showed an increased tendency for underestimating potential hazards on a traffic situation during simulated driving activities, which reflects the specific types of cognitive distortions observed at elevated levels of anger (Stevens & Groeger, 2009). Furthermore, individuals with high trait anger evidenced higher levels of reactive rage and annoyance manifested through faster automotive acceleration despite the minimal provocation by low-angering events. These findings bring to light the complex dynamics between anger, perception and driver behavior that reveal a broader scope of emotional states influence effect on driving safety. Therefore, the psychological perspectives of anger are required to be addressed as well as considered in developing risky driving behavior-preventing strategies and safe road guidelines (Stevens & Groeger, 2009).

Specific individual attributes, including personal characteristics like anger, anxiety, forgiveness, and impulsivity, were examined in this context (Barnard & Chapman 2018; Deffenbacher et al., 2001; Kovácsová et al., 2016), driving experience (Feng et al., 2016; Ge et al., 2017; Zhang et al., 2016), and gender roles can influence behavior on the road. High trait anger drivers, when compared to drivers with low trait anger, tend to experience higher levels

of anger, display increased aggressiveness, and engage in more dangerous driving behaviors (Deffenbacher et al., 2003; Roidl et al., 2014).

Scientific evidence establishes a connection between driving anger and engaging in a risky driving style. The psychological factors of intense feelings of rage and aggressiveness are particularly significant contributors to risk-taking behavior while driving. In essence, these emotional states play a crucial role in shaping the propensity for engaging in hazardous driving practices. (Padilla et al., 2020; Gonzalez-Iglesias et al., 2012; King & Parker, 2008). According to studies by various researchers, anger has been identified as a factor in the incidence of risky driving behavior, which directly influences the involvement in motor vehicle collisions and the seriousness of the outcomes (Mesken et al., 2007; Roidl et al., 2013). Drivers with greater trait anger levels expressed more rage and irritation and accelerated their vehicles more quickly under low-anger-provoking circumstances (Stevens & Groeger, 2009).

In a comprehensive examination of anger in traffic, researches explored the intricate interplay of situational factors contributing to feelings of rage, particularly focusing on individuals not naturally predisposed to anger. The study closely observed drivers' behavior in scenarios designed to provoke anger, shedding light on the significant impact of present driving circumstances, such as road construction, in triggering anger responses. The findings unveiled that even individuals with low proclivities towards anger could experience heightened levels of rage influenced by external factors. Notably, the study highlighted the pervasive influence of anger on driving behavior, showcasing how even subtle degrees of anger could manifest in increased driving speeds. This was discerned through meticulous monitoring of participants mental states and driving speeds during active vehicle operation, underscoring the intricate connection between emotional states and observable driving behaviors. The results emphasize the need for a nuanced understanding of how situational factors contribute to emotional

responses on the road, paving the way for targeted interventions aimed at promoting safer driving practices in diverse contexts (Mesken et al., 2007; Stephens & Groeger, 2011).

Research by Stephens and Groeger (2006) identifies a decrease in speed as a primary trigger for anger and frustration while driving. In their study, participants assessed their levels of aggravation, rage, and tranquility during various driving scenarios in a simulator, such as encounters with a pedestrian crossing the road or a slow-moving lead automobile. The findings from Pecher et al. (2011) further substantiate this, revealing that drivers exhibit heightened levels of rage when compelled to slow down. The act of deceleration not only disrupts the flow of traffic but also emerges as a consistent instigator of negative emotional responses, emphasizing the intricate link between speed-related frustrations and the emotional well-being of drivers on the road. These insights underscore the need for comprehensive approaches in addressing speed-related issues to enhance overall road safety and diminish the prevalence of aggressive driving behaviors (Pecher et al., 2011).

The expression of anger and aggression while driving is impacted by a range of social and environmental factors. These factors encompass the particular driving situations, the perceived anonymity, and the existence of hostile messages and bumper stickers on vehicles (Faílde-Garrido et al., 2023). Studies by different researchers have also shown that personality traits and emotional states play a role in driving-related anger and aggression. For example, research found a correlation between risky and illegal driving behaviors, high crash rates, and elevated levels of general anger, aggression, risk-taking, impulsiveness, and social irresponsibility in drivers (luo et al., 2023). Numerous inquiries have identified connections between driving anger and various personality traits. Findings from field studies emphasize a notable correlation between elevated levels of aggressiveness, engagement in hazardous behavior, and the experience of rage while driving. In essence, these investigations collectively underscore the interplay between driving anger, personality characteristics, and the

manifestation of risky driving behaviors (Deffenbacher, et al., 2016). Similarly, studies found that anger is linked to speeding and reckless driving in teenagers and college students, respectively. These findings suggest that the state-trait theory of anger can be adapted to explain driving-related rage (Arnett et al., 1997; Morris et al., 1996).

Research conducted by Oltedal and Rundmo (2006) has delved into the profound impact of emotions on drivers' attitudes and behavior. Notably, dangerous driving tendencies and a proclivity for excitement were found to be correlated with anxiety. A robust association between driver anger and speeding was identified in the study conducted by Begg and Langley (2004). Furthermore, investigations have revealed that negative emotions heighten the perception of danger during driving, while positive emotions are associated with a decreased perception of risk (Hu et al., 2013). Additionally, Chan and Singhal (2013) demonstrated that emotions can significantly affect a driver's attention, leading to a shift from tasks related to driving to emotional stimuli. This shift results in reduced focus and impaired information processing, essential for effective driving. These findings underscore the pivotal role emotions play in driving safety, emphasizing the need for effective emotion management to maintain control while driving (Trogolo et al., 2014).

Recent advancements in emotion research underscore the significance of studying positive emotions, complementing the predominant focus on negative emotions. Fredrickson (2003) notes that positive emotions, such as happiness, exert a less pronounced and distinct impact compared to their negative counterparts. While emotions like anger, fear, and sadness are easily differentiable, joy, amusement, and tranquility may exhibit a certain degree of blending. Fredrickson's Broaden and Build Theory posits that encountering positive emotions cultivates a more expansive and adaptable mindset, facilitating personal growth and development. This concept finds support in the work of lerner et al., (2015) who discovered

that inducing positive emotions enhances creativity, adaptability, openness to new information, and pro-social behavior.

These insights align with Mittal and Ross's (1998) research, demonstrating that individuals in a positive mood are more likely to perceive a strategic decision as an opportunity and exhibit reduced tendencies towards risk-taking. Recognizing the nuanced impact of positive emotions on cognition and behavior contributes to a more holistic understanding of emotional influences in various contexts, including decision-making and driving behavior.

Butler at al., (2007) research not only sheds light on emotional expression but also highlights cultural differences in the regulation of emotions. Their findings suggest that individuals from Western societies are generally less inclined to suppress negative emotions compared to their counterparts in Eastern societies, reflecting the nuanced interplay between cultural norms and emotional expression. This cultural variability extends to driving behaviors, as evidenced by studies examining risky driving across different regions. For instance, drivers hailing from southern European and Middle Eastern countries exhibit higher reported instances of driving mistakes and aggressive violations compared to their counterparts in western and northern Europe, as documented by Ozkan et al., (2006a). This cultural divergence underscores the importance of considering socio-cultural factors in understanding and addressing variations in driving habits, emphasizing the need for culturally tailored interventions to promote safer road behaviors globally.

A study proposed that examining mood instability in humans is a crucial aspect in understanding unsafe driving behavior. The variables investigated were found to have negative associations. Specifically, negative mood was identified as a factor that can result in affectively negative mental wandering content, such as feeling sad and recalling sad moments. This connection underscores the importance of considering mood instability and its impact on both cognitive processes and emotional states in the context of unsafe driving behaviors. (Albert et

al., 2022). Similar findings were made by Lerner and colleagues (2015), who found that excessive anxiety and poor emotional control were associated with a higher likelihood of dangerous driving behaviors including speeding and reckless driving. Likely to drive in a dangerous manner. According to several studies (Sumer, 2003; Patil et al., 2006; Simons-Morton, 2006; Greitemeyer, 2012; Arnau, 2013), aggressive driving is a significant contributor to traffic accidents. A connection between aggressive driving and traffic accidents was found (Yang et al., 2013). The same link was shown by (Fergusson et al., 2002). King and Parker (2008) have demonstrated that physical violence is a predictor of driving violations. And hazardous drivers are involved in much more road accidents than conscientious drivers (Chraif et al., 2016).

Many studies have been conducted to investigate how emotional control and mood states interact to impact unsafe driving behaviors. Drivers with excessive levels of anger and small degrees of emotional management, as discovered by Dahlen et al., (2005), were more. The evaluated research findings all point to mood states impacting driving behavior. Anger, sorrow, anxiety, and depression are all consistently connected with an increased likelihood of participating in unsafe driving behaviors. Surprisingly, several research shows a link between positive mood states including enjoyment and excitement and unsafe driving behavior. This implies that both negative and positive mood states might degrade driving ability and increase the chance of unsafe driving behavior (Cerniglia et al., 2015; Albert et al., 2022).

It is crucial to comprehend how emotional regulation, mood states, and hazardous driving behaviors are interconnected to create successful measures for minimizing risky driving and promoting road safety. This literature review underscores the importance of considering emotions and mood states as crucial factors in unsafe driving conduct.

Theoretical framework

Dual processing model (DPM), initially proposed in 2000 by Stanovich and West and later expanded upon by Evans in 2008, is widely acknowledged as the preeminent theory explaining how human decision-making involves cognitive processes. It divides higher-order cognitive processes into two systems: System 1 and System 2. System 1, characterized by its instinctive, automatic, and affect-based nature, leads to impulsive behavior driven by intuition, heuristics, and a lack of conscious thought. In contrast, System 2 is analytical, slow, verbal, deliberative, and logical, responsible for restraining impulses and regulating thoughts, emotions, and behavior.

This dichotomy between System 1 and System 2 processes, often likened to "hot" and "cold" thinking, has found applications in various fields, including understanding health behaviors and risk-taking. Additionally, alternate names such as reflective- impulsive model (Strack & deutsch 2004), Cognitive–experiential self-theory (Epstein, 1994), Associative- rule based model (Sloman, 1996) have emerged in different research studies.

Psychological studies reveal that thoughtful preparation, consideration, and self-control are not always the causes of human behavior. Seemingly small environmental signals can lead to unanticipated and spontaneous behavioral reactions, such as biased information processing, social judgments, adherence to norms, stereotyping, aggression, and risk-taking. Researches by Evans (2008), Evans & Stanovich (2013), Strack & Deutsch (2015), and Melnikoff & Bargh (2018b) have emphasized the influence of these environmental cues. Additional studies by Aarts and Dijksterhuis (2003), Bargh et al. (2012), Rivis and Sheeran (2013), Sheeran et al. (2013), and Melnikoff & Bargh (2018a) further reinforce this understanding.

While initially developed to explain human reasoning and decision-making, dual process theories have expanded their applications beyond those domains. One notable

application is in understanding health and risk-taking behaviors and developing interventions to modify them. Research (Wills et al., 2011; Hollands et al., 2016; Maher & Conroy, 2016) have demonstrated the usefulness of the "dualism" concept in these areas.

A study delves into how self-regulation processes, also known as System 2, might affect the relationship between impulsive processes and deviant driving behaviors. Specific links were discovered between driving mistakes, lapses, infractions, and motor impulsivity and normlessness (Lazuras et al., 2019). Attitudes towards driving safety mediate these collateral impacts, with the link between impulsivity, normlessness, sensation-seeking, and driving mistakes moderated by trait self-regulation (Lazuras et al., 2019). Numerous research studies support dual process models concerning unsafe driving behaviors, with one study by Taubman and colleagues (2004) finding that impulsive people were more likely to drive recklessly.

Further exploring the realm of driving, a study examined how the presence of peers affects driving performance and its interaction with inhibitory control. The study found that having peers around was associated with more traffic violations in a driving simulation task, aligning with previous research showing a link between having same-age peers in the car and actual road traffic collisions among young drivers (Simons-Morton et al., 2011). Additionally, research discovered that drivers with poorer inhibitory control committed more driving offenses, such as speeding, when peers were present (Ross et al., 2016).

Emotional regulation, the ability to manage and control one's emotions, is closely tied to the reflective system. Research has shown that individuals with effective emotional regulation skills are more likely to engage in careful and considered decision-making, particularly in situations with emotional triggers (Gross, 1998). Lerner and Keltner's model of emotion-specific influences on judgment and choice can be seen as a way of understanding how emotions may impact both System 1 and System 2 processing. For example, they propose

that fear, characterized by a sense of uncertainty and situational control, may lead to relatively pessimistic risk assessments, which could be seen as a System 1 response. Meanwhile, anger, defined by a sense of certainty and individual control, may lead to relatively optimistic risk assessments, which could be seen as a System 2 response (lerner & Keltner, 2000).

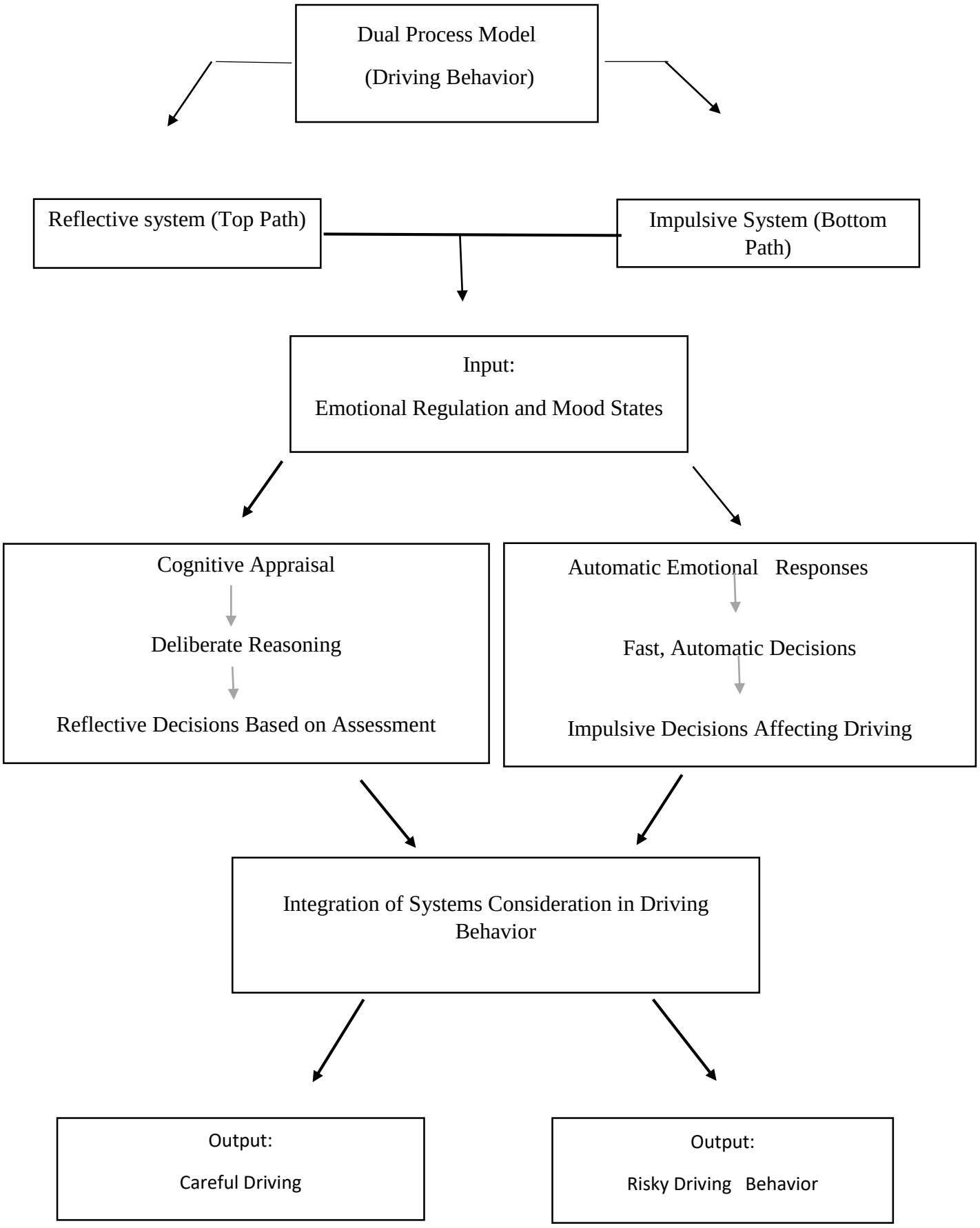
The dual-process model posits that behavior is determined by the interplay between the reflective and impulsive systems. In the realm of risky driving, emotional regulation and mood states play a crucial role in influencing the balance between these systems. Affective states have the capacity to modulate the activity of various components within the impulsive and reflective systems, thereby impacting decision-making and behavior (Bechara, 2005). Recognizing the interconnectedness of emotional regulation, mood states, and hazardous driving behaviors is essential for formulating effective measures to reduce risky driving and enhance overall road safety.

Effective emotional regulation, predominantly associated with System 2 processing, can influence mood states by mitigating the impact of external stressors on emotional well-being. Tailored educational initiatives can be devised to emphasize emotional regulation strategies, equipping drivers with tools to manage their emotional responses effectively. Furthermore, interventions aimed at promoting positive mood states serve as a preventative measure against impulsive and risky decision-making on the road (Evans & Stanovich, 2013).

This study accentuates the importance of considering mood states as a pivotal factor in unsafe driving actions. The results underscore the significance of targeted interventions and educational initiatives that address mood management and emotional well-being to enhance road safety. Mitigating harm may be achievable by promoting positive mood states and providing training in effective methods of emotional control. The integration of such strategies

into driver education programs holds promise for fostering safer driving practices and reducing the incidence of risky driving behaviors.

In summary, the Dual Process Model serves as a pivotal framework for understanding the intricate relationship between emotional regulation, mood states, and risky driving behaviors. By dissecting the roles of System 1 and System 2 decision-making processes, the model recognizes the profound influence of emotions on cognitive functions. This insight is crucial for developing targeted interventions that extend beyond traditional road safety measures. The model advocates for a holistic approach, emphasizing the integration of emotional well-being alongside cognitive and behavioral considerations in road safety initiatives. Its efficacy lies in offering nuanced strategies, recognizing the need for context-specific interventions to address the unique challenges faced by drivers. This comprehensive understanding of the interplay between emotions and decision-making provides a foundation for cultivating a safer and more mindful driving culture, contributing to the overarching goal of promoting road safety through informed and adaptive interventions.


Dual Process Model
(Driving Behavior)
Reflective system (Top Path)
Impulsive System (Bottom Path)
Input:
Emotional Regulation and Mood States
Cognitive Appraisal
Deliberate Reasoning
Reflective Decisions Based on Assessment
Automatic Emotional Responses
Fast, Automatic Decisions
Impulsive Decisions Affecting Driving
Integration of Systems Consideration in Driving Behavior
Output:
Careful Driving
Output:
Risky Driving Behavior

Interpretation of flow Chart:

The dual-process model helps us understand how emotions, moods, and risky driving are connected. Imagine it as a roadmap with two main paths: one at for careful thinking (reflective), and one for quick, automatic reactions (impulsive). In our roadmap, emotional regulation and mood states are like the starting points. Emotional regulation is how well we manage our feelings, and mood states are our current emotional conditions. These two factors play a big role in how we drive.

At the outset of our journey on this roadmap are the crucial inputs emotional regulation and mood states. Emotional regulation is our ability to manage and control our feelings, while mood states represent our prevailing emotional conditions. These factors act as pivotal determinants influencing the direction our cognitive processes take when we get behind the wheel.

As we embark on path of the reflective system, we encounter a scenario where effective emotional regulation and positive mood states guide our journey. In this context, individuals with well-regulated emotions and positive moods are more likely to channel their cognitive processes through the reflective system. This pathway leads to careful driving behaviors, as these individuals make deliberate and thoughtful decisions on the road. They are inclined to consider the consequences of their actions, prioritize safety, and exercise caution.

Conversely, impulsive system path illustrates a different trajectory. When emotional regulation is a challenge or when individuals experience negative mood states, the impulsive system becomes more prominent. This lower route signifies a propensity for automatic and instinctive reactions, potentially leading to risky driving behaviors. Negative emotions may trigger impulsive decision-making on the road, where individuals act without much forethought, potentially endangering themselves and others.

The critical juncture in this flow chart marks the divergence into either risky or careful driving. It underscores the pivotal role emotions play in shaping driving behavior. The implication is that interventions aimed at enhancing emotional regulation and promoting positive mood states could substantially impact driving habits. By nurturing emotional well-being, we may guide individuals towards the reflective system, fostering safer driving practices and reducing the incidence of risky behaviors on the road.

In essence, the dual-process model, applied to the interplay of emotional regulation, mood states, and driving behavior, provides a comprehensive understanding. It delineates the pathways through which emotions influence decision-making on the road, offering valuable insights for interventions geared towards road safety. By simplifying the model into a roadmap of careful thinking and quick reactions, we gain clarity on the connections between emotions and driving behaviors, paving the way for effective strategies to promote safer roads for everyone (Evans & Stanovich, 2013).

Rationale

Controlling emotions plays a vital role in influencing behavior. The World Health Organization (WHO) has identified road traffic accidents as a significant cause of death globally, particularly among young individuals aged 15-29. Individuals who can adeptly manage their emotions are less prone to engaging in hazardous driving practices (Mohiyeddini et al., 2015). Additionally, research has demonstrated that mood can impact how drivers perceive danger. I found that individuals in an optimistic mood tend to take more risks while driving, whereas those in a negative mood exercise more caution (Lerner et al., 2015).

The complex relationship among emotional regulation, mood states, and risky driving behavior has become a focal point in extensive research. Emotional regulation, a pivotal cognitive process, encompasses the capacity to monitor, evaluate, and adapt emotional responses for effective navigation through diverse situations. Complementarily, mood states encapsulate transient emotional experiences or feelings within individuals, playing a dynamic role in influencing behavior and decision-making, particularly in the context of driving. Understanding the nuanced interplay between emotional regulation and mood states is essential for unraveling the complex web of factors that contribute to risky driving behavior and devising targeted interventions to enhance road safety (Taubman et al., 2004).

Numerous research studies have indicated a significant link between emotional regulation and the tendency to engage in dangerous driving practices. People who have difficulty managing their emotions are more prone to exhibiting reckless and impulsive driving behaviors like speeding, aggressive driving, and distracted driving. These individuals struggle with controlling their emotions and often act impulsively based on negative emotions, which hampers their decision-making abilities and leads them to make risky choices while driving (Dahlen et al., 2005; Stavrinos et al., 2016).

Moreover, it has been observed that one's mood can influence their driving behavior. Negative mood states such as anger, frustration, or sadness have been associated with an increased inclination to take risks on the road (Deffenbacher et al., 2002; Philips, 2005). Such negative emotions can impair cognitive functioning, attention, and escalate aggression levels, all of which contribute to a higher likelihood of engaging in hazardous driving behaviors. On the other hand, when it comes to driving, feeling happy or content has been associated with safer behavior behind the wheel. Positive emotions tend to improve cognitive functioning, attention, and self-discipline, resulting in more careful and responsible driving decisions (Dahlen et al., 2005; Groeger, 2003).

To put it simply, how we regulate our emotions has a big impact on how we drive and how willing we are to take risks on the road. If someone struggles with emotional control or is in a negative mood, they're more likely to drive dangerously. On the flip side, being in a positive mood tends to lead to safer driving habits (Navon & Taubman, 2020). So, our emotional state plays a crucial role in shaping our behavior behind the wheel, highlighting the importance of emotional well-being for overall road safety.

The study conducted in Pakistan aims to bridge the gap in understanding how emotional regulation and mood states specifically influence driving behavior in that cultural context. By identifying these variables, the research intends to propose interventions that can effectively reduce risky driving behaviors and improve overall road safety in Pakistan. This study's rationale lies in uncovering the intricate connections between emotional regulation, mood states, and risky driving behavior, paving the way for targeted strategies to enhance road safety worldwide. In conclusion, emotional regulation and mood states significantly influence driving behavior, with proficient emotional management correlating with safer practices. Understanding these connections allows for the development of interventions tailored to

specific emotional states, contributing to improved road safety globally and in specific cultural contexts like Pakistan.

Objectives

The objectives of this research are:

1. To find relationship among emotional regulation, mood states and risky behavior of Pakistani drivers.

3. To examine whether age difference contributes to risky driving.

4. To examine relationship between gender difference, emotion regulation, mood states and risky driving behavior among Pakistani drivers.

Hypotheses

Hypotheses of this study are:

1. Poor emotional regulation will be positively related to increased risky driving behavior.
2. Negative mood states will be positively related with increase risky driving behavior and vice versa.
3. There will be a relationship between age and risky driving behaviors.
4. Gender difference will be significantly associated with emotion regulation and mood states influencing risky driving behavior.

Chapter 2

Method

Research design

Correlational research design was used.

Ethical considerations

This research was conducted after obtaining approval from the Department of Psychology, Capital University of Science and Technology. Adherence to ethical standards, encompassing confidentiality, consent acquisition, and data analyses, was ensured in accordance with the guidelines set forth by the American Psychological Association (APA). Informed consent was obtained from the participating drivers, signifying their willingness to be included in the study. Drivers who took part in the study were debriefed about the study and its purpose and while the conduction of study privacy and confidentiality was maintained. Drivers who did not want to be part of the study could leave it in between.

Population and sample

This study has been conducted on driver population in Pakistan. The study participants were 18 years and above, and sample size was 300, calculated through G-Power.

Inclusion criteria

Two inclusion criteria were considered:

(1) Age of participants should be 18 years and above.

(2) People who understand English language were included.

Exclusion criteria

Following exclusion criteria was considered:

(1) People with any physical or mental disability which hinders their ability to participate in this study were excluded from the study.

Sampling technique

Purposive sampling was used.

Instruments

The following instruments were used in the research.

Demographic Questionnaire:

The demographic questionnaire included the participants' basic information, their age, gender, qualification, occupation, and medical condition, socio economic status, having driving license, city, driving time and any major accident.

Emotional Regulation Questionnaire (ERQ)

The ERQ, a 10-item scale developed by Gross and John in 2003, analyses and rates the effectiveness of the emotion regulation techniques cognitive reappraisal and expressive suppression reliability for alpha is 0.78 (Preece & Becerra, 2019). The responses of respondents are graded on a 7-point Likert-type scale, with 1 representing "strongly disagree" and 7 representing "strongly agree." The scores for the cognitive reappraisal and expressive suppression subscales are determined by calculating the average of all the responses on the 7-point Likert-type scale for each respective subscale. According to Gross and John (2003), the more frequently an emotion management approach is used, the higher the score; conversely, the less frequently it is used.

Abbreviated Profile of Mood States (APOMS)

In 1983, McNair, Droppleman, and Lorr created a rating scale of 40 descriptors, known as the POMS, that is used to assess distinct mood states. The scale measures anxiety, depressive symptoms, weariness, vigour, perplexity, rage, and affects relating to one's self-worth. Low scores on the other subscales and high vigour scores both indicate a positive mood or sentiment. The scale's Alpha reliability is.80 (Grove & Prapavessis, 1992). The numerical ratings for the

items that make up each of the seven subscales of the shortened POMS are added up to determine the scores for each subscale. The Esteem-related Affect (ERA) subscale consists of 4 items, 2 of which are reverse-scored before being added to the other items. The totals for the negative subscales are added together, while the totals for the positive subscales are subtracted to get the total mood disturbance (TMD): TMD is made up of [TEN+DEP+ANG+FAT+CON] - [VIG+ERA]. To exclude negative scores from the TMD formula, a constant (like 100) might be applied.

Risky Driving Behavior Scale (RDBS)

RDBS is developed by Al Reesi et al., (2018) and it is used to assess risky behaviors series of questions that ask about several actions such as over-speed, distracted driving, and aggressive driving. The internal consistency of this scale revealed strong reliability (Cronbach's alpha > 0.70). The Risky Driving Behavior Scale (RDBS) is a validated instrument designed to assess and quantify an individual's engagement in risky driving behaviors. It encompasses a comprehensive range of driving-related actions, including speeding, aggressive maneuvers, and other potentially hazardous activities on the road. Developed through rigorous psychometric testing, the RDBS provides a standardized measure, allowing researchers and practitioners to systematically evaluate and compare risky driving tendencies across diverse populations. The scale's multifaceted approach captures nuances in driving behavior, contributing valuable insights into the factors influencing road safety. Its reliability and validity make it an essential tool for understanding and addressing risky driving behaviors in various contexts (Al Reesi et al., 2018).

Procedure

Following the APA guidelines, participants were provided with informed consent, ensuring their voluntary agreement to participate. The study's purpose was clearly communicated within the consent process. Data collection targeted drivers in Rawalpindi and Islamabad from university students, offices, and teachers, employing scales aligned with the study's variables. The emotional regulation scale, a 10-item scale, gauged cognitive reappraisal and expressive suppression as emotion control strategies. Mood states were evaluated using the abbreviated profile of mood states, encompassing 40 adjectives for a nuanced assessment. Risky driving behavior was scrutinized with the risky driving behavior scale, delving into actions such as over-speeding, distracted driving, and aggressive behavior. Paper-form questionnaires facilitated data collection, with subsequent entry and analysis conducted using SPSS. The results substantiated the study's hypotheses, revealing the interconnectedness of the variables under investigation.

Data Analyses

This research adopted a quantitative approach, employing SPSS (Statistical Package for the Social Sciences version 22) for data entry and analysis in correlation studies. Rigorous procedures were applied to the collected research data within the SPSS, encompassing thorough cleaning, processing, and analysis. Missing values in demographic information were coded as 999, and any missing values within the scales were imputed with mean values.

Descriptive statistics facilitated the calculation of data distribution and variance. Distinct methodologies were employed for categorical and continuous data. Categorical variables underwent analysis using percentages and frequencies, while continuous variables were subjected to computations for mean, median, mode, standard deviation, skewness, and kurtosis. The adherence to a normal distribution was maintained throughout.

The reliability of the emotional regulation scale (ERQ), abbreviated profile of mood states (APOMS), and risky driving behavior scale (RDBS) was assessed using inferential statistics, specifically Cronbach's alpha (α). Given the normal and non-normal distribution of the data, Pearson and Spearman correlations were employed to evaluate the associations between variables. This meticulous methodological approach ensures the robustness and accuracy of the study's findings, offering a comprehensive understanding of the intricate relationships among emotional regulation, mood states, age, and risky driving behavior.

Chapter 03

Results

Table 1. Frequencies and percentages of demographic variables of the participants (N=300).

Demographic characteristics of the participants

Demographic characteristics	Categories	*f*	%
Gender	Male	204	68
	Female	96	32
Socioeconomic status	Lower class	22	7.3
	Middle class	116	38.7
	Upper middle class	120	49.0
	Upper class	42	14.0
Driving license			
	Yes	228	76.1
	No	72	23.9
Major Accidents			
	Yes	115	38.3
	No	185	61.7

Note: f = Frequency, % = Percentage.

Table 1 exhibits the demographic variables and their frequency and percentage.The variables include gender, socio economic status, driving license and major accident. It shows that participants having license (*f* = 228, % = 76.1) were greater in number than those who do not (*f* = 72, % = 23.9). Participants that belong to middle and upper middle socioeconomic status were in high frequency. Lastly, the table shows that fewer people were involved in major

accidents (*f* = 115, % = 38.3).

Table 2. Reliability analysis (N=300)

Alpha reliability of the measures (N=300)

Measures	Items	*M*	*SD*	A	Range		Skew	Kurt
					Actual	Potential		
REAP	6	27.31	7.03	.67	6-42	6-32	-.03	-.21
SUPP	4	17.95	5.13	.54	4-28	4-28	-.19	-.09
NEG	30	50.98	23.95	.92	0-134	30-150	.39	.32
POS	10	25.64	7.13	.75	11-51	10-50	.55	.13
TEN	6	10.65	5.32	.81	0-30	6-30	.44	.25
ANG	6	10.51	5.52	.81	0-26	6-30	.18	-.33
FAT	5	9.02	4.35	.74	0-23	5-25	.30	.21
DEP	7	11.71	6.59	.86	0-35	7-35	.55	.68
VIG	6	10.91	4.09	.49	1-25	6-30	.32	-.11
CON	5	9.09	4.46	.67	0-23	5-25	.54	.24
ERA	5	14.73	4.07	.77	5-26	5-25	.34	-.19
TMD	40	25.34	23.95	.93	34-117	40-200	.23	.63
RDBS	39	101.61	24.57	.93	39-156	39-195	-.23	-.35
ERS	10	45.26	10.52	.74	10-70	10-70	-.02	-.19

NOTE: M = mean, SD = Standard Deviation, α = Alpha Reliability, Kurt = Kurtosis, Skew = Skewness, REAP= Reappraisal, SUPP= Suppression, NEG= Negative Mood, POS= Positive Mood, TEN= Tension, ANG= Anger, FAT= Fatigue, DEP=Depression, VIG=Vigorous, CON= Confusion, ERA=Esteem Related Affect, TMD= Total Mood Distress, RDBS= Risky Driving Behavior Scale.

Both the subscales Emotional Regulation Questionnaire i.e., REAP and SUPP have moderate reliability and total internal consistency of scale is good. Subscales of Total Mood Distress (TMD) have good reliability. The scale, Risky Driving Behavior has excellent

reliability.

Table 3. Descriptive Analysis (N=300)

Descriptive analysis of measures (N=300)

Measures	M	Mdn	Mode	SD	Skew	Kurt	K-S	p
REAP	27.31	27	18	7.03	-.03	-.21	1.00	.27
SUPP	17.95	30	16	5.13	-.19	-.09	1.47	.02
NEG	50.98	49	41	23.95	.39	.32	.91	.38
POS	25.64	25	25	7.13	.55	.13	1.28	.07
TEN	10.65	10.00	7.00	5.32	.44	.25	1.42	.04
ANG	10.51	10.00	8.00	5.52	.18	-.33	1.19	.12
FAT	9.02	9.00	7.00	4.35	.30	.21	1.47	.03
DEP	11.71	11.00	7.00	6.59	.55	.68	1.44	.03
VIG	10.91	10.50	8.00	4.09	.32	-.11	1.67	.01
CON	9.09	8.00	7.00	4.46	.54	.24	1.92	.00
ERA	14.73	14.00	12.00	4.07	.34	-.19	1.60	.01
TMD	25.34	26.00	30.00	23.95	.23	.63	.81	.53
RDBS	101.61	104	103	24.57	-.23	-.35	1.40	.04

NOTE: M = mean, Mdn= Median, SD = Standard Deviation, Kurt = Kurtosis, Skew = Skewness, REAP= Reappraisal, SUPP= Suppression, NEG= Negative Mood, POS= Positive Mood, TEN= Tension, ANG= Anger, FAT= Fatigue, DEP=Depression, VIG=Vigorous, CON= Confusion, ERA=Esteem Related Affect, TMD= Total Mood Distress, RDBS= Risky Driving Behavior Scale, K-S= Kolmogorov Smirnov test

To obtain the distribution of data, values of skewness, kurtosis are considered along with values of Kolmogorov Smirnov. Distribution of data was also assessed with histogram. The value of skewness kurtosis is less than + and – 1 for all the scales and subscales. The value

of Kolmogorov Smirnov shows REAP, NEG, POS, ANG TMD have significance values (p=.05) which means they are normally distributed while other scales are non-normal.

Distribution curve

Following are the figures representing the shape of distribution curve for Reappraisal, Suppression, Negative Mood, Positive Mood, Tension, Anger, Fatigue, Depression, Vigorous, Confusion, Esteem Related Affect, Total Mood Distress, Risky Driving Behavior Scale. Where total number of participants (N) forall three measures is 300.

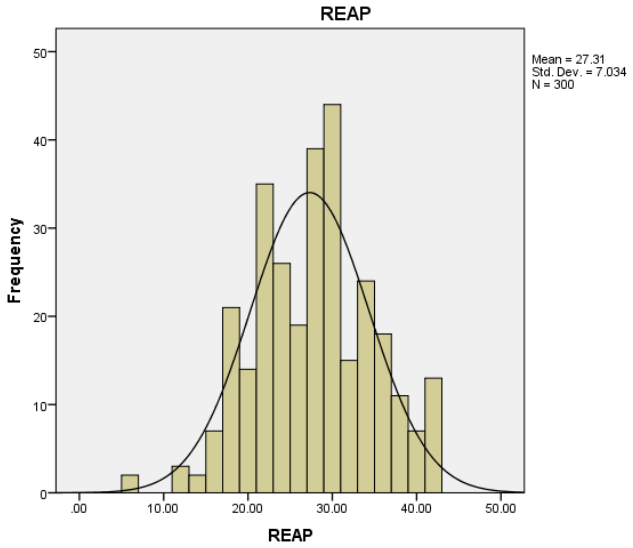


Figure 1. Distribution of scores for Reappraisal subscale (REAP) (N = 300)

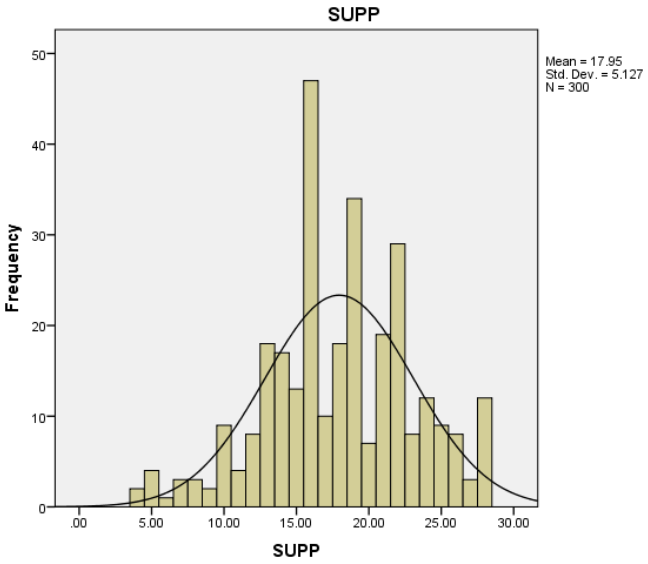


Figure 2. Distribution of scores for Suppression Subscale (N = 300)

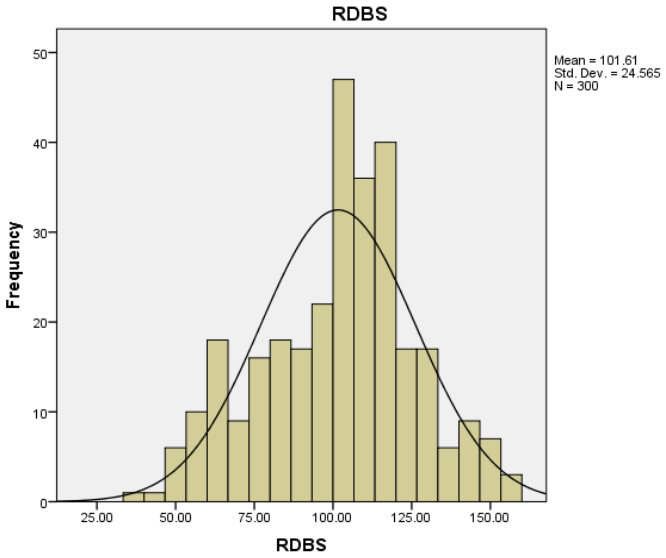


Figure3. Distribution of scores for Risky Driving Behavior Scale (RDBS) (N = 300)

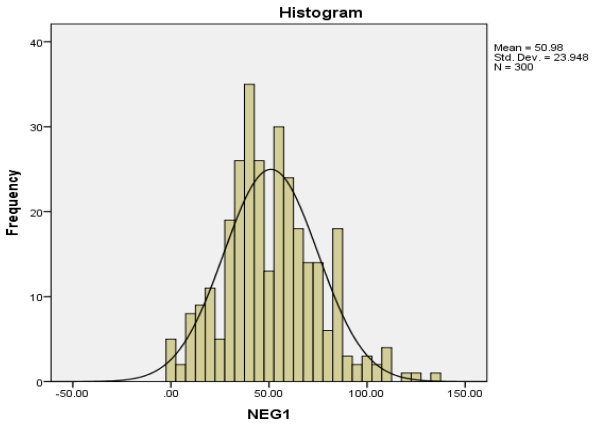


Figure 4.Distribution of scores for Negative Mood Behavior (NEG) (N = 300)

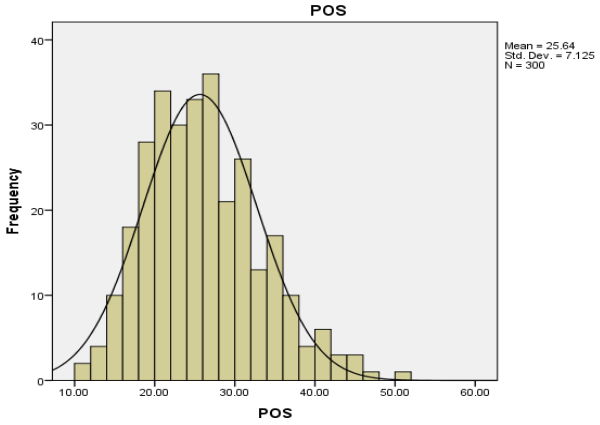


Figure 5. Distribution of scores for Positive Mood Behavior (POS) (N = 300)

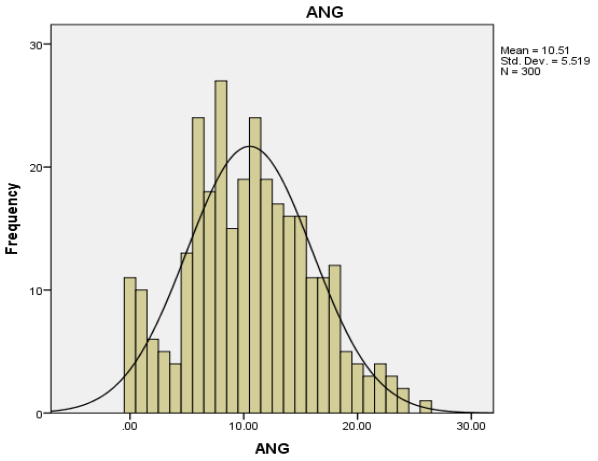


Figure 6. Distribution of scores for Anger (ANG) (N = 300)

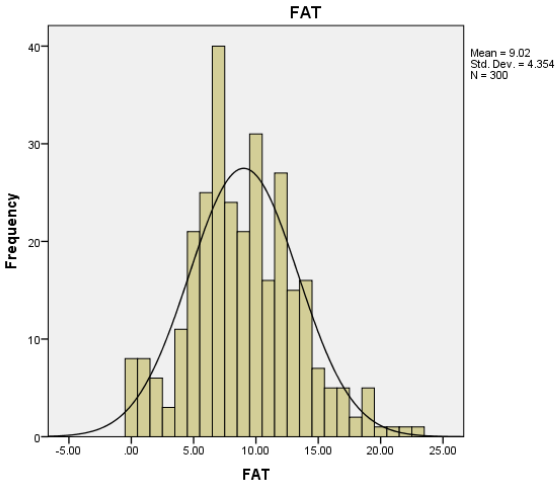


Figure 7. Distribution of scores for Fatigue (FAT) (N = 300)

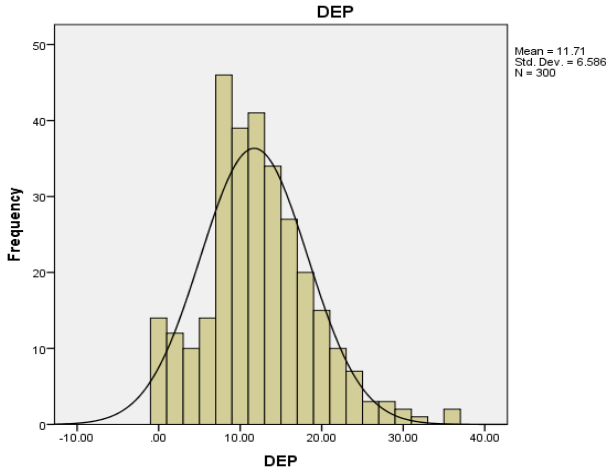


Figure 8. Distribution of scores for Depression (DEP) (N = 300)

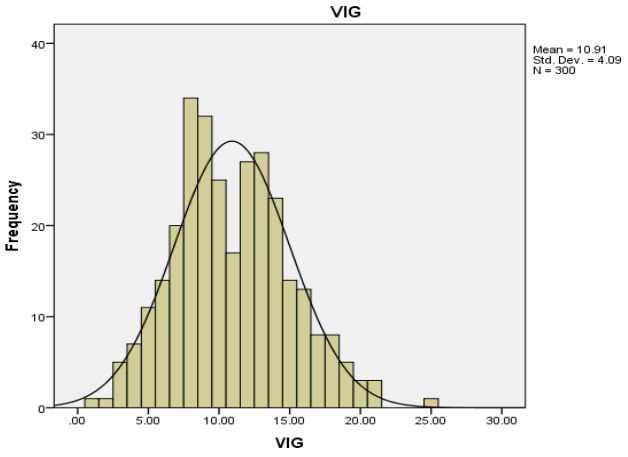


Figure 9. Distribution of scores for Vigorous (VIG) (N = 300)

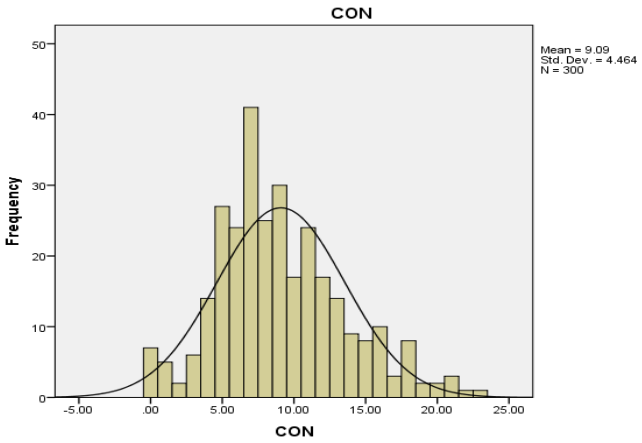


Figure 10. Distribution of scores for Confusion (CON) (N = 300)

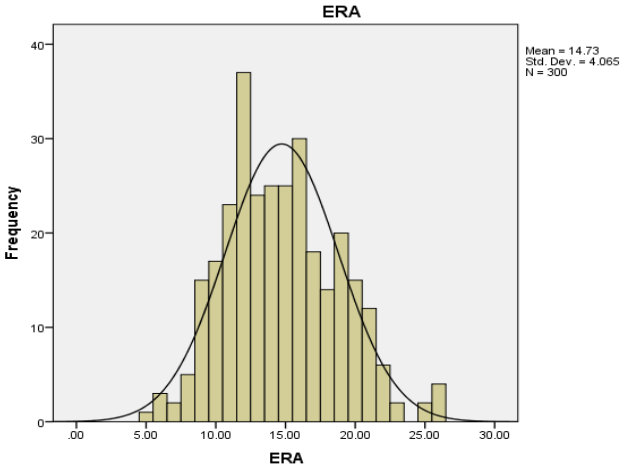


Figure 11. Distribution of scores for Esteem Related Assessment (ERA) (N = 300)

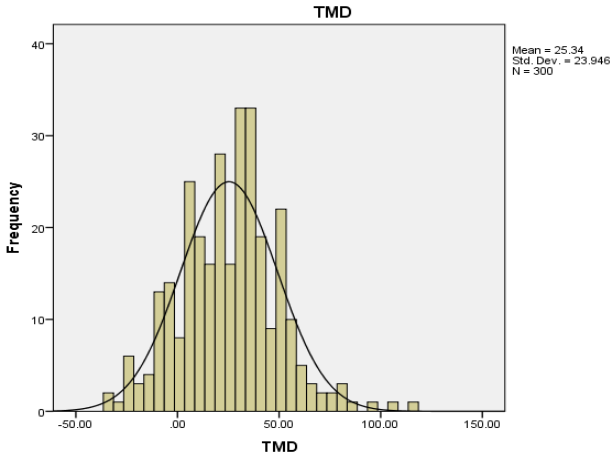


Figure 12. Distribution of scores Total Mood Disturbance (TMD) (N = 300)

Table 4. Correlation of Mood and Emotional Regulation with Risky Driving Behavior N= 300).

SCALE	1	2	3	4	5	6	7	8	9	10	11	12	13
REAP	1	-	-	-	-	-	-	-	-	-	-	-	-
SUPP	.48**	1	-	-	-	-	-	-	-	-	-	-	-
NEG	-.06	.10*	1	-	-	-	-	-	-	-	-	-	-
POS	.22**	.14**	.16**	1	-	-	-	-	-	-	-	-	-
TEN	-.05	.10*	.92**	.17**	1	-	-	-	-	-	-	-	-
ANG	-.03	.12*	.91**	.22**	.81**	1	-	-	-	-	-	-	-
FAT	-.07	.04	.88**	.15**	.76**	.77**	1	-	-	-	-	-	-
DEP	-.07	.10*	.93**	.06	.82**	.80**	.79**	1	-	-	-	-	-
VIG	.19**	.16**	.32**	.87**	.30**	.35**	.26**	.23**	1	-	-	-	-
CON	-.09	.06	.85**	.16**	.74**	.72**	.71**	.73**	.32**	1	-	-	-
ERA	.19**	.08	-.06	.84**	-.03	-.001	-.03	-.16**	.49**	-.06	1	-	-
TMD	-.13*	.07	.95**	-.11*	.87**	.84**	.84**	.91**	.09	.80**	-.30**	1	-
RDBS	-.11*	.09	.37**	-.01	.28**	.36**	.28**	.38**	.07	.35**	-.10*	.36**	1

**. *Correlation is significant at 0.01 level (1- tailed)*

NOTE: REAP= Reappraisal, SUPP= Suppression, NEG= Negative Mood, POS= Positive Mood, TEN= Tension, ANG= Anger, FAT= Fatigue, DEP=Depression, VIG=Vigorous, CON= Confusion, ERA=Esteem Related Affect, TMD= Total Mood Distress, RDBS= Risky Driving Behavior Scale,

Risky driving behavior has significant negative relation with reappraisal subscale (r=-.11, *p=0.01)* and non-significant weak positive relationship with Suppression subscale (r=.09, *p=0.01).* Moreover, Risky Driving Behavior has significant moderate positive relationship negative mood (r=.37, *p=0.01)* while it has weak negative relationship with positive mood (r=-.01, *p=0.01).* The same variable has moderate positive significant relationship with Tension (r=.28, *p=0.01),* Anger (r=.36, *p=0.01),* Fatigue (r=.28, *p=0.01),* Depression (r=.38, *p=0.01),*

Confusion (r=.35, *p=0.01)* and Total Mood Distress (r=-.11, *p=0.01)* and have significant negative relationship with Esteem Related Affect (r=-.10, *p=0.01).*

Table 5. Correlation between Age and Risky Driving Behavior (N=300)

Variables	N	M	SD	1	2
1.RDBS	300	45.26	10.52	1	-
2. AGE	300	25.85	8.27	-.18	1

NOTE: M=Mean, SD= Standard Deviation, RDBS= Risky Driving Behavior Scale

There is non-significant weak negative relationship between age and Risky Driving Behavior (r=-.18, *p=0.01).*

Table 6. Mean difference (t-test) among males and females (N=300).

INDEPENDENT sample T test

Independent sample t-test was found to compare mean difference between two groups (male and female).

Variable	Male		Female		*t (298)*	p	95% *CI*		Cohen's d
	M	*SD*	*M*	*SD*			*LL*	*UL*	
REAP	27.36	7.24	27.81	6.62	.18	.86	1.56	1.87	0.02
NEG	54.43	24.93	43.64	19.93	3.72	.00	5.08	16.51	0.48
POS	25.76	7.34	25.38	6.67	.44	.66	1.35	2.12	0.05
ANG	11.20	5.50	9.06	5.31	3.17	.00	.81	3.46	0.39
TMD	28.75	24.80	18.26	20.49	3.60	.00	4.76	16.22	0.46

Note: M= mean, SD= standard deviation, CI= Confidence Interval, LL= Lower Limit, UL= Upper Limit, ERS= REAP= Reappraisal, NEG= Negative Mood, POS= Positive Mood, ANG= Anger, TMD= Total Mood Distress.

Statistically significant mean difference was found between male (M=54.43, SD= 24.93) and female (M=43.64, SD= 19.93) among Negative Mood (t=3.72, p =.05). The result of Cohen's d suggests medium effect size. There is significant mean difference between male (M=11.20, SD= 5.50) and female (M=9.06, SD= 5.31) among Anger (t=3.17, p =.05). The result of Cohen's d suggests medium effect size. A significant mean difference was found between male (M=28.75, SD= 24.80) and female (M=18.26, SD= 20.49) among Negative Mood (t=3.60, p =.05). The result of Cohen's d suggests medium effect size.

A non- significant mean difference was found among Reappraisal (t=.18, p =.05) and Positive mood (t=.44, p =.05) among male and female. The effect size of the two scales is very small.

Table 7. Mean difference (Mann Whitney) among males and females (N=300).

Scales	Gender		*U*	*P*
	Males	Females		
SUPP	153.67	143.77	9145.50	.36
RDBS	155.76	139.32	8718.50	.13
TEN	160.57	129.11	7738.50	.003
FAT	157.78	135.04	8307.50	.03
DEP	162.85	124.27	7273.50	.000
VIG	153.49	144.16	9183.00	.38
CON	161.03	128.12	7643.50	.002
ERA	148.00	155.82	9281.00	.47

NOTE: SUPP= Suppression, TEN= Tension, FAT= Fatigue, DEP=Depression, VIG=Vigorous, CON= Confusion, ERA=Esteem Related Affect, TMD= Total Mood Distress, RDBS= Risky Driving Behavior Scale.

Statistically significant gender difference is observed in Tension (*U=7738.50, p=.05)* Fatigue (*U=8307.50.50, p=.05),* Depression (*U=7273.50, p=.05)* and Confusion (*U=7643.50, p=.05)* while non-significant mean difference is found Suppression (*U=9145.50, p=.05),* Risky Driving Behavior (*U=8718.50, p=.05),* Vigorous (*U=.50, p=.05)* and Esteem Related Affect (*U=7738.50, p=.05).*

Chapter 04

Discussion

The primary aim of this study was to investigate the relationship between emotion regulation, mood states with risky driving behavior. In the complex landscape of human behavior, the dynamic interplay between emotion regulation, mood states, and risky driving behavior forms a complex web that warrants careful examination. Our ability to navigate the roads is not solely determined by the mechanics of operating a vehicle; rather, it is intricately tied to our psychological and emotional states. This exploration seeks to unravel the nuanced relationship between how we regulate our emotions, the ebb and flow of our mood states, and the potential consequences for our behavior behind the wheel. Emotion regulation serves as a psychological compass, guiding our responses to the numerous stimuli encountered on the road. It involves the conscious and unconscious processes by which we modulate our emotional experiences. When faced with the challenges of driving be it traffic congestion, aggressive drivers, or unexpected obstacles our capacity to regulate emotions becomes paramount. The frustration of being stuck in a traffic jam can significantly influence our reactions, impacting our risk perception and decision-making while driving. Mood states, similar to the ever-shifting skies of the mind, play a crucial role in shaping our cognitive and emotional landscape. The emotional highs and lows we experience throughout the day can profoundly influence how we approach driving tasks. This research suggests that individuals in positive moods may exhibit riskier behaviors, underestimating potential hazards due to an optimistic bias. Conversely, negative moods might lead to increased cautiousness or, in some cases, risky behavior as a form of emotional regulation or escape. Understanding the intersection of emotion regulation, mood states, and risky driving behavior is pivotal for enhancing road safety. Empirical evidence underscores the significance of these psychological factors in contributing to traffic accidents and violations. Cognitive processes related to emotion regulation, such as impulse

control and attention allocation, directly impact our ability to respond to changing driving conditions. Moreover, the influence of individual differences in emotional regulation strategies and mood susceptibility adds complexity to the equation. Some may possess adaptive emotional regulation skills, allowing them to cope effectively with stressors on the road, while others may struggle to manage intense emotions, increasing the likelihood of impulsive and risky driving behavior. As we delve into the subsequent sections of this exploration, we will examine empirical studies, psychological theories, and real-world implications. This multifaceted investigation aims to shed light on the intricacies of the relationship between emotion regulation, mood states, and risky driving behavior, paving the way for targeted interventions, educational initiatives, and increased awareness surrounding the psychological dimensions of road safety.

Demographic Characteristics

In the current study (N=300), the categorical variables examined include gender, socio-economic status, major accidents, and possession of a driving license. Table 1 presents an overview of the demographic characteristics of the study participants. The male participants numbered 204, outnumbering the female participants (96). The majority of participants (76.1%) held a driving license, indicating an actively driving sample. Additionally, participants from middle and upper-middle socio-economic statuses were more prevalent. A smaller percentage of participants reported involvement in major accidents (38.3%). These demographic variables play a crucial role in comprehending the context and generalizability of the study's findings.

The observed demographic characteristics are consistent with prior research suggesting that socio-economic status and driving experience can impact driving behaviors (Bener et al., 2010; McCartt et al., 2014). For instance, individuals with higher socio-economic status may have access to superior driving education and resources, potentially influencing their driving behavior.

Reliabilities of Scales

The reliability analysis, specifically alpha reliability, of the measures presented in Table 2 illustrates the internal consistency within each scale. Upon scrutinizing the reliability of the measures employed in this study, it becomes apparent that various components demonstrate different levels of internal consistency. The sub-scales of reappraisal (REAP) and suppression (SUPP), integral to the emotional regulation questionnaire, individually exhibit moderate reliability, with their alpha coefficients reaching satisfactory levels. However, when these subscales are combined in the overall emotional regulation questionnaire, the resulting measure demonstrates good internal consistency. This suggests that amalgamating these dimensions enhances the reliability of the broader emotional regulation construct. Similar patterns have been noted in existing literature on emotional regulation (Gross & John, 2003).

The reliability coefficients (Cronbach's alphas) for the subscales of the emotional regulation questionnaire were found to be .67 and .54, resulting in a commendable mean of .61. This level of reliability is considered good and aligns with prior research findings (Gross & John, 2003). For the subscales of the abbreviated profile of mood states, the reliability coefficients (Cronbach's alphas) ranged between .81 and .77, contributing to a commendable mean of .73. This level of reliability is considered good and is consistent with findings from previous research (Grove & Prapavessis, 1992).

The internal consistency of RDBS, with a reliability coefficient of .93, aligns with the research conducted by Al Reesi and colleagues in 2018, where the reliability exceeded .70 (Cronbach's alpha > 0.70). In summary, the overall reliability values for these scales were deemed good.

Hypothesis 1: Poor emotional regulation will be positively related to increased risky driving behavior.

The examination of emotional regulation components, specifically reappraisal and suppression, unearthed intriguing insights. While suppression did not show a significant relationship with risky driving behavior, reappraisal exhibited a notable negative correlation.

This implies that individuals with higher reappraisal tendencies, characterized by a more adaptive and positive cognitive restructuring of emotional experiences, were associated with reduced engagement in risky driving behavior. The hypothesis suggests that poor emotional regulation will be positively related to increased risky driving behavior.

The correlation analysis indicates a significant negative relationship between reappraisal (a facet of emotional regulation) and risky driving behavior ($r = -0.11$, $p = 0.01$). These results align with existing research emphasizing the crucial role of emotional regulation in influencing impulsive behaviors (Lazuras et al., 2019). Research shows that experiencing negative emotions tends to perceive higher risks in traffic situations compared to those with positive or neutral emotions. However, this heightened perception of risk among individuals with negative emotions is associated with a greater inclination towards risky driving attitudes (Hu et al., 2013).

The negative correlation with reappraisal aligns with another research indicating that individuals with effective reappraisal skills are less prone to engage in risky driving behavior (Li et al., 2021). However, suppression (another facet of emotional regulation) shows a weak positive correlation with risky driving behavior ($r = 0.09$, $p =0.01$).

The positive correlation with suppression suggests a nuanced relationship, potentially indicating that excessive use of suppression may lead to increased risky behavior. This finding is consistent with studies highlighting the role of emotional regulation in driving behaviors

(Scott-Parker et al., 2009). Research highlighted the significance of emotional regulation in mitigating impulsive behaviors, and the findings from the current study support this notion by demonstrating the negative correlation between reappraisal tendencies and risky driving behavior (Lazuras et al., 2019).

This suggests that interventions aimed at enhancing emotional regulation skills, particularly those related to reappraisal, could potentially contribute to a decrease in risky driving behaviors, as indicated in the study (Lazuras et al., 2019). Hypothesis is accepted for reappraisal facet and partially accepted for suppression facet. The hypothesis suggesting a positive relationship between poor emotional regulation (specifically, lower reappraisal) and increased risky driving behavior is accepted.

The significant negative correlation ($r = -0.11$, $p = 0.01$) indicates that individuals with better reappraisal skills engage in less risky driving behavior. This aligns with existing literature emphasizing the importance of effective emotional regulation in reducing risky behaviors (Li et al., 2022). Suppression is partially accepted as the weak positive correlation ($r = 0.09$, $p = 0.01$) with suppression suggests a nuanced relationship.

While the correlation is not strong, it indicates a potential association between higher suppression and increased risky behavior. Further investigation is needed to understand the complexities of this relationship. The hypothesis is partially accepted.

Hypothesis 2: Negative mood states will be positively related to increased risky driving behavior, and vice versa.

The hypothesis posits that negative mood states will be positively related to increased risky driving behavior, and vice versa. The examination of various mood states, including tension, anger, fatigue, depression, and confusion, in relation to risky driving behavior revealed a significant positive correlation.

The correlation analysis reveals a significant moderate positive relationship between negative mood states and risky driving behavior ($r = 0.37$, $p = 0.01$). However, positive mood states show a weak negative correlation with risky driving behavior ($r = -0.01$, $p = 0.01$). This suggests that individuals experiencing heightened negative mood states are more prone to engage in risky driving behaviors. Notably, positive mood states did not show a significant relationship with risky driving behavior.

These findings resonate with the broader literature linking negative moods to increased risk-taking behaviors. As in the study, drivers with negative mood tended to see higher levels of traffic risk than those with positive mood. However, this heightened perception of risk was associated with a greater openness to engaging in risky driving behavior. Moreover, individuals with a more positive attitude toward risky driving were more likely to exhibit a propensity for engaging in such behavior (Hu et al., 2013).

The positive correlation with negative mood states is consistent with the literature linking negative affect to riskier driving behavior. Constantly thinking about angry feelings, known as anger rumination, was found to predict self-reported risky, aggressive, and negatively emotional driving. While it was anticipated that anger rumination would be most closely linked to aggressive driving, the findings showed that it had a stronger connection with scores related to dangerous driving rather than just aggressive behaviors (Suhar & Dula, 2017).

The weak negative correlation with positive mood suggests that individuals experiencing more positive moods may be less inclined toward risky driving behavior. These findings highlight the importance of considering both positive and negative mood states in understanding their impact on driving behavior.

Hypothesis proposing a positive relationship between negative mood states and increased risky driving behavior is accepted. The significant moderate positive correlation ($r = 0.37$, $p = 0.01$) indicates that individuals experiencing more negative mood states are more likely to engage in risky driving behavior. This finding is consistent with previous research emphasizing the impact of negative affect on driving behavior (Stephens et al., 2017).

The weak negative correlation ($r = -0.01$, $p = 0.01$) with positive mood suggests that individuals in more positive moods may be less inclined toward risky driving behavior. However, this correlation is very weak, and the hypothesis is rejected due to the lack of a meaningful association.

Understanding the impact of negative mood states on driving behavior provides valuable information for targeted interventions. Interventions focusing on mood management, especially addressing factors contributing to tension, anger, fatigue, depression, and confusion, could potentially mitigate risky driving behaviors. This highlights the importance of addressing mood management in interventions aimed at reducing risky driving behavior among young novice drivers. By targeting factors contributing to negative mood states, such as stress and fatigue, interventions could potentially mitigate risky driving behaviors.

Hypothesis 3: There will be a relationship between age and risky driving behaviors.

The hypothesis proposing a relationship between age and risky driving behavior is substantiated by correlation analysis, indicating a non-significant weak negative relationship ($r = -0.18$, $p = 0.01$) between age and engaging in risky driving behaviors. This weak negative relationship implies that younger individuals are more prone to exhibiting risky driving behaviors. There is a consistency in the literature as researches showed that younger adults are more involved in risky driving behavior as finding of research shows that compared to younger individuals older persons were able to use effective strategies for regulating their emotions they not only demonstrate a stronger emotional regulation, but they also seem to have lower levels of negative emotions. This age-related bifurcation further indicates that emotional development across the lifespan is not static, and therefore intervention efforts targeting positive emotions regulation ought to consider various factors associated with different stages of life (Carstensen et al., 2004; Gross et al., 1997; Zimmermann & Iwanski, 2015)

Consistent with this finding, extensive literature, including research by Taubman et al. (2004), underscores age-related disparities in driving behavior, particularly the inclination for risk-taking among younger drivers. Taubman and colleagues(2020) study not only aligns with the current findings but also emphasizes an inverse association between age and risky driving style, reinforcing the concept that younger individuals exhibit a higher proclivity for risk-taking while driving.

Further support for this age-related pattern in risky driving behavior comes from studies by Vassallo (2007) and Williams (2003), emphasizing that a younger age is linked to riskier driving behaviors. Williams (2003) specifically notes an elevated risk of car accidents in teenagers, particularly the youngest ones, highlighting the critical period for intervention. Younger drivers often display a higher propensity for risk-taking behaviors due to factors such

as inexperience, sensation-seeking tendencies, and underdeveloped cognitive control, as demonstrated by Scott-Parker et al. (2009).

Recognizing age-related patterns in risky driving behaviors is imperative for developing targeted educational initiatives and interventions. Tailoring strategies to address the specific needs and challenges faced by younger drivers holds the potential for substantial improvements in overall road safety. This comprehensive understanding of age-related factors contributes to the formulation of effective measures to mitigate risky driving behaviors among younger individuals.

Hypothesis 4: Gender difference will be significantly associated with emotion regulation and mood states influencing risky driving behavior.

The hypothesis posits that gender differences are significantly associated with emotion regulation and mood states, ultimately influencing risky driving behavior. Analysis employing t-tests and Mann-Whitney U tests unveils distinct gender differences in various emotional states, revealing that males tend to exhibit higher levels of negative mood, anger, and total mood distress compared to their female counterparts.

Within the realm of emotional regulation and mood states, notable gender disparities emerge. Female participants showcase superior emotional regulation skills, particularly in terms of reappraisal, and lower levels of negative mood states, encompassing tension, anger, fatigue, depression, and confusion, in contrast to their male counterparts. This study unveils gender differences in the Suppression scale, attributed to the greater participation of males. This aligns with Gross and John (2003) research findings indicating that men tend to score higher than females on the suppression sub-scale.

These gender distinctions align with prior studies highlighting variations in emotional regulation and mood states between males and females (Deffenbacher et al., 2000). Consistent with existing literature revealing gender variations in emotional expression and driving behavior (Ozkan & Lajunen, 2005; Wickens et al., 2018), more masculine traits are associated with an increase in both aggressive and ordinary offenses. Conversely, more feminine traits are linked to a decrease in accidents, offenses, aggressive and ordinary violations, as well as errors (Ozkan & Lajunen, 2005).

Earlier research noted variations between males and females in rumination patterns, particularly concerning anger. For instance, studies indicate that males often report experiencing and contemplating anger more frequently than females (Bushman, 2002). Social

and cultural factors likely contribute to these differences, suggesting that males may experience and express emotions differently while driving.

The significant gender differences in negative mood states, with males exhibiting higher levels, lend support to the hypothesis linking gender differences to negative mood states influencing risky driving behavior. However, the non-significant mean difference in positive mood states between genders leads to the rejection of the hypothesis regarding positive mood states influencing risky driving behavior.

Similarly, the non-significant mean difference in reappraisal between genders results in the rejection of the hypothesis regarding gender differences in reappraisal influencing risky driving behavior. Despite the imbalance in male and female participants, the significant gender differences in emotion regulation and mood states influencing risky driving behavior suggest robust findings. The consistency across various measures and substantial effect sizes strengthen the validity of results. While acknowledging the limitation of unequal sample sizes, the observed patterns align with existing literature and emphasize the relevance of gender in understanding driving behavior. Future research with a more balanced sample can further validate these findings (Oviedo and Scott, 2018).

By recognizing these nuanced distinctions becomes imperative for the development of gender-specific interventions. Tailoring strategies to address the unique emotional and mood-related challenges faced by males and females could enhance the effectiveness of interventions aimed at reducing risky driving behaviors. This understanding contributes to a more comprehensive approach to road safety, acknowledging the diversity in emotional experiences and regulatory capacities across different genders.

Conclusion

This study has successfully unveiled a distinct association between poor emotional regulation, negative mood states, and an increased susceptibility to unsafe driving practices, including speeding, aggressive driving, and distracted driving. Conversely, the positive influence of emotions is evident in improved cognitive functioning, heightened attention, and enhanced self-discipline, leading to more conscientious and responsible driving decisions.

The robust research design and careful ethical considerations strengthen the validity and reliability of the findings, contributing significantly to the expanding knowledge base on the subject. The study effectively accomplishes its objectives and validates hypotheses, establishing a positive correlation between emotional regulation, mood states, and risky driving behavior. Additionally, the exploration of demographic factors such as age and gender enriches the study by providing valuable insights for future research and interventions.

The implications of the findings underscore the paramount importance of comprehending the intricate interplay between emotional regulation, mood states, and risky driving behavior. These insights are particularly valuable for policymakers, researchers, and practitioners seeking to enhance road safety. The study's exploration of demographic factors adds depth to the context and enhances the generalizability of the findings.

In conclusion, this study's results emphasize the imperative for targeted interventions and strategies geared towards enhancing emotional regulation skills and managing mood states. Such initiatives are crucial for promoting safe driving practices and curbing the occurrence of risky driving behaviors among Pakistani drivers. The study's comprehensive approach sheds light on the multifaceted nature of emotional influences on driving behavior, contributing to the development of effective interventions for a safer driving environment.

Limitations

The limitations of this study are:

1. The correlational design was employed in the research to find out the relationship between the variables which may not be sufficient to demonstrate causality. A third component may influence the relationship.
2. As the study includes both male and female, and people of age range 18 years and above. So, it is difficult to generalize this study to other populations due to differences in age, gender, and other characteristics that may influence the association between the variables being studied.

Future Implications

Future Implications of study are:

1. Implement emotion recognition and regulation strategies to reduce unsafe driving behaviors and improve road safety. Provide techniques for managing stress, anger, and negative emotions that contribute to risky driving, anticipating increased adoption in the future.
2. Launch an awareness campaign through public service ads and driver education programs to promote safe driving. Focus on developing interventions, enhancing emotional regulation skills, stress management, and self-awareness to prevent negative mood states from impacting driving behavior.
3. Recognize age-related patterns, emphasizing the importance of early interventions and educational initiatives for younger drivers. Tailor programs to address specific challenges faced by this demographic, promoting safer driving practices.
4. Address and implement gender-specific differences in emotional regulation and mood states through interventions considering unique challenges faced by males and females.

Future Recommendation:

1. Future researches can be conducted across multiple cities to explore regional variations in driving behavior. By collecting data from diverse urban environments, researchers can better understand how local factors such as traffic patterns, infrastructure, and cultural differences impact driver behavior. This approach can contribute to the development of more tailored and effective interventions for improving road safety and traffic management. This approach will enhance the generalizability of findings and uncover potential urban-rural disparities.
2. Ensure an equal representation of male and female participants in the study to investigate potential gender-specific differences in driving behavior. Analyzing how men and women respond to various driving conditions, challenges, and interventions can provide valuable insights for designing gender-inclusive transportation policies and safety measures. This balanced approach will enable a more accurate comparison and interpretation of gender-related patterns.
3. Narrow the research focus to specific driver categories, such as truck drivers or online taxi drivers. Investigate the unique challenges, stressors, and factors influencing decision-making for these specific groups. This targeted approach can lead to more precise recommendations for occupational safety measures, training programs, and policy improvements tailored to the distinct needs of different driver segments.

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Appendices

Appendix 1

Capital University of Science and Technology
Islamabad

Islamabad Expressway, Kahuta Road,
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Telephone :+92-(51)-111-555-666
:+92-51-4486700
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Ref. CUST/IBD/PSY/Thesis-609
August 7, 2023

TO WHOM IT MAY CONCERN

Capital University of Science and Technology (CUST) is a federally chartered university. The university is authorized by the Federal Government to award degrees at Bachelor's, Master's and Doctorate level for a wide variety of programs.

Ms. Syeda Nayab Zahra, registration number **BSP201064** is a bona fide student in BS Psychology program at this University from Spring 2020 till date. In partial fulfillment of the degree, she is conducting research on "Relationship between emotion regulation, mood states with risky driving behavior". In this continuation, the student is required to collect data from your institute.

Considering the forgoing, kindly allow the student to collect the requisite data from your institute. Your cooperation in this regard will be highly appreciated.

Please feel free to contact undersigned, if you have any query in this regard.

Best Wishes,

Dr. Sabahat Haqqani
Head, Department of Psychology
Ph No. 111-555-666 Ext: 178
sabahat.haqqani@cust.edu.pk

Appendix 2

Well Being of Pakistani Drivers Consent Form

This study is done as a bachelor's thesis by Syeda Nayab Zahra under Dr. Sabahat Haqqani from the Psychology Department at Capital University of Science and Technology Islamabad. This determines the relationship between emotional regulation, mood states, cognitive function, sensation seeking and attention bias with risky driving behavior. The data will be kept confidential, and privacy will be maintained. The data collected will be used for research purposes only. Participation in this study is purely voluntary. You may withdraw anytime point and it will not incur any penalty on the part of the participant. Your participation will be highly appreciated. I invite you to take part in this research. Please carefully read each instruction and ensure that each piece of information is understood. You may ask if any query. Please confirm that you want to participate in this study by providing your consent below.

Date: _

Sign: _

Appendix 3

Demographics

Age	
Gender	
Qualification	
Occupation	
Medical Condition (If any)	
City	
Socioeconomic Status:	• Lower class • Middle class • Upper middle class • Upper class
Do you have a Driving License?	• Yes • No
From how many years you are driving? Please Explain	
Any major accident in your driving period? Yes or No Please explain	

Appendix 4

Emotion Regulation Questionnaire

We would like to ask you some questions about your emotional life and how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem like one another, they differ in important ways. For each item, please answer using the following scale:

1----------2----------3----------4----------5----------6----------7

Strongly Disagree **neutral** **strongly agree**

1	When I want to feel more positive emotion (such as joy or amusement), I change what I am thinking about.	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree
2	I keep my emotions to myself.	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree
3	When I want to feel fewer negative emotions (such as sadness or anger), I change what I am thinking about**.**	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree
4	When I am feeling positive emotions, I am careful not to express them.	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree
5	When I am faced with a stressful situation, I make myself think about it in a way that helps me stay calm**.**	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree
6	I control my emotions by not expressing them.	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree
7	When I want to feel more positive emotion, I change the way I am thinking about the situation.	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree
8	I control my emotions by changing the way I think about the situation I am in**.**	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree
9	When I am feeling negative emotions, I make sure not to express them.	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree
10	When I want to feel less negative emotion, I change the way I am thinking about the situation.	1----------2----------3----------4----------5----------6----------7 Strongly Disagree neutral strongly agree

Appendix 5

Abbreviated Profile of Mood States

Below is a list of words that describe feelings people have. Please CIRCLE THE NUMBER THAT BEST DESCRIBES HOW YOU FEEL RIGHT NOW.

No	Words	Not At All	A Little	Moderately	Quite a lot	Extremely
1.	Tense	Not At All	A Little	Moderately	Quite a lot	Extremely
2.	Angry	Not At All	A Little	Moderately	Quite a lot	Extremely
3.	Worn Out	Not At All	A Little	Moderately	Quite a lot	Extremely
4.	Unhappy	Not At All	A Little	Moderately	Quite a lot	Extremely
5.	Proud	Not At All	A Little	Moderately	Quite a lot	Extremely
6.	Lively	Not At All	A Little	Moderately	Quite a lot	Extremely
7.	Confused	Not At All	A Little	Moderately	Quite a lot	Extremely
8.	Sad	Not At All	A Little	Moderately	Quite a lot	Extremely
9.	Active	Not At All	A Little	Moderately	Quite a lot	Extremely
10.	On-edge	Not At All	A Little	Moderately	Quite a lot	Extremely
11.	Grouchy	Not At All	A Little	Moderately	Quite a lot	Extremely
12.	Ashamed	Not At All	A Little	Moderately	Quite a lot	Extremely
13.	Energetic	Not At All	A Little	Moderately	Quite a lot	Extremely
14.	Hopeless	Not At All	A Little	Moderately	Quite a lot	Extremely
15.	Uneasy	Not At All	A Little	Moderately	Quite a lot	Extremely
16.	Restless	Not At All	A Little	Moderately	Quite a lot	Extremely
17.	Unable to concentrate	Not At All	A Little	Moderately	Quite a lot	Extremely
18.	Fatigued	Not At All	A Little	Moderately	Quite a lot	Extremely
19.	Competent	Not At All	A Little	Moderately	Quite a lot	Extremely
20.	Annoyed	Not At All	A Little	Moderately	Quite a lot	Extremely
21.	Discouraged	Not At All	A Little	Moderately	Quite a lot	Extremely
22.	Resentful	Not At All	A Little	Moderately	Quite a lot	Extremely

	Words	Not At All	A Little	Moderately	Quite a lot	Extremely
23.	Nervous	Not At All	A Little	Moderately	Quite a lot	Extremely
24.	Miserable	Not At All	A Little	Moderately	Quite a lot	Extremely
25.	Confident	Not At All	A Little	Moderately	Quite a lot	Extremely
26.	Bitter	Not At All	A Little	Moderately	Quite a lot	Extremely
27.	Exhausted	Not At All	A Little	Moderately	Quite a lot	Extremely
28.	Anxious	Not At All	A Little	Moderately	Quite a lot	Extremely
29.	Helpless	Not At All	A Little	Moderately	Quite a lot	Extremely
30.	Weary	Not At All	A Little	Moderately	Quite a lot	Extremely
31.	Satisfied	Not At All	A Little	Moderately	Quite a lot	Extremely
32.	Bewildered	Not At All	A Little	Moderately	Quite a lot	Extremely
33.	Furious	Not At All	A Little	Moderately	Quite a lot	Extremely
34.	Full of Pep	Not At All	A Little	Moderately	Quite a lot	Extremely
35.	Worthless	Not At All	A Little	Moderately	Quite a lot	Extremely
36.	Forgetful	Not At All	A Little	Moderately	Quite a lot	Extremely
37.	Vigorous	Not At All	A Little	Moderately	Quite a lot	Extremely
38.	Uncertain about things	Not At All	A Little	Moderately	Quite a lot	Extremely
39.	Bushed	Not At All	A Little	Moderately	Quite a lot	Extremely
40.	Embarrassed	Not At All	A Little	Moderately	Quite a lot	Extremely

Appendix 6

Risky Driving Behavior Scale

In the last twelve months, how often have you done the following behaviors while driving?" in a 5-point Likert-type scale ranging from 1 (never) to 5 (Always).

	Statements	Never	Rarely	Sometime	often	Always
1.	Attempt turning without ensuring road is devoid of pedestrians or cyclists,	Never	Rarely	Sometime	often	Always
2.	Cross a junction knowing that the traffic lights have already turned red.	Never	Rarely	Sometime	Often	Always
3.	Turn right/left into the path of another vehicle putting it at a risk or making it breaks suddenly (blind spot)	Never	Rarely	Sometime	often	Always
4.	Turn using an illegal U-turn.	Never	Rarely	Sometime	Often	always
5.	On entering a roundabout or intersection, you pay such close attention to the mainstream of traffic that you nearly hit car front'	Never	Rarely	Sometime	often	Always
6.	Attempt to overtake a row of cars in a traffic jam from right hand side	Never	Rarely	Sometime	Often	Always
7.	Get involved in 'drifting.'	Never	Rarely	Sometime	often	Always
8.	Enter the road in front of another vehicle which forces it to break suddenly	Never	Rarely	Sometime	Often	Always
9.	Attempt to overtake another car in an area where overtaking prohibited	Never	Rarely	Sometime	often	Always
10.	Get involved with unofficial 'races' with other drivers on the roads	Never	Rarely	Sometime	often	Always
11.	Attempt to overtake a car that you had not noticed to be signaling a left/right turn.	Never	Rarely	Sometime	often	Always
12.	Attempt to overtake a row of cars, stopped on roads, for any reason	Never	Rarely	Sometime	often	Always
13.	Exceed the posted speed limit when you drive in bad road conditions (i.e., working zone, slippery roads.)	Never	Rarely	Sometime	often	Always
14.	Misjudge the stopping distance you needed which forces you to suddenly use the breaks	Never	Rarely	Sometime	often	Always
15.	Cross a junction knowing that the traffic lights have already turned yellow.	Never	Rarely	Sometime	often	Always
16.	Turn right/left, without signaling the turn	Never	Rarely	Sometime	often	Always

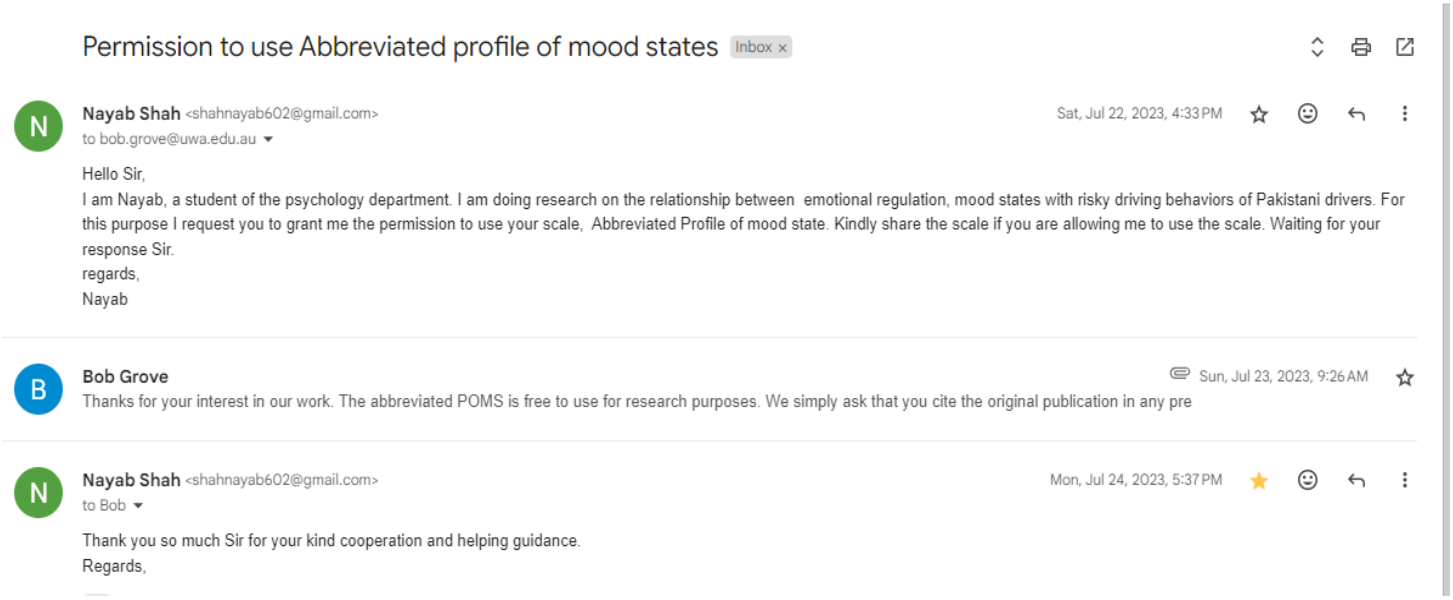
17.	Drive close to the car in front as a signal to its driver to go faster or get out of the way.	Never	Rarely	Sometime	Often	Always
18.	Get angered by other slow drivers.	Never	Rarely	Sometime	often	Always
19.	Watching views or events happening on roads while driving.	Never	Rarely	Sometime	often	Always
20.	Joking with my friends while driving	Never	Rarely	Sometime	Often	Always
21.	Using horn to indicate my anger from another driver's behavior.	Never	Rarely	Sometime	often	Always
22.	Listening to a specific radio program while driving	Never	Rarely	Sometime	Often	Always
23.	You are driving is affected by negative emotions like anger or frustration.	Never	Rarely	Sometime	often	Always
24.	Drive faster if you are in a bad mood.	Never	Rarely	Sometime	often	Always
25.	Exceed the posted speed limit when you drive on open roads or roads with low traffic	Never	Rarely	Sometime	often	Always
26.	Exceed the posted speed limit when you drive in areas where it was unlikely there was a radar or speed camera.	Never	Rarely	Sometime	often	Always
27.	Exceed the posted speed limit by more than 15 km/hr. (e.g., 120 km/hr. – I drive at 135 km/hr. or more).	Never	Rarely	Sometime	often	Always
28.	Exceed the posted speed limit by less than 15 km/hr. (e.g., 120 km/hr. – I drive with 121-134 km/hr.)	Never	Rarely	Sometime	often	Always
29.	Attempt to overtake a car in front even when it keeps the appropriate speed	Never	Rarely	Sometime	often	Always
30.	Keep driving while you feel tired	Never	Rarely	Sometime	often	Always
31.	Keep driving while you feel sleepy	Never	Rarely	Sometime	Often	Always
32.	Driving for long distances without taking breaks.	Never	Rarely	Sometime	often	Always
33.	using a hand-held mobile phone (Call or reply) while driving)	Never	Rarely	Sometime	often	Always
34.	Using mobile phones for texting or chatting while driving	Never	Rarely	Sometime	often	Always
35.	Ingestion while driving	Never	Rarely	Sometime	often	Always
36.	putting seat belt on only in the presence of	Never	Rarely	Sometime	often	Always

	traffic police					
37.	Driving without putting the seat belt on.	Never	Rarely	Sometime	often	Always
38.	Drive close to the car in front, which forces you to use the brakes many times.	Never	Rarely	Sometime	Often	Always
39.	Drive close to the car in front in traffic jam.	Never	Rarely	Sometime	often	Always

Appendix 7

The ERQ is straightforward and quick to complete, making it a practical tool for various purposes. Moreover, being freely available allows for easy accessibility to individuals, professionals, and researchers.

Appendix 8



Permission to use Abbreviated profile of mood states Inbox ×

Nayab Shah <shahnayab602@gmail.com> Sat, Jul 22, 2023, 4:33 PM

to bob.grove@uwa.edu.au

Hello Sir,
I am Nayab, a student of the psychology department. I am doing research on the relationship between emotional regulation, mood states with risky driving behaviors of Pakistani drivers. For this purpose I request you to grant me the permission to use your scale, Abbreviated Profile of mood state. Kindly share the scale if you are allowing me to use the scale. Waiting for your response Sir.
regards,
Nayab

Bob Grove Sun, Jul 23, 2023, 9:26 AM

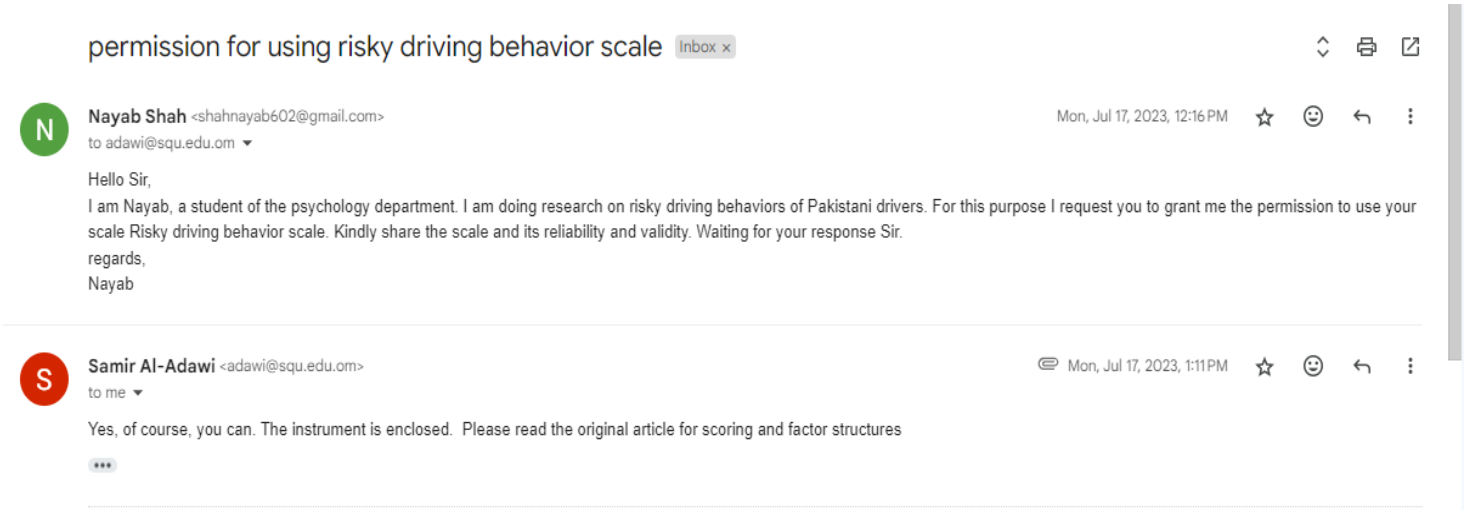
Thanks for your interest in our work. The abbreviated POMS is free to use for research purposes. We simply ask that you cite the original publication in any pre

Nayab Shah <shahnayab602@gmail.com> Mon, Jul 24, 2023, 5:37 PM

to Bob

Thank you so much Sir for your kind cooperation and helping guidance.
Regards,

Appendix 9



permission for using risky driving behavior scale Inbox ×

Nayab Shah <shahnayab602@gmail.com> Mon, Jul 17, 2023, 12:16 PM

to adawi@squ.edu.om

Hello Sir,
I am Nayab, a student of the psychology department. I am doing research on risky driving behaviors of Pakistani drivers. For this purpose I request you to grant me the permission to use your scale Risky driving behavior scale. Kindly share the scale and its reliability and validity. Waiting for your response Sir.
regards,
Nayab

Samir Al-Adawi <adawi@squ.edu.om> Mon, Jul 17, 2023, 1:11 PM

to me

Yes, of course, you can. The instrument is enclosed. Please read the original article for scoring and factor structures