THE BEST, THE WORST, AND THE AVOIDANT: THE RELATIONSHIP BETWEEN CAUSAL AND AFFECTIVE EVALUATIONS ABOUT DRIVING PERFORMANCE AND SELF-REGULATORY DRIVER BEHAVIORS

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

GIZEM FINDIK

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY
IN
THE DEPARTMENT OF PSYCHOLOGY

SEPTEMBER, 2023

Approval of the thesis:

THE BEST, THE WORST, AND THE AVOIDANT: THE RELATIONSHIP BETWEEN CAUSAL AND AFFECTIVE EVALUATIONS ABOUT DRIVING PERFORMANCE AND SELF-REGULATORY DRIVER BEHAVIORS

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ABSTRACT

THE BEST, THE WORST, AND THE AVOIDANT: THE RELATIONSHIP BETWEEN CAUSAL AND AFFECTIVE EVALUATIONS ABOUT DRIVING PERFORMANCE AND SELF-REGULATORY DRIVER BEHAVIORS

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September 2023, 84 pages

Self-regulatory behaviors in road traffic context involve modifying driving behavior in a way to adapt to changes in capacity and occurs in the form of reduction or cessation of driving in the face of challenging situations. One individual difference variable that may potentially be a precursor of self-regulatory behaviors in driving is causal attribution, which means the set of evaluations about the perceived causes of success and failure. Previous studies investigated different precursors of driving self-regulation. However, this study is the first to examine the precursors of driving self-regulation within the causal attributional framework. Unlike previous studies that either have participants of old age or make age-based comparisons, this study aims to understand the aforementioned mechanism independent from age. The current study aims to investigate the relationship between causal attributions (about the best and the worst performed aspects of driving), affective outcomes of these attributions (i.e. Positive Affect and Negative Affect), and behavioral outcomes associated with them (i.e. driving self-regulation measured by the level of avoidance). A sample of 400 drivers filled out the demographic information form, the Causal Dimension Scale-II, the International Positive and Negative Affect Schedule Short Form, and the Extended Driving Mobility Questionnaire-Avoidance. Results show that attributional model is more useful for explaining driving avoidance in the context of the worst performance as compared to the best performance. Increased External Control leads to increased Negative Affect, which then

leads to increased avoidance behavior. This study shows that causal evaluations about performance can influence self-regulatory driving behaviors.

Keywords: causal dimensions, attribution, affect, driving self-regulation, driving avoidance

ÖZ

İYİ, KÖTÜ VE KAÇINMACI: SÜRÜŞ PERFORMANSINA İLİŞKİN NEDENSEL VE DUYGUDURUM DEĞERLENDİRMELERİ İLE ÖZ-DÜZENLEYİCİ SÜRÜCÜ DAVRANIŞLARI ARASINDAKİ İLİŞKİ

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Eylül 2023, 84 sayfa

Karayolu trafiği bağlamında öz-düzenleyici davranışlar, sürüş davranışlarını kapasite değişimlerine uyum sağlayacak yönde şekillendirmektir ve zorlayıcı durumlar karşısında maruziyeti azaltma veya sürüşü sonlandırma şeklinde ortaya çıkmaktadır. Sürüşte öz-düzenleyici davranışların öncülü olabilecek bireysel farklılık değişkenlerinden biri, başarı ve başarısızlığın algılanan sebeplerine dair değerlendirmeler anlamına gelen nedensel atıflardır. Önceki çalışmalar, öz-düzenleyici sürücü davranışlarının farklı öncüllerini incelemişlerdir. Ancak bu çalışma, öz-düzenleyici sürücü davranışlarının öncüllerini nedensel atıflar çerçevesinde ele alan ilk çalışmadır. Katılımcıları yaşlı sürücüler olan veya yaş-temelli karşılaştırmalar yapan önceki çalışmalardan farklı olarak, bu çalışmada sözü edilen ilişkinin yaştan bağımsız olarak incelenmesi hedeflenmektedir. Mevcut çalışmanın amacı nedensel atıflar (sürücülükte en iyi ve en kötü olunan yönlere dair), bu atıfların duygudurum çıktıları (yani Pozitif Duygudurum ve Negatif Duygudurum) ve yine bu atıfların davranışsal çıktıları (yani kaçınma düzeyi ile ölçülen öz-düzenleyici sürücü davranışları) arasındaki ilişkiyi incelemektir. Dört yüz kişilik örneklem demografik bilgi formu, Nedensel Boyutlar Ölçeği-II, Uluslararası Pozitif ve Negatif Duygudurum Ölçeği Kısa Formu ve Genişletilmiş Sürücü Hareketlilik Ölçeği-Kaçınma ölçeklerini doldurmuştur. Sonuçlar atıf modelinin sürücülükte kaçınma davranışlarını en iyi performansa kıyasla en kötü performans bağlamında daha iyi açıkladığını göstermektedir. Artan Dışsal Kontrol Negatif Duygudurumda artışa yol

açmakta, bu da artan kaçınma davranışına neden olmaktadır. Bu çalışma, performansa dair nedensel değerlendirmelerin öz-düzenleyici sürücü davranışlarını etkileyebileceğini göstermektedir.

Anahtar Kelimeler: nedensel boyutlar, atıf, duygudurum, öz-düzenleyici sürücü davranışları, sürücü kaçınmacılığı

To My Niece, Rüya

ACKNOWLEDGEMENTS

I would like to express deepest gratitude to my supervisor, Assoc. Prof. Bahar ÖZ. I feel, and I believe that all her students also feel- that supervisor or instructor describes one of the many contributions she made in my life. She has been a mentor, a counsel, a friend, a sister; in short, she has been everything a student might ever need. I feel lucky for having the chance to be her student.

I am grateful to my thesis advisory committee members, Prof. Dr. Timo Lajunen and Prof. Dr. Türker Özkan. Their valuable comments opened new horizons in my mind through all stages of my academic life. I am also grateful to the thesis jury members, Prof. Dr. Tülin Gençöz and Assoc. Prof. Dr. Gaye Solmazer. They were very supportive and constructive, not only in the thesis defense, but also in other instances. It is an opportunity for me to work with such good academicians. I am hoping that our roads cross again in the future, since there is still too much to learn from them.

This work could not be completed without the people who participated in this study. Some of them I know, some of them I do not know. I thank all of them. I deeply appreciate their participation and contribution, since they did so with no profit for themselves. I am grateful to everyone who helped me reach my participants. My father asked even random strangers to participate in this work. My mother coordinated all her friends to contribute to this work. My dear friends Dr. Yeşim Yavaşlar Doğru and Dr. Onur Cem Doğru shared my study with their social network over and over again for days. My lovely friends Dr. Bilgesu Kaçan Bibican and Sema Erel did their best to make sure their acquaintances took part in this study. My cousins Halime Gence, Berrin Gence, Melis Gence, and Özlem Sönmez also shared my study with their social network and helped me to reach participants. Last, but not least, I would like to thank the Guard Gym family for their efforts to find participants. I could not have done this without their support.

I would like to express my gratitude to Hüseyin Üstün. He has his own ways to keep one on track and motivated. Rüya Fındık has been and will always be a source of joy through hard times. I thank her for being my twinkle. Special thanks to Şükran Gence, my safe haven, for

making me who I am. I know that she could have done much better than me as a student if she had been given the chance. Her effort, willingness, and courage will always be a source of inspiration to me.

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CHAPTER 1

INTRODUCTION

Traffic is an integral part of life. Individuals can participate in the traffic with different roles such as drivers, pedestrians, and passengers. The future trend in travel is shifting towards a more sustainable, demand-based, and reduced form, yet a long time is needed for fundamental changes in the functioning of traffic system (Holden, Gilpin, & Banister, 2019; Moriarty, & Honnery, 2008). In the meantime, traffic volume (International Transport Forum, 2022) and private car ownership (European Environment Agency, 2019) are still on the rise. Some of the reasons why individuals prefer driving rather than other means are private cars' convenience, independence, flexibility, comfort, speed, reliability, pleasure, and status (Steg, 2003). For these and other reasons, driver role and factors related to driving has been and will continue to remain in the spotlight.

Car drivers can only take part in the traffic system after a licensing process, which aims to ensure that the person is capable and knowledgeable enough to drive. This provides the driver group to be above some minimum level of performance. Beyond that minimum level, though, some individual differences such as age, sex, experience, attitudes, and personality (Lajunen, & Summala, 1995; Özkan, Lajunen, Chliaoutakis, Parker, & Summala, 2006) relate to varieties in skill levels of drivers. For instance, Özkan and his colleagues (2006) reported that increased age is associated with increased safety skills (i.e. accident avoidance skills), increased experience is associated with increased perceptual-motor skills (i.e. technical driving skills), and males report higher perceptual-motor skills than females, which are findings present across 6 different countries. Similarly, Lajunen, Sullman, and Gaygısız (2022) found that males report higher perceptual-motor skills than safety skills, while females report higher safety skills than perceptual-motor skills. Additionally, they reported that increased experience is associated with increased perceptual-motor skills and decreased safety skills among both males and females. The diversity in individual differences among drivers result in heterogeneity in the skills deemed necessary for safe driving. One implication of the heterogeneity in skill level is that the same driving task can be more challenging for some, while quite simple for others.

Driving is a self-paced task, meaning that the drivers have the chance to determine the safety margins or level of risk as they drive (Lajunen & Özkan, 2011). Recent studies show that skill is one of the important factors that relates to driving behavior, that is the way drivers choose to drive (Üzümcüoğlu, Özkan, Wu, & Zhang, 2020; Yang, Li, Guan, & Jiang, 2022). The self-paced nature of driving allows drivers to optimize their driving in order to deal with the challenges brought by the heterogeneity in skill levels. In other words, having the opportunity to choose between the available options, drivers can select to drive under the most suitable conditions for themselves. For example, assuming that the option is available, a driver with reduced visual skills may choose to drive in daytime as compared to nighttime. This phenomenon is an example of driving self-regulation and is one of the main variables of this study. The purpose of this study is to examine different precursors of it.

1.1. Self-Regulatory Driver Behaviors

1.1.1. Definition of Self-Regulation in Driving

In order to deal with the challenges they face while driving, drivers can engage in self-regulatory behaviors. Self-regulatory behaviors in road traffic context implies drivers' attempt to protect from potential harm in case of accidents, by avoiding hazards of dangerous situations (Stalvey, & Owsley, 2000). These behaviors involve modifying driving behavior in a way to adapt to changes in capacity (Charlton, Oxley, Fildes, Oxley, & Newstead, 2003) and occurs in the form of reduction or cessation of driving in the face of challenging situations (Ang et al., 2019a). In that sense, appropriately applied self-regulatory behaviors in driving can be regarded as a positive coping strategy in maintaining safe mobility (Gwyther, & Holland, 2012). Although the expression "changes in capacity" connotes to old age only, self-regulatory behaviors are more common among young as well as old drivers, as compared to their middle-aged counterparts (Gwyther, & Holland, 2012; Naumann, Dellinger, & Kresnow, 2011). Still, older and younger individuals show differences in the way they self-regulate when driving (Azık, 2015). Undeveloped skills and declining skills among young and old drivers, respectively, might explain why these drivers self-regulate.

1.1.2. Current Debates and Improvements Regarding Driving Self-Regulation Concept

Self-regulation in driving is an important concept in terms of shaping the choices of drivers. In addition to limiting the driving conditions, it also has implications on the accident risk of drivers (Ross et al., 2009). Carrying on its practical importance on one hand, driving self-

regulation studies suffer from several limitations on the other. Molnar and her colleagues (2015) listed five limitations regarding the studies about driving self-regulation. These are narrowing the operationalization of the concept down to avoidance behaviors, examining a limited set of driving situations, using a cross-sectional design, employing self-report measurements, and methodological issues in relating self-regulatory behaviors to (un)safe driving practices or outcomes.

Several attempts have been made to overcome the issues mentioned above. For instance, Wong, Smith, and Sullivan (2015) developed an updated version of previous self-regulation scales (i.e. Driving Habits Questionnaire and Driving Mobility Questionnaire), adding new items to better cover the concept. Another attempt to develop a theory-based scale development was carried out by Yeoh, Ibrahim, Oxley, Hamid, and Rashid (2016). Ang and her colleagues (2020) conducted a qualitative exploration of the subject. Their findings revealed detailed information about the challenges to continue driving and compensatory strategies for continuing driving by older couples. Another study by Bergen and her colleagues (2017) aimed to identify classes of self-regulators based on driving frequency and avoidance of 7 selected conditions. Combining their findings with the previous ones, Bergen and her colleagues concluded that older drivers can be investigated in 5 groups: drivers with no modifications, low self-regulating drivers, medium self-regulating drivers, high self-regulating drivers, and former drivers. Bernstein and his colleagues (2022) conducted a longitudinal study, in which they found that after controlling for executive function, increased age was associated with increased self-regulation, but not risky driving. In another longitudinal study, Vivoda and his colleagues (2022) found that the most common type of self-regulation was done in nighttime driving and driving comfort was the leading predictor of driving self-regulation. Thompson, Baldock, Mathias, and Wundersitz (2016) compared self-reported driving avoidance behavior with global positioning system (GPS) data, and conclude that the correspondence between subjective and objective data is rather low. Another study investigated the on-road self-regulatory driving behaviors of drivers with early Alzheimer's Disease (AD) by expert assessments and found that the AD drivers had decreased performance as well as lower-quality self-regulation as compared to healthy older drivers (Paire-Ficout et al., 2018). These and other studies contributed to the proliferation of knowledge regarding driving self-regulation by focusing on different aspects of the concept.

1.1.3. Precursors of Driving Self-Regulation

Despite considerable inter-individual variability, self-regulation of driving is found to be more common and the underlying factors related to it are more complex among older drivers

(Moták, Gabaude, Bougeant, & Huet, 2014). The quantitative review by Ang et al. (2019a) summarized the factors that influenced older individuals' self-regulatory driving behaviors under four main headings: demographics, health and well-being, social influence, and environment. They further reported that increased age, being female, and presence of depressive symptoms contributed to reduction; while increased age, being female, being unmarried, poor cognitive ability, poor vision, decreased subjective health, lower physical functioning, presence of depressive symptoms, presence of stroke history, and presence of comorbidities contributed to cessation of driving. The qualitative review by Ang, Oxley, Chen, and Lee (2019b), on the other hand, revealed that the most important factors were health status and driving anxiety in the pre-decision; gender, employment status, living and housing arrangements, and feeling of independence in the decision; social support, infrastructure, and legal support in the post-cessation phase of driving reduction and cessation. Put another way, older drivers' transition process from driver to non-driver status is characterized by 3 phases and each phase is influenced by distinct factors. In the pre-decision phase (in which declining abilities are acknowledged but serious intention to self-regulate is not present), recognition of deterioration in the health status and experiencing anxiety/discomfort while driving pave the way for self-regulation. In the decision phase (in which self-regulation through reduction or cessation is present), females are more likely to consider regulating their driving, whereas those who work, lost their spouse or living alone were less likely to do so since they have to rely on themselves in running their errands. Additionally, decision to cease driving is a difficult and critical one since driving is associated with independence. Finally, in the post-cessation phase (in which driving is ceased and alternatives are sought), social (feedback from loved ones and reassurance that mobility needs will be met), infrastructural (presence of alternative transport options), and legal support (awareness of existing regulations/guidelines about driving) foster transition to non-driver status. A number of studies investigated the relationship between attitudes and driving self-regulation among older drivers (Conlon, Rahaley, & Davis, 2017; Tuokko et al., 2016). Conlon and her colleagues (2017) reported that negative attitudes towards driving is associated with increased driving self-regulation for females, but not males. Furthermore, negative attitudes mediated the relationship between health related variables (i.e. visual difficulties and physical strength) and driving self-regulation. Mediator role of attitudes in the relationship between health-related variables and driving self-regulation was also found in Tuokko and her colleagues' (2016) study. These findings emphasize the role of intrapersonal factors associated with driving self-regulation. While the precursors of self-regulated driving are well-studied for the older sample, the issue remains widely unexplored for the young drivers.

1.1.3.1. Demographics as the Precursors of Self-Regulatory Driver Behaviors

Among many others, demographic variables, especially age and gender, have been particularly studied in relation to self-regulation in driving. Though limited, there is a number of studies that examine self-regulatory driving behaviors across all age groups. These studies are mainly aimed at comparing younger and older drivers in terms of the level and/or pattern of self-regulatory driving. In their study, Azık and Özkan (2018) reported that the older drivers mainly self-regulate their driving in the strategic level (i.e. higher-order decisions and strategies such as route planning), whereas their younger counterparts do so in the tactical level (i.e. maneuvering actions such as following distance). Naumann and her colleagues (2011) reported that more than half of their sample of 8129 respondents reported at least one type of self-restriction and the most common type of restriction was avoiding driving in bad weather (compared with avoiding at night and avoiding driving on high-speed roads). Their group comparisons showed that females reported higher avoidance scores in all 3 conditions and older drivers reported higher avoidance for driving at night. Except for those aged 75 and older, there was no apparent difference in age groups in terms of avoiding driving in bad weather; in fact, lower odds ratios were observed as age increased. Finally, avoidance of driving on high-speed roads was increasingly more common among drivers aged 65-74 and 75+ compared to young and middle-age groups. Moták and his colleagues (2014) revealed that older drivers engaged more in driving avoidance as compared to younger drivers and there was a main effect of the type of situation on driving avoidance. They further reported that most avoided conditions across both ages were driving at night in the rain, in fog, during the rush hour, and in the snow; whereas the least avoided ones were driving around roundabouts, making left turns, and driving on the highways. Moták and his colleagues reported that there was no age by situation interaction, meaning that the older drivers consistently avoided more than the younger ones across all situations. In their further analyses, they reported that the main effect of age was significant when self-reported mental health was added as a covariate. Gwyther and Holland (2012), also reported an age effect on driving avoidance in the way that younger and older drivers both avoid more compared to middle-aged drivers. Their results indicate a main effect of sex (female drivers avoiding more than their male counterparts), and when experience was controlled for, female and older drivers still engaged in avoidance more than male and younger drivers, respectively. The study by Fort and her colleagues (2021) had participants from different ages, but age was not a main variable of interest in this study. The aim of the study was to understand how level of driving anxiety relates to driving avoidance, personal, and occupational life. Relevant findings from their study were females and middle-aged drivers being over-

represented in the extreme-driving anxiety group. Another study worth mentioning is that of Andrews and Westerman (2012), in which the age-related differences in simulated driving performance and compensatory processes were investigated. They found that there were relatively few differences between the younger and older drivers in terms of mean driving performance. The significant differences were observed in mean time headway and standard deviation of speed, and older drivers scored higher in both performance indexes. Longer headway is thought of as a generic compensatory strategy for complex decision making processes employed by older drivers. Additionally, Andrews and Westerman (2012) discussed that high crystallized ability may act as a selective compensatory strategy among older drivers, since high levels of it is associated with better performance for older drivers, but not for younger drivers. To summarize, literature suggests that demographic variables has a critical role in driving self-regulation. However, other psychological constructs such as attitudes are found to be associated with self-regulatory behaviors in traffic. Causal attribution is one other psychological construct that may be related to these behaviors.

1.2. Attributions, Affective Outcomes, and Behavioral Outcomes

1.2.1. Causal Attributions/Evaluations and Behavioral Outcomes

One individual difference variable that may potentially be a precursor of self-regulatory behaviors in driving is causal attribution, which means the set of evaluations about the perceived causes of success and failure. Attribution theories examine the antecedent conditions that lead to different causal explanations, while attributional theories investigate the psychological consequences of the attributions (Försterling, 2001, p. 9). Regardless from its focus, assumptions of attribution/al studies are accepting the mediating role of cognitions in the stimulus-reaction relationship, considering that individuals rationally seek explanations for the causes of events, and seeing attributions as functional (Försterling, 2001, p. 11). Causal explanations can be made spontaneously, yet often they are triggered by specific conditions such as schema-inconsistent instances, unexpected events, and novel situations (Försterling, 2001, p.13-17). According to Hewstone (1994, p. 9), causal explanations can be investigated in 4 levels: intrapersonal level (i.e. the mechanism by which the individual processes the information), interpersonal level (i.e. dynamics of interpersonal processes), intergroup level (i.e. effect of social categorization on the attributions), and societal level (i.e. shared beliefs of the people in a given society).

At the intrapersonal level, which is the focus of the current research, one of the consequences that has generated the most influential work is achievement motivation. According to the

influential model proposed by Weiner (2000), motivational process begins with an event (i.e. success or failure), is guided by attributional inferences, and ends with a behavioral outcome. Following the initial event, an outcome-dependent emotion is given: the person is happy in goal attainment (i.e. success) and unhappy in goal non-attainment (i.e. failure) condition. Weiner (2000) claims that these outcome-dependent emotions are general affective reactions that do not require much cognitive work. Outcome-dependent emotions are followed by a questioning the reasons of the event only under certain circumstances (e.g. when event is unexpected, negative and/or important). Individuals use a number of information sources (i.e. causal antecedents) in ascribing a reason to the event, such as past achievements or failures, norms, biases, and so on. Once a cause is selected, underlying characteristics or properties of it are evaluated on a number of dimensions. In the early version of Weiner's model, the cause of an event is evaluated on 2 dimensions: locus of causality and stability (Försterling, 2001, p. 111). Specifically, individuals assess whether the cause resides within the individual or the environment, and whether it is changing or unchanging over time, respectively. Later version of the model suggested 3 additional dimensions named controllability, globality, and intentionality (Weiner, 1990, p. 10). A great amount of research is conducted on the topic and it is concluded that causes are evaluated on 3 dimensions (i.e. locus of causality, stability, and controllability; Weiner, 2000). Locating the perceived cause on these dimensions results in affective (i.e. emotions) and cognitive (i.e. expectancy of success or failure) consequences, which then determine future behavior (Weiner, 1990, p. 9; see Figure 1).

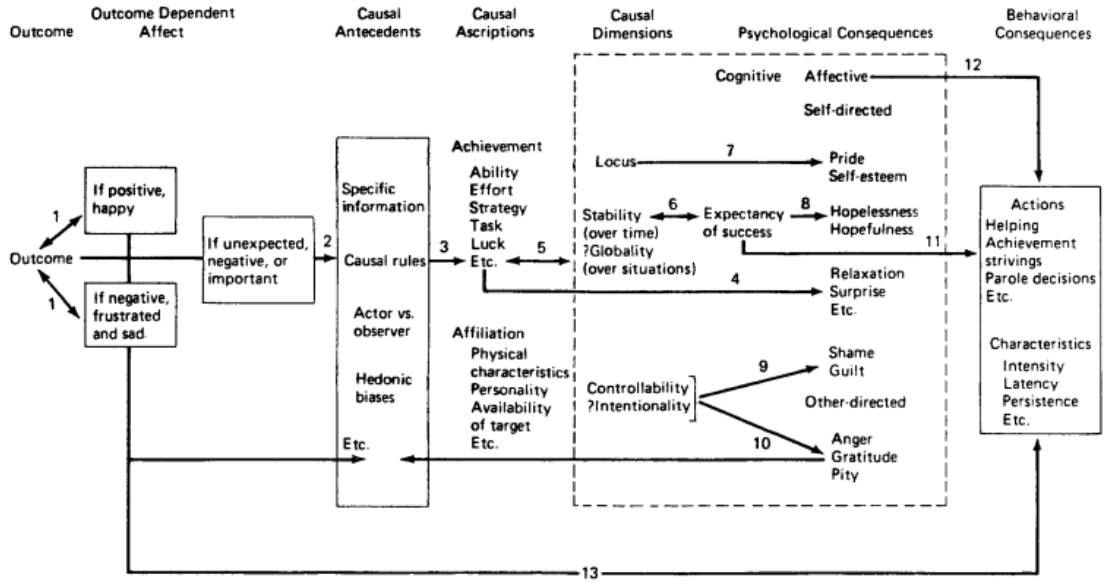

Figure 1. Weiner's intrapersonal attributional process (taken from Weiner, 2000)

In the achievement context, attributions can influence behavioral outcomes in terms of task selection and performance (Försterling, 2001, p. 119-121). Specifically, success at an extremely difficult task or failure at an extremely easy task is likely to be attributed to luck (characterized by low stability and external locus of causality), while success at an easy task or failure at a difficult one is likely to be attributed to task difficulty (characterized by high stability and external locus of causality). Only when the task is regarded as having intermediate difficulty, internal attributions can be made and such tasks are preferred by individuals as compared to extremely easy or difficult tasks. Similarly, task performance can enhance if the person attributes previous failure to highly stable factors (e.g. task difficulty or inability) as compared to factors that may change (e.g. bad luck or lack of effort). Studies investigating the individual characteristics that influence achievement motivation report that individuals with high achievement motivation tend to attribute success to internal causes (e.g. ability, effort), attribute failure to changeable causes (e.g. chance, lack of effort), approach achievement-related activities, persist in the face of failure, select intermediate-difficulty tasks, and perform with greater vigor (Försterling, 2001). The opposite pattern is observed among individuals with low achievement motivation.

According to Mascret, Nicolleau, and Ragot-Court (2020), driving can be considered as an achievement context, since driving context meets the criteria of achievement context (i.e. one in which individual competence is implicated and evaluated, the result is dependent on the person, and success is uncertain as well as socially valued). In line with that, this study also accepted driving as an achievement context and examined self-regulatory driving behaviors in the context of success (i.e. good driving performance) and failure (i.e. bad driving performance). It is assumed that individuals approach success (i.e. performing good as a driver) and avoid failure (i.e. performing bad as a driver) situations in traffic and use self-regulatory strategies in doing so. Mascret and his colleagues (2020) reported that having the goal of avoiding performing bad (i.e. mastery-avoidance goals) in driving task is negatively associated with both accident involvement and at-fault accident involvement. Another study found that adopting such goals is negatively associated with different types of violations and the relationship is mediated by sensation seeking (Mascret, Nicolleau, Martha, Naude, Serre, & Ragot-Court, 2021). Mascret and his colleagues (2021) also reported that goals characterized by outperforming other drivers (i.e. performance-approach goals) is associated positively with violations among drivers. These studies provide a sufficient basis for considering driving as an achievement context and encourage further examination of correlates of achievement-related behavioral outcomes in traffic.

1.2.2. Causal Attributions/Evaluations and Behavioral Outcomes in Traffic Context

Road traffic has been one of the contexts that causal attributions are investigated in. For instance, the diary study by Palat and Delhomme (2018) found that, drivers explain near-miss events mostly (i.e. 56.3%) with internal, controllable, unstable, specific, and universal causes; put another way, trivial errors. However, their causal explanations varied based on their perception of responsibility, comparative driving skill, and comparative risk of accident. Similarly, Lennon, Watson, Arlidge, and Fraine (2011) reported that being in the recipient or instigator position affects people's causal explanations regarding aggressive acts. To specify, recipients attributed aggressive acts to internal rather than external reasons as compared to instigators. For internal causes, recipients reported more stable reasons than instigators; whereas for external causes, instigators reported more stable reasons than recipients. Stewart (2005) reported that traffic accident survivors make defensive attributions and engage in actor-observer bias. To specify, the more severe the accident, the more responsibility is attributed to other drivers. Additionally, situational (i.e. weather and road) conditions were assigned an increased role for the accidents that the driver claimed responsibility for as compared to the accidents that the driver assigned the responsibility to other drivers. In a similar vein, Fındık, Uslu, Öz, Lajunen, and Özkan (2016) reported that drivers engage in self-enhancement and actor-observer biases. To specify, individuals rate themselves as safer and more skillful drivers compared to others. In addition, people attribute their own risky driving to situational factors (i.e. external reasons), while attributing other drivers' risky driving to dispositional factors (i.e. internal reasons). These studies explore how individuals perceive the causes of traffic-related events and make reference to the attribution biases in traffic context.

There are other studies that examined how causal explanations influence traffic-related outcomes. For instance, Britt and Garrity (2006) reported that attributing anger-evoking events to stable causes is associated with anger and aggressive behavior. This finding implies that causal attributions are related both to emotional and behavioral outcomes in traffic. Locus of control has been a more popular concept in relation to traffic-related outcomes. Despite locus of causality and controllability being two separate dimensions of causal attributions, locus of control has been conceptualized in similar-enough-to-confuse yet different-enough-to-differentiate ways by various researchers (Pettersen, 1987). Perhaps for this reason, early studies investigating the association between context-independent locus of control and behavioral outcomes in traffic yielded mixed results and lead the researchers to develop traffic-context-specific measures of locus of control (Bıçaksız, 2021; Özkan, &

Lajunen, 2005). Töre, Kaçan-Bibican, and Özkan (2022) investigated the relationship between risky driver behaviors and two different measures of locus of control specific to traffic context (i.e. Multidimensional Traffic Locus of Control Scale of Özkan, & Lajunen, 2005 and the Montag Driver Internality and Driver Externality Scale by Montag, & Comrey, 1987). They found that internal locus of control was positively associated with errors and violations when measured with Özkan and Lajunen's (2005) scale, but the relationships were non-significant when measured with Montag and Comrey's (1987) scale. On the other hand, external locus of control was positively associated with errors and violations when measured with Montag and Comrey's (1987) scale, but the relationships were mixed when measured with Özkan and Lajunen's (2005) scale. Conflicting results in Töre and her colleagues' (2022) as well as other studies indicate that the relationship between attributions and traffic-related behavioral outcomes need further clarification. Despite the wealth of studies about locus of control and behavioral outcomes in traffic setting, the conceptual ambiguity still makes it difficult to accurately interpret the results.

1.2.3. Affective Outcomes and Behavioral Outcomes

As mentioned in the previous sections, affective (i.e. emotions) evaluations represent one of the psychological outcomes of attributions -along with cognitive (i.e. expectations) ones- and they are associated with the behavioral outcomes (see Figure 1). Despite the long-lasting popularity, there is still no agreed-upon definition of the concept of emotion, but some of its agreed-upon properties are being an affective state, being directed/intentional, containing bodily changes, and being triggered by appraisal (Mulligan, & Scherer, 2012). The appraisal component of emotion make it closely associated with attributions. Core affect -used in the remaining of the text as affect- is defined as "a neurophysiological state that is consciously accessible as a simple, non-reflective feeling that is an integral blend of hedonic (pleasure-displeasure) and arousal (sleepy-activated) values" (Russell, 2003). According to Russell (2003), affect has cognitive (e.g. attention, perception, judgment, retrieval) and behavioral (e.g. decision-making, mood-congruent behavior) consequences. The literature shows that affect dominantly has a two-factor structure: Positive Affect and Negative Affect (Thompson, 2007). Positive Affect is a continuum of the level of pleasurable emotions (e.g. joy), whereas Negative Affect is a continuum of the level of non-pleasurable emotions (e.g. fear; Gençöz, 2000). Although the names may imply the components to be opposites, the studies show that they emerge as somewhat distinct concepts (Gençöz, 2000; Watson, Clark, & Tellegen, 1988).

Relationships between attributions, affective evaluations, and subsequent behavior is examined in a variety of different contexts such as team sports (Allen, Jones, & Sheffield, 2009), academic self-esteem (Robins, & Pals, 2002), parenting behaviors (Chavira, López, Blacher, & Shapiro, 2000; Dadds, Mullins, McAllister, & Atkinson, 2003), help provision for depressed patients (Yao, & Siegel, 2021), consumer behavior (Zielke, 2014), and interpersonal style (Zijlmans, Embregts, Bosman, & Willems, 2012). The role of affect is also investigated in relation to traffic-related behaviors. For instance, Hu, Xie, and Li (2013) reported that negative affect is associated with risky driving. Pêcher, Lemercier, and Cellier's (2011) review of the relevant literature suggested that anger is mostly related with risk taking and aggressive actions, and sadness or ruminations tend to be related to increased risk of accident involvement and performance decline. Additionally, anxiety yields mixed results, some studies related anxiety to risky driving whereas others related it to defensiveness and cautiousness. One study that examined the differences in groups differing in their level of driving anxiety found that individuals in the high-anxiety group avoid driving and have more negative cognitions about driving as compared to those in lower-level groups (Stephens, Collette, Hidalgo- Muñoz, Fort, Evennou, & Jallais, 2020). Increased level of driving anxiety was found to be associated with increased level of shame (Fort et al., 2021). Pêcher and her collegues (2011) pointed to a lack of literature on the role of positive affect in traffic context. The way that affect relates to driving depends on the type of specific driving tasks and the attentional processes involved (Steinhauser et al., 2018).

Aside from the inconclusive results regarding risky driving, there are some studies that examined the role of affect, especially anxiety, in driving avoidance. For instance, Gwyther and Holland (2012) reported that driving self-regulation, as measured by the level of avoidance, increased as negative affective attitudes, as measured by the level of worries and concerns about driving, increase. The relationship between affective attitudes and self-regulatory driving behaviors was also found in the study of Wong, Smith, and Sullivan (2016). The study by Fort and her colleagues (2021) divided individuals into 3 groups based on their level of driving anxiety and examined the group differences in driving and riding avoidance. Their results showed that the most avoided conditions for all 3 groups are "avoiding driving a car" and "riding a bus to avoid driving in the car". Other most avoided conditions were rescheduling drives to avoid traffic for the mild and extreme anxiety groups, and avoiding driving in busy streets for the moderate anxiety group. These studies highlight the potential role of anxiety in terms of self-regulation by avoidance in driving context.

Despite the wealth of literature on the relationship between affect and drivers' behaviors, there is only a limited literature incorporating attributional processes into this relationship. A thesis by Arslan (2018) investigated the moderating role of affect in the relationship between locus of control and coping styles. She reported that Negative Affect moderated the relationship between self as the locus of control and task-focused coping, as well as fate as the locus of control and emotion focused coping. Specifically, a low level of negative affect is found to strengthen the relationships mentioned above. Subsequent work by Arslan (2021) showed that as Negative Affect increases, so does self as the locus of control. On the other hand, a positive relationship is reported between Positive Affect and both other drivers and fate as the locus of control. These results are in line with the mood-congruency concept mentioned in the previous sections. Another thesis by Wickens (2009) examined the Weiner's model in traffic context with a special focus on aggressive and prosocial driving. Her results showed that, controllability, intentionality, and locus of causality were positively related to responsibility, which in turn was positively related to anger. The negative relationships between causal attributions and sympathy were direct: they were not mediated by responsibility. Aggressive behavior was associated with feeling anger, whereas prosocial behavior was associated with feeling sympathy. As mentioned above, affect forms a bridge between causal attributions and behavioral outcomes. This link is established for the behaviors relevant in traffic context, in addition to others. Therefore, it seems meaningful to include affect in the current and the future investigations of causal attribution-behavior links.

1.3. Current Study

Still having its own issues to resolve, driving self-regulation literature will continue to be an important subject due to the dynamic and heterogeneous nature of the traffic context. Drivers with different demographic, individual, and psychological characteristics, hence different skill levels, need to perform the same tasks. In order to safely achieve this, drivers engage in self-regulatory behaviors in this achievement context.

The purpose of this study to shed light on the mechanism underlying self-regulatory driving behaviors. Unlike previous studies that make age-based comparisons in the demographic and psychological antecedents of driving self-regulation, this study examines the way these antecedents act together to result in these behaviors. In uncovering the mechanism of self-regulation, the current study builds its basis on the attributional theory of Weiner (1990), which is another unique contribution of this study. Previous studies mostly lack a theoretical basis in investigating the antecedents of driving self-regulation. A few exceptions to this

examined the relationship between the Theory of Planned Behavior (TPB) components and self-regulatory driving in their studies (Chen et al., 2022; Gwyther, & Holland, 2012; Wong et al., 2016). Another study made use of the Selection, Optimization, and Compensation Theory to develop a self-regulation scale (Yeoh et al., 2016). However, there is no previous study, to the best of the author's knowledge, investigating the role of attributional constructs in self-regulation in driving. In line with that, no previous studies considered driving self-regulation in the achievement motivation context.

The current study aims to investigate the relationship between causal attributions of the best and the worst performance in driving, affective outcomes of these attributions (i.e. Positive Affect and Negative Affect), and behavioral outcomes associated with them (i.e. driving self-regulation measured by the level of avoidance). According to Weiner's (2000) model, evaluating the causes of events is associated with future behavior and emotions elicited by the attributions play a mediator role in this relationship. In line with that, it is expected that attributions will be related to driving self-regulation and affect will mediate this relationship in the current study. It is aimed to be investigated whether the aforementioned relationships will differ in the best and the worst performance conditions. Difference in the patterns of relationships in these two contexts is expected. Specifically, a dominance of positive feelings (i.e. Positive Affect) in success (i.e. the best performance) is expected and a dominance of negative feelings (i.e. Negative Affect) in failure (i.e. the worst performance) is expected. In line with the mood-congruency principle (Russell, 2003), Positive Affect is expected to be the prominent mediator leading to decreased avoidance in the best performance context and Negative Affect is expected to be the prominent mediator leading to increased avoidance in the worst performance context.

CHAPTER 2

METHOD

2.1. Participants

The sample consists of 400 active drivers aged between 18 and 70 (M = 37.68, SD = 15.84). Of these 400 participants, 54.5% is male (N = 218) and 45.5% is female (N = 182). Education level of 2.3% is primary school graduate, 1.8% is secondary school graduate, 13.8% is high school graduate, 35.8% is university graduate, 17.3% is master's/doctorate graduate, and 29.3% is current students. The participants have been licensed for an average of 15.88 years (SD = 14.04) and drove 12274 kilometers on average since previous year (SD = 37918). See Table 1 for the details regarding the sample characteristics.

Table 1. Sample Characteristics

Variable	**Mean (Standard Deviation)**	**Range**	**N**
Age	37.68 (15.84)	18-70	400
Licensed years	15.88 (14.04)	0-51	397
Annual kilometers	10515 (15014)	0-100000	391
Income (in Turkish Lira)	17565 (19671)	1250-200000	298
Driving frequency	3.74 (1.45)	1-5	400
Baseline Positive Affect	3.60 (.60)	1.2-5	400
Baseline Negative Affect	2.01 (.64)	1-4.2	400
	Levels	**Percent of sample**	**n**
Sex			
	Male	54.5	218
	Female	45.5	182
Education			
	Primary school	2.3	9
	Secondary school	1.8	7
	High school	13.8	55
	University	35.8	143
	Master's/Doctorate	17.3	69
	Currently student	29.3	117
Income status			
	No income	24.5	98
	Has income	75.5	302

2.2. Materials

In measuring the variables, a survey battery is formed. The battery starts with an informed consent and those participants who agree to take part in the study are directed to the measurement tools. These tools are the demographic information form, the Causal Dimension Scale-II (CDS-II), the International Positive and Negative Affect Schedule Short Form (I-PANAS-SF), and the Extended Driving Mobility Questionnaire-Avoidance (E-DMQ-A). The order of the measurement tools in the survey battery is depicted in Figure 2.

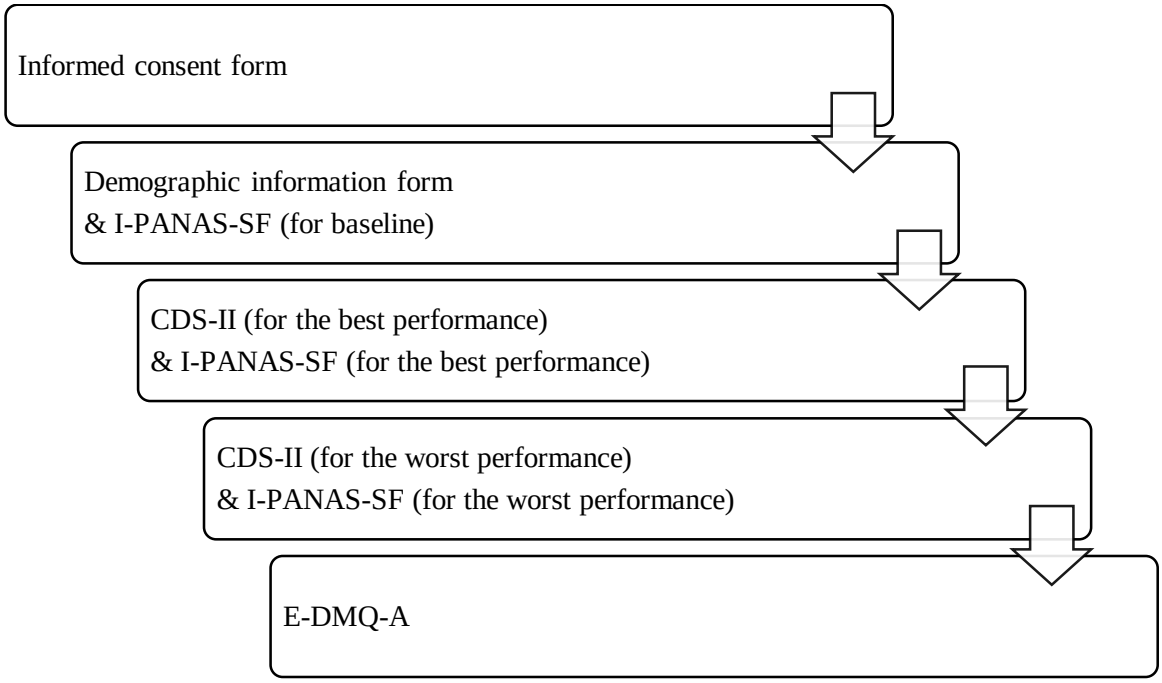

Figure 2. The order of the measurement tools in the survey battery

2.2.1. The Demographic Information Form

The demographic information form consists of questions aimed at obtaining background information about the participants. Age, sex, education level, income level, licensed years, annual mileage in kilometers, lifetime mileage in kilometers, and accident history are some of the main information obtained in this section. Baseline affect is also measured in this section.

2.2.2. The Causal Dimension Scale-II (CDS-II)

The Causal Dimension Scale (CDS) is originally developed by Russell (1982) and later revised by McAuley, Duncan, and Russell (1992). It is designed to evaluate the way people

perceive the cause of an event (Russell, 1982). The scale has a qualitative and a quantitative section. The qualitative section asks the respondent to define a specified event (for this study, the event is the best and the worst performed aspect in driving) and state the most apparent cause of this event. In the quantitative section, the respondent rates this cause in a number of dimensions. The original version put forward by Russell (1982) consists of 3 dimensions measured with 9 items (i.e. Locus of causality-3 items, Stability-3 items, and Controllability-3 items). On the other hand, the revised version of McAuley and his colleagues (1992) consists of 4 dimensions measured with 12 items (i.e. Locus of causality-3 items, Stability-3 items, Personal control-3 items, and External Control-3 items). Locus of causality refers to whether the cause of an event resides in an individual or is external to him/her. Stability dimension reflects if the cause of an event is invariant or changeable over time. Personal control and external control dimensions reflect whether the cause of an event can be controlled by the person himself/herself and by the other people, respectively. Each item is rated on a 9-point Likert type scale and higher scores indicate internal locus of causality, increased stability, increased personal controllability, and increased external controllability.

The revised version of the scale is translated to Turkish by Serdar (2005). Serdar used CDS-II in the context of English language teaching, therefore only the quantitative section of the CDS-II is taken from her study. The quantitative section of the scale is redesigned for the purposes of this study. Specifically, in the qualitative part, the participants are asked to indicate 2 aspects based on their driving experiences: the aspect they perform best and the aspect they perform worst. Upon defining what their best and worst performed aspects are, they are asked to indicate the most important cause of these aspects. In other words, they are asked why they think they perform the specified aspect best and worst, respectively. The data collected in the qualitative section of the CDS-II is not subjected to any analyses in the scope of this study. The quantitative section of the CDS-II is presented after the qualitative section to rate these 2 causes in terms of the causal dimensions. In the present study, the CDS-II translated by Serdar (2005) was used. Factor analysis yielded a 3-factor structure for both the best and the worst performance evaluations measured by the CDS-II in this study. The 3 factors are Personal Control, External Control, and Stability for both the best performance evaluations (see Table 2) and the worst performance evaluations (see Table 3). Cronbach alpha internal consistency values are .84, .77, and .62, respectively for the best performance evaluations (see Table 2) and .89, .81, and .76, respectively for the worst performance evaluations (see Table 3).

2.2.3. The International Positive and Negative Affect Schedule Short Form (I-PANAS-SF)

The Positive and Negative Affect Schedule (PANAS) was originally developed by Watson, Clark, and Tellegen (1988) as a 20-item questionnaire in an attempt to measure emotional experiences of individuals. The internationally reliable short form of it is later put forward by Thompson (2007). This short form consists of 10 items rated on a 5-point Likert type scale (1=Never, 5=Always). As in the original PANAS, I-PANAS-SF has 2 dimensions titled positive affect (PA, 5 items) and negative affect (NA, 5 items). Positive Affect refers to feelings of enthusiasm, activeness, and alertness. A low level of PA is characterized by sadness and lethargy, whereas a high level of it is characterized by high energy, complete concentration, and pleasurable engagement. Negative Affect, on the other hand, refers to subjective distress and non-pleasurable engagement. A low level of NA is characterized by calmness and serenity, whereas a high level of it is characterized by aversive mood states such as anger, guilt, fear, and so on (Watson et al., 1988). In this study, Cronbach alpha values of PA and NA are .70 and .68 for baseline, .71 and .77 for the best performance, and .80 and .76 for the worst performance evaluations, respectively.

The Turkish version of the original PANAS is put forward by Gençöz (2000). Translations of the 10 items in I-PANAS-SF are adopted from the work Gençöz (2000) to be used in this thesis. For the purposes of this study, the participants answered the 10 I-PANAS-SF items 3 times. In the present study, I-PANAS-SF is first presented to the participants within the demographic information form to measure the baseline level of affect. In measuring the baseline level of affect, the instructions were aimed at understanding the way the participants generally feel. Afterwards, it is presented again the second and the third time between the qualitative sections of the CDS-II. To be specific, participants are asked to fill out the I-PANAS-SF after they defined their best (the second time) and worst (the third time) performed aspects of driving. The instructions in the second and third occurrence of the I-PANAS-SF within the survey battery were aimed at understanding the way the participants feel when they engaged in the best and worst performed aspects defined by themselves, respectively. The placement and change of instructions in the second and third occurrences of the I-PANAS-SF is done to ensure that the ratings of affect exclusively relate to the specified event.

2.2.4. The Extended Driving Mobility Questionnaire-Avoidance (E-DMQ-A)

The Extended Driving Mobility Questionnaire-Avoidance is put forward by Wong and her colleagues (2015) as a measure of self-regulation strategy consisting of avoiding driving conditions that is perceived unsafe due to impairment. It combines related items from the avoidance subscale of the Driving Mobility Questionnaire (Baldock, Mathias, McLean, & Berndt, 2006) and the Driving Habits Questionnaire (Owsly, Stalvey, Wells, & Sloane, 1999), as well as the newly developed ones. Although the initial version of the E-DMQ-A had 21 items rated on a 5-point Likert type scale (1=Never, 5=Always), the results of analyses conducted by Wong and her colleagues (2015) suggested dropping 7 items, ending up with a 14-item scale with 2 dimensions. Wong and her colleagues (2015) named these 2 dimensions as External Driving Environment and Internal Driving Environment. The 10 items of the external driving environment dimension reflect aspects of driving influenced by environmental conditions or factors outside of the car. The remaining 4 items of the internal driving environment dimension reflect aspects of driving internal to the car.

To the best of the author's knowledge, the E-DMQ-A was not used in a Turkish sample previously. For this reason, the full (i.e. 21-item) version of the scale is translated to Turkish by the author and then back translated to English by a second researcher working in the field of traffic and transportation psychology. The differences between the original and translated English versions were minor, therefore the translated Turkish version of the scale is retained. In the current study, factor analysis yielded a 5-factor structure: Experience and Technical Skills, Adverse Weather Conditions, Traffic Jam, Intercity Driving, and Unfamiliarity and Responsibility. Internal consistency values of these 5 factors are .89, .88, .88, .87, and .67, respectively (see Table 4).

2.3. Procedure

Ethical approval for this thesis is obtained from the Human Subjects Ethics Committee (HSEC) of the Middle East Technical University (METU). Upon approval, the survey battery is distributed to potential participants via the survey link generated on Qualtrics, an online data collection platform. The link was shared on social media platforms (i.e. Instagram, Whatsapp, LinkedIn). Additionally, it was shared via SONA system, which is a platform in which METU students fill out surveys in exchange for bonus course points. Therefore, snowball and convenience sampling procedures are followed in data collection phase, which started on October, 2022 and ended on February, 2023.

CHAPTER 3

RESULTS

3.1. Data and Analysis Preparation

Before starting the analyses, the dataset is organized and cleared. Any string data is converted to numerical format for variables such as age, education level, annual kilometers, lifetime kilometers, and so on. In cases where a range of values were provided instead of an exact value, the arithmetic average of the lower and upper limits is taken.

Since they are not previously used in the traffic context and the Turkish sample, factor structures of the CDS-II and the E-DMQ-A, respectively, are examined. In doing so, principal axis factoring method with a promax rotation is chosen. For the 2 ratings of the CDS-II (the best and the worst), 2 separate factor analyses are conducted. Based on the results of the factor analyses, mean scores are computed for each factor of each study variable. The mean differences in the best and the worst CDS-II, as well as I-PANAS-SF assessments are compared via a series of paired-samples t-tests. This was done to understand whether evaluations about the best and the worst aspects should be analyzed separately or in an aggregated manner. After the best solutions are selected for the factor structure of CDS-II and the E-DMQ-A, as well as the use of CDS-II and the I-PANAS-SF, the relationships between the study variables are examined based on the Pearson correlation coefficients. Up to this point, all analyses are conducted using the Statistical Package for the Social Sciences (SPSS) v28. The remaining analyses, which are the mediational path model tests are conducted using the Analysis of Moment Structures (AMOS) v23. In these models, the independent variables were the causal dimensions, the mediators were the subscales of affect, and the dependent variables were the types of driving avoidance. The effects of age, sex, and baseline affect were controlled in the mediational path models.

3.2. Factorial Structures of the Instruments

In analyzing the factorial structure of the instruments, principal axis factoring (PAF) is used. PAF aims to extract the highest amount of variance from the data (Tabachnick, & Fidell,

2019). Promax technique is chosen for rotation. For understanding the factor structure of the CDS-II, the analysis is conducted twice: once for the causal evaluations of the best performance, once again for the causal evaluations of the worst performance. For understanding the factor structure of the E-DMQ-A, the analysis is conducted once. Since the factor structure of the I-PANAS-SF was previously validated in a sample consisting of participants from 66 countries (Thompson, 2007) and that of the PANAS in Turkey (Gençöz, 2000), examining the factor structure of the I-PANAS-SF is regarded as redundant. Hence, a total of 3 PAFs are conducted.

3.2.1. Factorial Structure of the CDS-II

Two separate PAFs on the 12 items of the Causal Dimension Scale-II with promax rotation are conducted. Results for the causal evaluations of the best performance are presented first and the results for that of the worst performance are presented afterwards.

For the CDS-II items about the best performance, The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is .86 and the Bartlett's Test of Sphericity is significant (χ^2 (66) = 1604.46, $p < .001$). Therefore, it is concluded that the items are factorable. Based on the initial solution, 3 factors had eigenvalues above 1. The scree plot also suggested a 3-factor solution. Based on the agreement between the eigenvalues and the scree plot, the 3-factor solution is retained. Of the 3 factors, the first explained 37.69%, the second explained 12.96%, and the third explained 10.39% of the variance in the data. Initial eigenvalues for the factors were 4.52, 1.56, and 1.25, respectively.

The pattern matrix is examined in order to understand the relationship between the items and the factors, that is factor loadings. The first factor included 6 items composed of the combination of the locus of causality and personal control items in the original CDS-II. The second and the third factors included 3 items per factor, corresponding to the external control and the stability items in the original CDS-II, respectively. Though Item 3 was cross-loaded on the first ($r = .37$) and the third ($r = .39$) factors, it was included in the third factor both due to higher loading and the theoretical framework the scale is developed upon. The factor loadings, communalities, and the Cronbach Alpha internal consistency values are presented in Table 2.

Table 2. Factor Loadings, Communalities, and the Cronbach α Values of the CDS-II (Best Performance)

Is the cause something;	Personal Control	External Control	Stability	Communalities
That reflects an aspect of yourself vs. reflects an aspect of the situation	**.52**			.40
Manageable by you vs. not manageable by you	**.86**			.63
Permanent vs. temporary	.37		**.39**	.40
You can regulate vs. you cannot regulate	**.87**			.58
Over which others have control vs. over which others have no control		**.79**		.60
Inside of you vs. outside of you	**.52**			.43
Stable over time vs. variable over time			**.65**	.49
Under the power of other people vs. not under the power of other people		**.70**		.57
Something about you vs. something about others	**.46**			.35
Over which you have power vs. over which you have no power	**.76**			.57
Unchangeable vs. changeable			**.64**	.33
Other people can regulate vs. other people cannot regulate		**.69**		.45
Cronbach α	.84	.77	.62	

Note. Factor loadings below .30 are suppressed for ease of interpretation.

For the CDS-II items about the worst performance, The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is .85 and the Bartlett's Test of Sphericity is significant (χ^2 (66) = 2329.76, $p < .001$). Therefore, it is concluded that the items are factorable. Based on the initial solution, 3 factors had eigenvalues above 1. The scree plot also suggested a 3-factor solution. Based on the agreement between the eigenvalues and the scree plot, the 3-factor solution is retained. Of the 3 factors, the first explained 38.12%, the second explained 19.01%, and the third explained 12.44% of the variance in the data. Initial eigenvalues for the factors were 4.57, 2.28, and 1.49, respectively.

The pattern matrix is examined in order to understand the relationship between the items and the factors, that is factor loadings. As in the case of the best performance, the first factor included the combination of the locus of causality and personal control items in the original CDS-II. The second and the third factors included the external control and the stability items

in the original CDS-II, respectively. No cross-loadings was observed. The factor loadings, communalities, and the Cronbach Alpha internal consistency values are presented in Table 3.

Table 3. Factor Loadings, Communalities, and the Cronbach α Values of the CDS-II (Worst Performance)

Is the cause something;	Personal Control	External Control	Stability	Communalities
That reflects an aspect of yourself vs. reflects an aspect of the situation	**.60**			.56
Manageable by you vs. not manageable by you	**.95**			.82
Permanent vs. temporary			**.76**	.59
You can regulate vs. you cannot regulate	**.90**			.76
Over which others have control vs. over which others have no control		**.84**		.67
Inside of you vs. outside of you	**.66**			.54
Stable over time vs. variable over time			**.80**	.66
Under the power of other people vs. not under the power of other people		**.84**		.75
Something about you vs. something about others	**.56**			.44
Over which you have power vs. over which you have no power	**.79**			.61
Unchangeable vs. changeable			**.60**	.42
Other people can regulate vs. other people cannot regulate		**.61**		.40
Cronbach α	.89	.81	.76	

Note. Factor loadings below .30 are suppressed for ease of interpretation.

When the factor analysis results for the best and worst performance evaluations are compared, it can be seen that the results are, at the very least, acceptable for both versions. Factor loadings of the best performance vary between .39 and .87, whereas those of the worst performance vary between .56 and .95. Communalities range between .33 and .63 among the best performance items and they range between .40 and .82 among the worst performance items. Finally, Cronbach alpha values are .84, .77, and .62 in the former, whereas .89, .81, and .76 in the latter results. Taken together, factorial structure of the CDS-II seems to show a better fit for the worst performance evaluation as compared to the best performance evaluation. Despite slightly higher coefficients in the evaluations of the worst performance, the structures themselves were identical. In both analyses, the first factor

represented the combination of the locus of causality and personal control items. This factor is named “Personal Control” since locus of control items positively loaded on the factor and this indicates a personal locus of causality (e.g. Manageable by you vs. not manageable by you). The second factor composed of the “External Control” items (e.g. Under the power of other people vs. not under the power of other people). Finally, the third factor composed of the “Stability” items (e.g. Permanent vs. temporary).

3.2.2. Factorial Structure of the E-DMQ-A

A single PAF on the 21 items of the Extended Driving Mobility Questionnaire-Avoidance with promax rotation is conducted. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is .90 and the Bartlett’s Test of Sphericity is significant (χ^2 (210) = 5366.42, $p < .001$). Therefore, it is concluded that the items are factorable. Based on the initial solution, 5 factors had eigenvalues above 1. The scree plot suggested a 3-factor solution. Considering the disagreement between the eigenvalues and the scree plot, a parallel analysis is conducted. The parallel analysis yielded a 6-factor solution. The 5-factor solution is found to be the most interpretable, hence accepted. Of the 5 factors, the first explained 40.76%, the second explained 12.34%, the third explained 7.20%, the fourth explained 5.38%, and the fifth explained 4.81% of the variance in the data. Initial eigenvalues for the factors were 8.56, 2.59, 1.51, 1.13, and 1.01, respectively.

The pattern matrix is examined in order to understand the relationship between the items and the factors, that is factor loadings. The first factor included 7 items about regular tasks conducted while driving, therefore named “Experience and Technical Skills” (e.g. Parallel parking). The second factor was composed of 4 items about challenging weather conditions, hence named “Adverse Weather Conditions” (e.g. In the rain). The third factor included 2 items regarding high traffic density, hence named “Traffic Jam” (e.g. Peak hour). The fourth factor was composed of 3 items about driving conditions that reflect highway conditions, therefore named “Intercity Driving” (e.g. Long distance driving). Finally, the fifth factor included 3 items that require additional effort, hence named “Unfamiliarity and Responsibility” (e.g. Other people’s car). Item 15 was cross-loaded on the first ($r = .45$) and the fifth ($r = .39$) factors. Similarly, Item 18 was cross-loaded on the third ($r = .31$) and the fifth ($r = .32$) factors. They both were excluded from the scale and the further analyses, since the difference between the loadings were minimal. The factor loadings, communalities, and the Cronbach Alpha internal consistency values are presented in Table 4.

Table 4. Factor loadings, Communalities, and the Cronbach α Values of the E-DMQ-A

	Experience and Technical Skills	Adverse Weather Conditions	Traffic Jam	Intercity Driving	Unfamiliarity and Responsibility	Communalities
At night in the rain		**.99**				.78
In the rain		**.83**				.77
At night		**.70**				.60
Peak hour			**.93**			.65
In foggy conditions		**.47**				.50
High traffic roads			**.90**			.66
Long distance driving				**.66**		.57
Freeways				**.93**		.78
Tunnels				**.70**		.75
Other people's car					**.69**	.30
With passengers (children)					**.53**	.45
When alone	**.61**					.56
With passengers (adult)	**.81**					.69
Familiar roads	**.95**					.72
At the start/end of school time	.45				.39	.51
Unfamiliar roads					**.65**	.57
Lane changes	**.48**					.50
Roadworks			.31		.32	.37
Parallel parking	**.39**					.35
Right turns	**.94**					.71
Roundabouts	**.88**					.68
Cronbach α	.89	.88	.88	.87	.67	

Note. Factor loadings below .30 are suppressed for ease of interpretation.

3.3. Comparison of the Evaluations Regarding the Best and the Worst Performance

In order to compare the causal as well as affective evaluations about the best performance with those of the worst performance, paired samples t-tests is chosen. This is done to

understand whether the best and the worst performance evaluations should be analyzed separately or in aggregated form in the subsequent analyses. Since CDS-II and I-PANAS-SF are both completed twice (once about the best performance and once again about the worst performance), t-tests are conducted for only these measurements. E-DMQ-A has a single score for each participant, therefore it is not subjected to this analysis.

3.3.1. Mean Difference of the Best and the Worst CDS-II Evaluations

A paired samples t-test is conducted to examine the potential difference between causal evaluations of the best and the worst performance. In the t-test, the best and the worst performance evaluations of the participants are compared for all 3 factors of the CDS-II (i.e. Personal Control, External Control, and Stability) separately. Put another way, Personal Control evaluations about the best performance is compared with the Personal Control evaluations about the worst performance. External Control evaluations about the best performance is compared with the External Control evaluations about the worst performance. Finally, Stability evaluations regarding the best performance is compared with the Stability evaluations regarding the worst performance (see Table 5). According to the results, the difference between the best and the worst performance evaluations were statistically significant for Personal Control ($t(399) = 4.78$, $p < .001$, *Cohen's d* = .24) and Stability ($t(399) = 15.51$, $p < .001$, *Cohen's d* = .78), but not for External Control ($p = .16$). To specify, causal evaluations of the best performance ($M = 6.71$, $SD = 1.67$ for Personal Control; $M = 6.14$, $SD = 1.78$ for Stability) were higher than that of the worst ($M = 6.12$, $SD = 1.96$ for Personal Control; $M = 4.28$, $SD = 1.93$ for Stability) for both Personal Control and Stability.

3.3.2. Mean Difference of the Best and the Worst I-PANAS-SF Evaluations

A paired samples t-test is conducted to examine the potential difference between affective evaluations of the best and the worst performance. In the t-test, the best and the worst performance evaluations of the participants are compared for both factors of the I-PANAS-SF (i.e. Positive Affect, and Negative Affect) separately. Put differently, Positive Affect evaluations about the best performance is compared with the Positive Affect evaluations about the worst performance. Similarly, Negative Affect evaluations about the best performance is compared with the Negative Affect evaluations about the worst performance (see Table 5). According to the results, the difference between the best and the worst performance evaluations were statistically significant for both Positive Affect ($t(399) =$

19.55, $p < .001$, *Cohen's d* = .98) and Negative Affect ($t(399) = -15.21$, $p < .001$, *Cohen's d* = .76). Specifically, Positive Affect was higher in the case of the best performance (M = 3.91, SD = .59) as compared to the worst performance (M = 3.03, SD = .88). On the contrary, Negative Affect was higher in the case of the worst performance (M = 2.24, SD = .87) as compared to the best performance (M = 1.61, SD = .61).

3.3.3. Overview of the Mean Difference Comparisons

The results of the t-tests show that, 4 out of 5 factors tested were significantly different across the best and the worst performance evaluations (see Table 5). Specifically, 2 factors of the CDS-II (i.e. Personal Control, and Stability) and the 2 factors of the I-PANAS-SF (i.e. Positive Affect, and Negative Affect) differed for the best and the worst performance evaluations. There was no such difference in the External Control factor of the CDS-II. The higher number of significant differences is considered as a legitimate basis for separately analyzing the best and the worst evaluations. In other words, since 4 out of 5 factors showed difference across the best and the worst evaluations, the best and the worst evaluations are not aggregated. Instead, they are used separately in the following analyses.

Table 5. Summary of the Best and Worst Evaluation Comparisons

	Mean-Best	**SD-Best**	**Mean-Worst**	**SD-Worst**	**df**	**t-statistic**
CDS-II						
Personal Control	6.71	1.67	6.12	1.96	399	4.78†
External Control	4.39	2.04	4.22	2.07	399	1.40
Stability	6.14	1.78	4.28	1.93	399	15.51†
I-PANAS-SF						
Positive Affect	3.91	.59	3.03	.88	399	19.55†
Negative Affect	1.61	.61	2.24	.87	399	-15.21†

Note. SD = Standard deviation, df = Degrees of freedom, † two-sided $p < .001$.

3.4. Bivariate Correlations among the Study Variables

The relationships between the study variables are examined using Pearson correlation coefficients. The result of the correlation analysis is presented in Table 6.

Table 6. Pearson Correlation Coefficients among the Study Variables

	LY	KM	FR	BPC	BEC	BST	WPC	WEC	WST	PA	NA	BPA	BNA
Age	.94**	.07	.44**	.24**	-.10*	.28**	-.07	.01	.21**	.19**	-.28**	.02	-.10*
LY		.07	.42**	.21**	-.12*	.25**	-.05	.00	.22**	.23**	-.28**	.04	-.07
KM			.19**	-.02	-.05	-.04	.00	-.05	-.02	.06	-.06	.04	-.02
FR				.27**	-.12*	.22**	-.02	-.01	.02	.22**	-.25**	.17**	-.17**
BPC					-.43**	.43**	.08	-.01	.03	.15**	-.11*	.17**	-.09
BEC						-.20**	-.08	.27**	.06	-.10*	.12*	-.04	.12*
BST							.07	-.02	.17**	.10*	-.09	.07	-.09
WPC								-.42**	.02	.05	-.14**	.06	-.14**
WEC									.17**	.00	.07	-.02	.16**
WST										-.09	-.02	-.09	.08
PA											-.21**	.57**	-.03
NA												-.16**	.53**
BPA													-.20**
BNA													
WPA													
WNA													
DV1													
DV2													
DV3													
DV4													

Table 6. (continued)

	DV5	DV4	DV3	DV2	DV1	WNA	WPA
	-.27**	-.13*	-.18**	-.03	-.14**	-.25**	.10*
	-.31**	-.13**	-.15**	-.06	-.15**	-.23**	.12*
	-.01	.01	-.05	-.08	.01	-.07	.00
	-.34**	-.25**	-.18**	-.35**	-.27**	-.25**	.05
	-.18**	-.24**	-.09	-.14**	-.22**	-.15**	.11*
	.19**	.21**	.08	.16**	.22**	.12*	-.05
	-.14**	-.08	-.09	-.07	-.11*	-.14**	.04
	-.02	-.08	.01	.02	-.11*	-.17**	.17**
	-.01	.02	.02	.03	.05	.18**	.07
	-.06	.08	-.05	.03	.09	-.07	.09
	-.22**	-.20**	-.15**	-.11*	-.10*	-.11*	.40**
	.20**	.25**	.14**	.10*	.26**	.47**	-.12*
	-.19**	-.14**	-.10*	-.11*	-.17**	-.04	.31**
	.06	.19**	.03	.08	.27**	.41**	.04
	-.05	-.02	-.14**	-.07	-.01	-.10*	
	.24**	.15**	.17**	.13**	.17**		
	.52**	.64**	.23**	.41**			
	.51**	.51**	.44**				
	.30**	.28**					
	.53**						

Note. LY = Number of licensed years, KM = Annual kilometers, FR = Frequency of driving, BPC = Best Personal Control, BEC = Best External Control, BST = Best Stability, WPC = Worst Personal Control, WEC = Worst External Control, WST = Worst Stability, PA = Baseline Positive Affect, NA = Baseline Negative Affect, BPA = Best Positive Affect, BNA = Best Negative Affect, WPA = Worst Negative Affect, WNA = Worst Negative Affect, DV1 = Experience and Technical Skills, DV2 = Adverse Weather Conditions, DV3 = Traffic Jam, DV4 = Intercity Driving, DV5 = Unfamiliarity and Responsibility, * $p < .05$, ** $p < .01$.

Based on the results presented in Table 6, age, licensed years, and frequency of driving has significant relationships with the outcome variables (i.e. Experience and Technical Skills, Adverse Weather Conditions, Traffic Jam, Intercity Driving, and Unfamiliarity and Responsibility). Of these demographic variables, the outcome variables showed the strongest correlations with frequency of driving ($r = -.27$, $p < .01$; $r = -.35$, $p < .01$; $r = -.18$, $p < .01$; $r = -.25$, $p < .01$; $r = -.34$, $p < .01$; respectively). However, considering that the outcome variables are dimensions of avoidance, strong negative correlations has little to explain. Expectedly, age has a very strong positive relationship with licensed years ($r = .94$, $p < .01$).

Of these 2, age is chosen as the control variable in the next analyses due to its potential relevance to the outcome variable (Kostyniuk, & Molnar, 2008). Baseline Positive Affect (r = .57, p < .01 for PA of the best performance; r = .40, p < .01 for PA of the worst performance) and Baseline Negative Affect (r = .53, p < .01 for NA of the best performance; r = .47, p < .01 for NA of the worst performance) also show relationships of various strengths with performance-specific affect levels and outcome variables. For this reason, effects of baseline Positive Affect and baseline Negative Affect are also controlled in the following analyses. Although sex is not included in the Pearson correlation analysis due to binary coding, it is also included as a control variable due to its relevance to the avoidance in driving (Kostyniuk, & Molnar, 2008).

Table 6 also shows that the majority of relationships between attributions about the best performance and avoidance dimensions were significant, whereas those of the worst performance and avoidance dimensions were not. There was also a reverse pattern in the relationships between affective evaluations and behavioral outcomes. Specifically, Positive Affect regarding the best performance showed a higher number of significant relationships with the E-DMQ-A factors (r = -.17, p < .01; r = -.11, p < .05; r = -.10, p < .05; r = -.14, p < .01; r = -.19, p < .01; respectively) as compared to Negative Affect of the best performance (r = .27, p < .01 for Experience and Technical Skills; r = .19, p < .01 for Intercity Driving). On the other hand, Negative Affect regarding the worst performance showed a lower number of significant relationship with them (r = .17, p < .01; r = .13, p < .05; r = .17, p < .05; r = .15, p < .01; r = .24, p < .01; respectively) as compared to Positive Affect of the worst performance (r = -.14, p < .01 for Traffic Jam).

3.5. Causal Evaluations, Affective Evaluations, and Behavioral Outcomes: Mediational Models

In this section, the mediating role of affect in the relationship between causal attributions and driving self-regulation is investigated. The mediational models are tested through a series of path models. A total of 10 path analyses are conducted. Each outcome variable (i.e. Experience and Technical Skills, Adverse Weather Conditions, Traffic Jam, Intercity Driving, and Unfamiliarity and Responsibility) is subjected to the path analyses twice: once with the causal and affective evaluations of the best performance, and once with the causal and affective evaluations of the worst performance. Also, analyses are conducted by including one outcome variable at a time. In each model, the predictor variables are the 3 dimensions of causal attributions (i.e. Personal Control, External Control, and Stability), the

mediator variables are the 2 dimensions of affective evaluations (i.e. Positive Affect, and Negative Affect), the outcome variable was one of the 5 dimensions of driving self-regulation (i.e. Experience and Technical Skills, Adverse Weather Conditions, Traffic Jam, Intercity Driving, and Unfamiliarity and Responsibility). In all 10 models, age, sex, baseline Positive Affect, and baseline Negative Affect are entered as the control variables. Maximum likelihood is chosen as the estimation method. Bootstrap is performed with percentile confidence intervals (95%) and resampling is done 2000 times. Initially, all of the models were the saturated models, therefore goodness of fit indices was not available (see Figure 3). The results presented below are those of the trimmed models, in which the non-significant paths were removed.

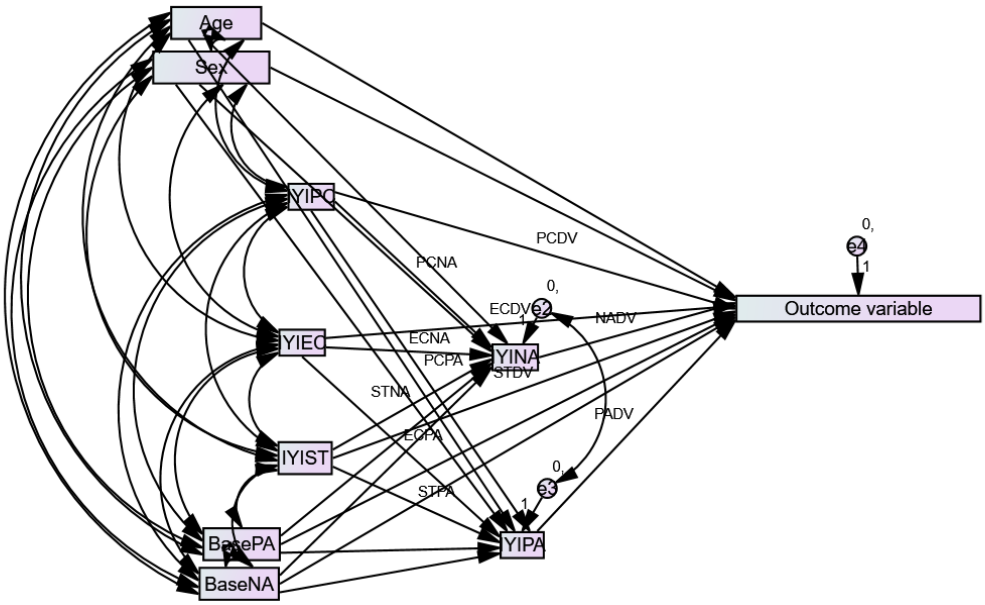

Figure 3. The saturated model

The model fit is evaluated based on chi square (χ^2), the ratio of chi square to degrees of freedom (χ^2/df), comparative fit index (CFI), normed fit index (NFI), and the root mean square error of approximation (RMSEA). Tabachnick and Fidell (2019) suggest that a non-significant χ^2 is desired for a good fitting model; however, since this test is sensitive to the sample size, a ratio of chi square to degrees of freedom less than 2 can be considered as a good model fit. Also, according to Hu and Bentler (1999), a value higher than .95 indicates a good fit in terms of CFI, a value higher than .90 indicates a good fit in terms of NFI, and a value below .06 indicates a good fit in terms of RMSEA.

3.5.1. Mediational Path Models of the Best Performance

In this section, causal and affective evaluations about the best performance are presented. A series of 5 path models are tested for each dimension of driving self-regulation: Experience and Technical Skills, Adverse Weather Conditions, Traffic Jam, Intercity Driving, and Unfamiliarity and Responsibility. The results are presented respectively.

The first model, in which the dependent variable is Experience and Technical Skills, yielded a non-significant chi square (χ^2 (5) = 4.05, p = .54). Also the ratio of chi square to degrees of freedom was .81, which indicate a good fit. CFI was 1.00, NFI was .99, and RMSEA was .00 [95%CI (.00, .06)], which are also indications of a good model fit. The model accounted for 35% of the variance in Positive Affect, 28% of the variance in Negative Affect, and 15% of the variance in Experience and Technical Skills. Direct path coefficients of the trimmed model ranged between -.16 and .55. Directs effect of Personal Control on Positive Affect (β = .05, p < .01), Positive Affect on Experience and Technical Skills (β = -.16, p < .05), Negative Affect on Experience and Technical Skills (β = .19, p < .01), and External Control on Experience and Technical Skills (β = .05, p < .01) were significant. Indirect effects were non-significant. See Figure 4 for the graphic representation of the trimmed model.

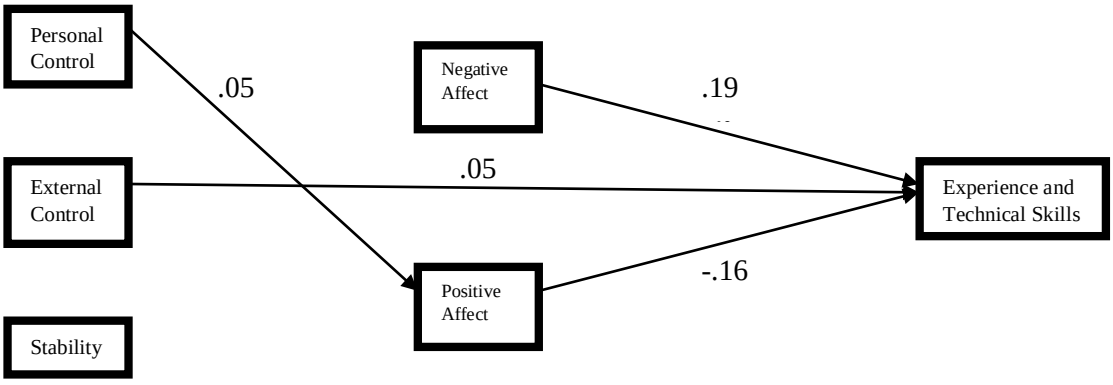

Figure 4. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the best performance, and Experience and Technical Skills.

The second model, in which the dependent variable is Adverse Weather Conditions, yielded a non-significant chi square (χ^2 (8) = 6.22, p = .62). Also the ratio of chi square to degrees of freedom was .78, which indicate a good fit. CFI was 1.00, NFI was .99, and RMSEA was .00 [95%CI (.00, .05)], which are also indications of a good model fit. The model accounted for

35% of the variance in Positive Affect, 28% of the variance in Negative Affect, and 9% of the variance in Adverse Weather Conditions. Direct path coefficients of the trimmed model ranged between -.07 and .55. Direct effects of Personal Control on Positive Affect (β = .05, p < .01) and External Control on Adverse Weather Conditions (β = .07, p < .01) were significant. Indirect effects were non-significant. See Figure 5 for the graphic representation of the trimmed model.

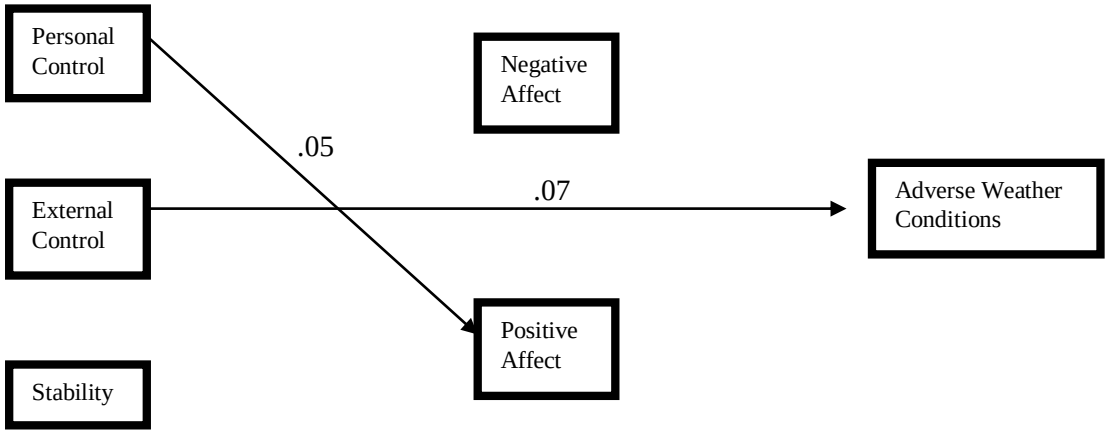

Figure 5. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the best performance, and Adverse Weather Conditions.

The third model, in which the dependent variable is Traffic Jam, yielded a non-significant chi square (χ^2 (9) = 6.32, p = .71). Also the ratio of chi square to degrees of freedom was .70, which indicate a good fit. CFI was 1.00, NFI was .99, and RMSEA was .00 [95%CI (.00, .04)], which are also indications of a good model fit. The model accounted for 35% of the variance in Positive Affect, 28% of the variance in Negative Affect, and 5% of the variance in Traffic Jam. Direct path coefficients of the trimmed model ranged between -.22 and .55. Direct effect of Personal Control on Positive Affect was significant (β = .05, p < .01). Indirect effects were non-significant. See Figure 6 for the graphic representation of the trimmed model.

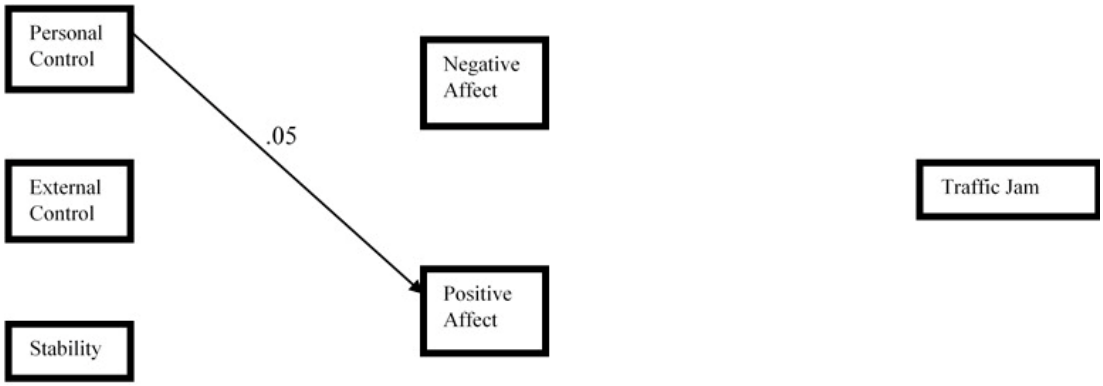

Figure 6. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the best performance, and Traffic Jam.

The fourth model, in which the dependent variable is Intercity Driving, yielded a non-significant chi square (χ^2 (6) = 5.10, p = .53). Also the ratio of chi square to degrees of freedom was .85, which indicate a good fit. CFI was 1.00, NFI was .99, and RMSEA was .00 [95%CI (.00, .06)], which are also indications of a good model fit. The model accounted for 35% of the variance in Positive Affect, 28% of the variance in Negative Affect, and 19% of the variance in Intercity Driving. Direct path coefficients of the trimmed model ranged between -.15 and .55. Direct effects of Personal Control on Positive Affect (β = .05, p < .01), Personal Control on Intercity Driving (β = -.08, p < .01), and External Control on Intercity Driving (β = .05, p = .03) were significant. Indirect effects were non-significant. See Figure 7 for the graphic representation of the trimmed model.

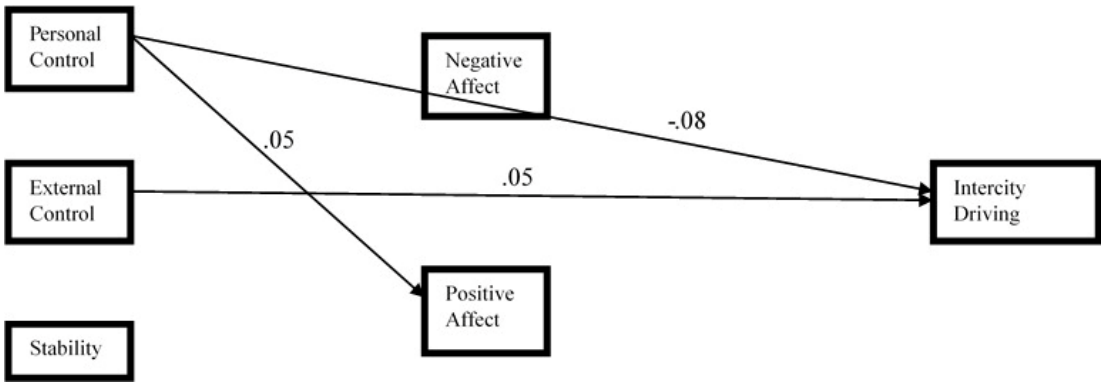

Figure 7. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the best performance, and Intercity Driving.

The fifth model, in which the dependent variable is Unfamiliarity and Responsibility, yielded a non-significant chi square (χ^2 (7) = 5.68, p = .58). Also the ratio of chi square to degrees of freedom was .81, which indicate a good fit. CFI was 1.00, NFI was .99, and RMSEA was .00 [95%CI (.00, .05)], which are also indications of a good model fit. The model accounted for

35% of the variance in Positive Affect, 28% of the variance in Negative Affect, and 20% of the variance in Unfamiliarity and Responsibility. Direct path coefficients of the trimmed model ranged between -.17 and .55. Direct effects of Personal Control on Positive Affect (β = .05, p < .01), and External Control on Unfamiliarity and Responsibility (β = .07, p < .01) were significant. Indirect effects were non-significant. See Figure 8 for the graphic representation of the trimmed model.

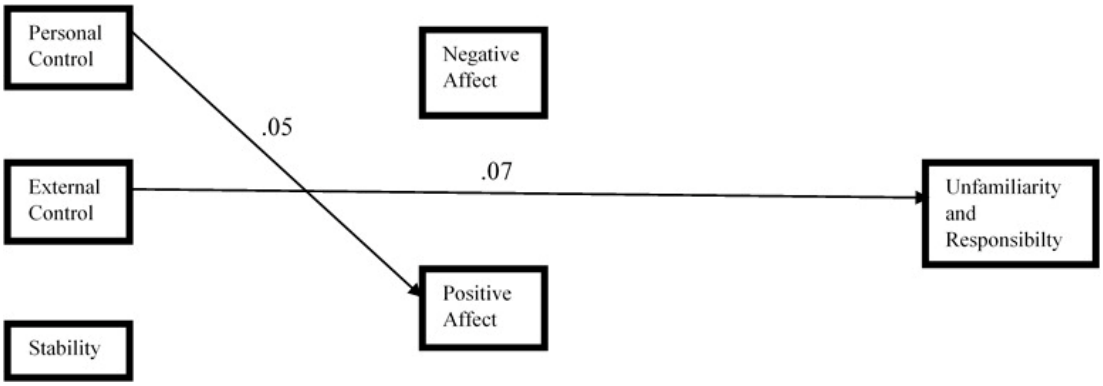

Figure 8. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the best performance, and Unfamiliarity and Responsibility.

3.5.2. Mediational Path Models of the Worst Performance

In this section, causal and affective evaluations about the worst performance are presented. A series of 5 path models are tested for each dimension of driving self-regulation: Experience and Technical Skills, Adverse Weather Conditions, Traffic Jam, Intercity Driving, and Unfamiliarity and Responsibility. The results are presented respectively.

The first model, in which the dependent variable is Experience and Technical Skills, yielded a non-significant chi square (χ^2 (5) = 4.04, p = .54). Also the ratio of chi square to degrees of freedom was .81, which indicate a good fit. CFI was 1.00, NFI was .99, and RMSEA was .00 [95%CI (.00, .06)], which are also indications of a good model fit. The model accounted for 21% of the variance in Positive Affect, 27% of the variance in Negative Affect, and 10% of the variance in Experience and Technical Skills. Direct path coefficients of the trimmed model ranged between -.04 and .57. Direct effects of Personal Control on Positive Affect (β = .09, p < .01), External Control on Positive Affect (β = .06, p < .01), Stability on Positive Affect (β = .04, p = .04), External Control on Negative Affect (β = .05, p = .01), Personal Control on Experience and Technical Skills (β = -.04, p < .05), and Stability on Experience and Technical Skills (β = .05, p = .03) were significant. Indirect effects were non-significant. See Figure 9 for the graphic representation of the trimmed model.

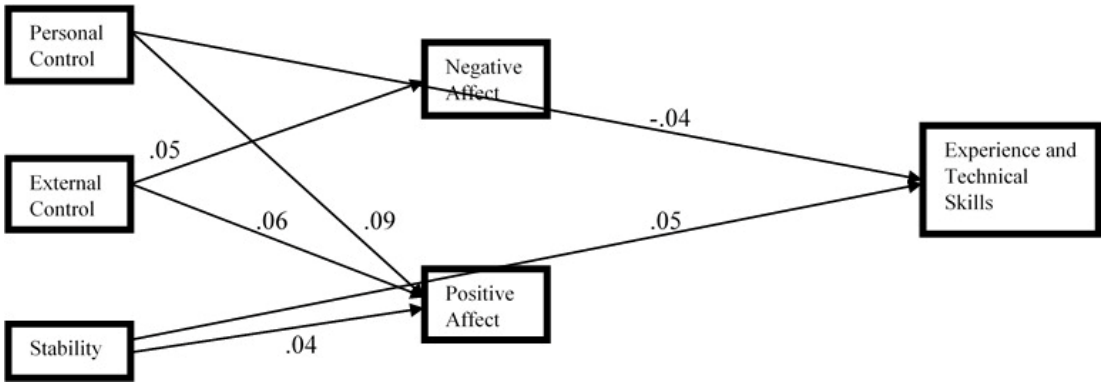

Figure 9. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the worst performance, and Experience and Technical Skills.

The second model, in which the dependent variable is Adverse Weather Conditions, yielded a non-significant chi square (χ^2 (7) = 6.82, p = .45). Also the ratio of chi square to degrees of freedom was .98, which indicate a good fit. CFI was 1.00, NFI was .99, and RMSEA was .00 [95%CI (.00, .06)], which are also indications of a good model fit. The model accounted for 21% of the variance in Positive Affect, 27% of the variance in Negative Affect, and 8% of the variance in Adverse Weather Conditions. Direct path coefficients of the trimmed model ranged between -.08 and .57. Direct effects of Personal Control on Positive Affect (β = .09, p < .01), External Control on Positive Affect (β = .06, p < .01), Stability on Positive Affect (β = .04, p = .04), and External Control on Negative Affect (β = .06, p < .01) were significant. Indirect effects were non-significant. See Figure 10 for the graphic representation of the trimmed model.

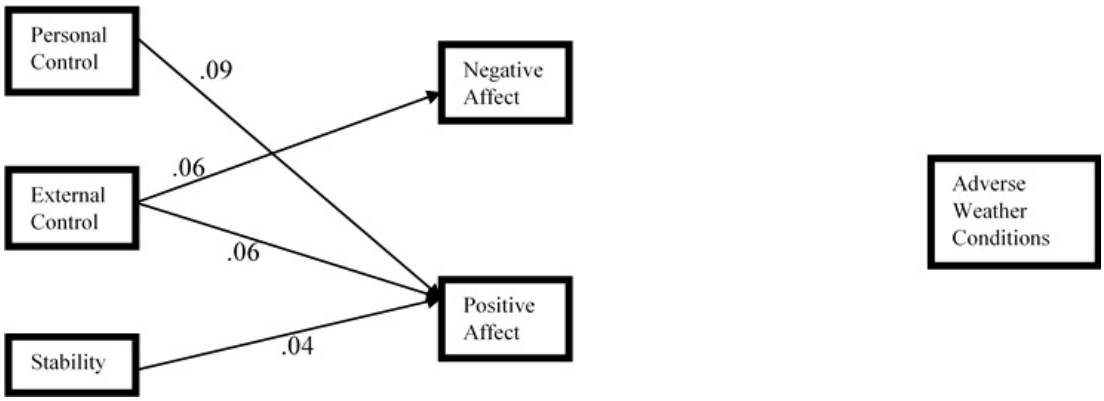

Figure 10. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the worst performance, and Adverse Weather Conditions.

The third model, in which the dependent variable is Traffic Jam, yielded a non-significant chi square (χ^2 (7) = 7.88, p = .34). Also the ratio of chi square to degrees of freedom was 1.13, which indicate a good fit. CFI was 1.00, NFI was .98, and RMSEA was .02 [95%CI (.00, .07)], which are also indications of a good model fit. The model accounted for 21% of the variance in Positive Affect, 27% of the variance in Negative Affect, and 7% of the variance in Traffic Jam. Direct path coefficients of the trimmed model ranged between -.23 and .57. Direct effects of Personal Control on Positive Affect (β = .09, p < .01), External Control on Positive Affect (β = .06, p < .01), Stability on Positive Affect (β = .04, p = .04), External Control on Negative Affect (β = .06, p < .01), and Negative Affect on Traffic Jam (β = .15, p = .03) were significant. Indirect effect of Negative Affect on the relationship between External Control and Traffic Jam was significant (β = .01, p = .04). See Figure 11 for the graphic representation of the trimmed model.

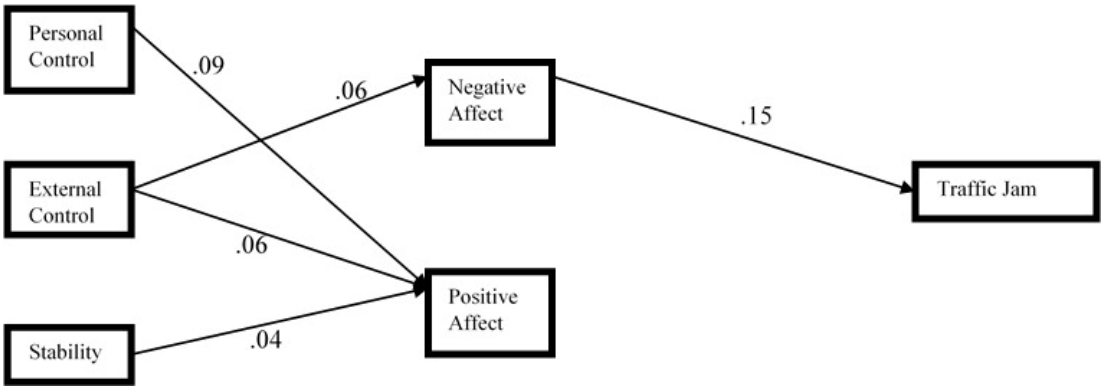

Figure 11. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the worst performance, and Traffic Jam.

The fourth model, in which the dependent variable is Intercity Driving, yielded a non-significant chi square (χ^2 (7) = 10.37, p = .17). Also the ratio of chi square to degrees of freedom was 1.48, which indicate a good fit. CFI was .99, NFI was .98, and RMSEA was .04 [95%CI (.00, .08)], which are also indications of a good model fit. The model accounted for 21% of the variance in Positive Affect, 27% of the variance in Negative Affect, and 15% of the variance in Intercity Driving. Direct path coefficients of the trimmed model ranged between -.23 and .57. Direct effects of Personal Control on Positive Affect (β = .09, p < .01), External Control on Positive Affect (β = .06, p < .01), Stability on Positive Affect (β = .04, p = .04), and External Control on Negative Affect (β = .06, p < .01) were significant. Indirect effects were non-significant. See Figure 12 for the graphic representation of the trimmed model.

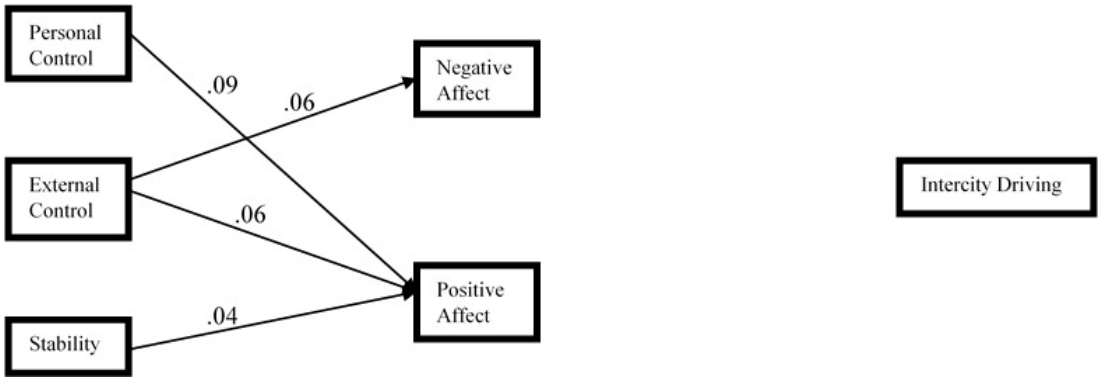

Figure 12. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the worst performance, and Intercity Driving.

The fifth model, in which the dependent variable is Unfamiliarity and Responsibility, yielded a non-significant chi square (χ^2 (7) = 7.24, p = .41). Also the ratio of chi square to degrees of freedom was 1.03, which indicate a good fit. CFI was 1.00, NFI was .99, and RMSEA was .01 [95%CI (.00, .06)], which are also indications of a good model fit. The model accounted for 21% of the variance in Positive Affect, 27% of the variance in Negative Affect, and 21% of the variance in Unfamiliarity and Responsibility. Direct path coefficients of the trimmed model ranged between -.17 and .57. Direct effects of Personal Control on Positive Affect (β = .09, p < .01), External Control on Positive Affect (β = .06, p < .01), Stability on Positive Affect (β = .04, p = .04), External Control on Negative Affect (β = .06, p < .01), and Negative Affect on Unfamiliarity and Responsibility (β = .13, p = .02) were significant. Indirect effect of Negative Affect on the relationship between External Control and Unfamiliarity and Responsibility was significant (β = .01, p = .02). See Figure 13 for the graphic representation of the trimmed model.

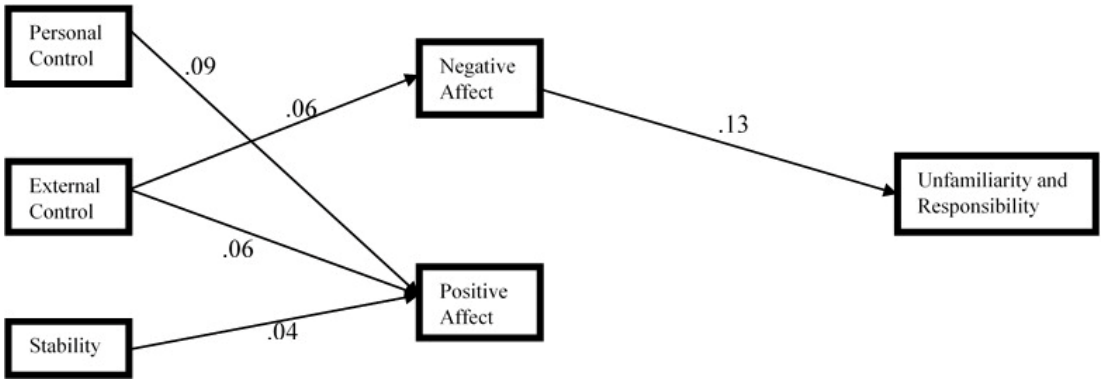

Figure 13. Simplified and trimmed path model showing the relationship between causal and affective evaluations of the worst performance, and Unfamiliarity and Responsibility.

3.5.3. Overview of Mediational Models

To summarize, no indirect effects are found for the models testing the best performance evaluations. For these models, there was a direct positive effect of External Control on Experience and Technical Skills, Adverse Weather Conditions, Intercity Driving, and Unfamiliarity and Responsibility. In other words, increased External Control was associated with increased avoidance from these 3 conditions. Additionally, direct positive effect of Negative Affect and direct negative effect of Positive Affect on Experience and Technical Skills is found. In driving situations requiring Experience and Technical Skills, increased Negative Affect and decreased Positive Affect was related with increased avoidance. Finally, direct negative effect of Personal Control on Intercity Driving is found, meaning that increased Personal Control was associated with decreased avoidance from Intercity Driving.
Indirect effects are observed in the case of the worst performance. Specifically, increased External Control was associated with increased Negative Affect, which in turn results in increased avoidance in terms of Traffic Jam, and Unfamiliarity and Responsibility. There was a direct negative effect of Personal Control as well as direct positive effect of Stability on Experience and Technical Skills. Put another way, increased Personal Control was associated with decreased avoidance from situations requiring Experience and Technical Skills. Also as the worst performance is perceived higher in Stability, avoiding Experience and Technical Skills also increased. The summary of the results of the path analyses are presented in Table 7.

Table 7. Summary of the Mediational Path Analyses

	Experience and Technical Skills	**Adverse Weather Conditions**	**Traffic Jam**	**Intercity Driving**	**Unfamiliarity and Responsibility**
Best Performance					
Direct	EC+, NA+, PA-	EC+	none	EC+, PC-	EC+
Indirect	none	none	none	none	none
Worst Performance					
Direct	PC-, ST+	none	NA+	none	NA+
Indirect	none	none	EC+NA+	none	EC+NA+

Note. PC = Personal Control, EC = External Control, ST = Stability, (-) corresponds to a significant negative path coefficient and (+) corresponds to a significant positive path coefficient.

CHAPTER 4

DISCUSSION

This study aimed to understand the mechanism of driving self-regulation by focusing on its relationship with causal attributions and affect among drivers of all ages for the first time in the literature. Previous studies also investigated different precursors of driving self-regulation. However, this study is the first to examine the precursors of driving self-regulation within the causal attributional framework. Unlike the previous studies that either have participants of old age or make age-based comparisons, this study aims to understand the aforementioned mechanism independent from age. In doing so, attributional model by Weiner (1990) is used as the theoretical basis. Accepting driving as an achievement context, the association between causal attributions about driving performance and self-regulatory driving behaviors is investigated. Moreover, mediator role of affect is examined. In line with the expectations, affect played a mediator role in the relationship between attributions and self-regulatory behavior. However, contrary to the expectations, this pattern was not observed in all 10 models tested. Expectations regarding the difference between the success (i.e. the best performance) and failure (i.e. the worst performance) were also partially supported by the current findings. Specifically, a mediator role of Positive Affect was expected for the success context, whereas a mediator role of Negative Affect was expected for the failure context. Positive Affect did not mediate the relationship between causal attributions and self-regulatory driving behaviors. On the other hand, Negative Affect mediated the relationship between causal attributions and self-regulatory driving behaviors with some degree of consistency across different types of behaviors. Current results are discussed in relation to the previous literature in the next section.

4.1. Discussion of the Factor Structures of the CDS-II and the E-DMQ-A

In the scope of this study, factor structures of the CDS-II and E-DMQ-A are investigated. The results suggested that the 3-factor solution was the most suitable for the CDS-II and the 5-factor solution was the most interpretable for the E-DMQ-A.

Originally, CDS-II has 4 factor namely Locus of Causality, Personal Control, External Control, and Stability (McAuley et al., 1992). However, the 3 factors that is yielded in this study are Personal Control, External Control, and Stability. In other words, items of Locus of Causality and Personal Control merged into a single factor. Moreover, this structure was consistent for both the best performance and the worst performance evaluations, which indicate that the causes of good and bad performance are interpreted on the same 3 dimensions. In original CDS-II, higher scores on Locus of Causality dimension indicate that the cause of the event lies in the person and higher scores on Personal Control dimension indicate that the cause is controllable by the person. Since items of both dimensions loaded on the same factor in the same direction, it can be claimed that the participants interpreted internal causes as internally controllable in the traffic context. This is not the case in the original theory: aptitude and effort are both internal causes, however aptitude cannot be controlled, while effort can be (Weiner, 2000). From another perspective, lower scores on Locus of Causality dimension indicate that the cause of the event lies outside the person and lower scores on Personal Control dimension indicate that the cause is not controllable by the person. Items of both dimensions loading on the same factor in the same direction may be interpreted as people considering external causes as internally non-controllable. For some external reasons, (e.g. help from others), internal controllability may be higher than it is for others (e.g. chance). Individuals can alter (if not control) the level of help they get by asking or not asking for help. Beyond that, externally originated reasons may (e.g. fair enforcement) or may not (e.g. luck) be controllable by outer agents (Weiner, 2018). However, they did not consider it so in the traffic context as implied by the results. This finding can offer an explanation for the confusion regarding conceptualization of locus of control (Pettersen, 1987).

Wong and her colleagues (2015) reported that E-DMQ-A has 2 factors, namely External Driving Environment and Internal Driving Environment. In this study, 5 factors emerged: Experience and Technical Skills, Adverse Weather Conditions, Traffic Jam, Intercity Driving, and Unfamiliarity and Responsibility. Most Internal Driving Environment items loaded onto Experience and Technical Skills, whereas most External Driving Environment items loaded onto remaining 4 dimensions in this study. One explanation is that drivers interpreting external conditions in a more refined manner. This may be resulting from the wide age-range of participants in the current study. Wong and her colleagues (2015) examined the factor structure of the instrument in a sample of older drivers aged 65 and above. However, drivers of all ages are included in the current study. This difference may have led to greater variability and differentiation in the interpretation of the items.

4.2. Discussion of the Mean Differences of the CDS-II and I-PANAS-SF

The results of this study suggest that individuals explain the causes of their best and worst performance distinctively. To specify, individuals perceive the causes of their good performance as more personally controllable and more stable than the causes of their bad performance. This is in line with the previous studies that found self-enhancement bias in traffic context (Fındık, Uslu, Öz, Lajunen, & Özkan, 2016). Not surprisingly, a higher level of Positive Affect is reported for the best performed driving task as compared to the worst one. On the contrary, a higher level of Negative Affect is reported following the worst performed driving task compared to the best performed task. This pattern of relationships was in accordance with the expectations regarding the findings of this study. These differences suggest that causal attributions and affective evaluations show distinct features for the success and failure contexts. Therefore, they need to be separately examined in relation to the behavioral outcomes.

4.3. Discussion of the Relationships between the Main Study Variables

Correlations were mostly significant between causal attributions of the best performance and behavioral outcomes, while mostly non-significant between causal attributions of the worst performance and behavioral outcomes. This indicates that the attribution-affect-behavior mechanism works differently in the success and failure situations in the traffic context. Attributional processes are triggered by schema-inconsistent instances, unexpected events, and novel situations (Försterling, 2001, p.13-17), therefore it is not surprising that attributions of success (i.e. the best performance in this case) provide less information about the behavioral outcome at hand (i.e. driving self-regulation) compared to failure (i.e. the worst performance in this case). Also, this pattern provides further basis for examining the best and worst performance evaluations separately. For affective evaluations, the correlations were in line with the mean difference findings. According to the results of the mean difference tests, Positive Affect is higher after the best performance than it is after the worst performance. On the contrary, Negative Affect is higher after the worst performance than it is after the best performance. In a similar vein, results of the correlation analysis showed that Positive Affect related more with evaluations of the best performance, whereas Negative Affect related more with evaluations of the worst performance. This is in accordance with Försterling's (2001, p. 116) statement that different affective responses mediate the relationship between causal evaluations and behavioral outcomes. This finding is also in accordance with the expectation that Positive Affect would be the prominent emotional

experience in the success (i.e. the best performance) condition and Negative Affect would be the prominent emotional experience in the failure (i.e. the worst performance) condition. These relationships are discussed in more detail in the following sections.

4.3.1. Mediational Models for the Best Performance

Indirect effects of Positive Affect and Negative Affect were non-significant in all 5 mediational models tested in this section. In other words, Positive Affect and Negative Affect did not mediate the relationship between causal attributions of best performance and 5 dimensions of self-regulatory driving behaviors. Rather, some direct relationships were observed. Attribution-behavior relations were not completely overlapping across different types of self-regulatory driving behaviors. With the exception of Traffic Jam, there was a direct positive relationship between External Control and the 4 avoidance dimensions. Additionally, Positive Affect was negatively and Negative Affect was positively associated with Experience and Technical Skills. Finally, Personal Control was negatively associated with Intercity Driving.

Weiner (2010) claims that causal thinking is important for being functional and motivational. According to him, not all behavioral outcomes require a search for causes, since it uses cognitive resources. Attributional process is particularly conducted by the individual under conditions of schema-inconsistent instances, unexpected events, and novel situations (Försterling, 2001, p.13-17). Future success in the behavioral outcome depends on understanding the causes underlying past failures (Weiner, 2010), in the context of this study, the worst performance. This may be the reason why the mediational models were not significant for attributions and affective consequences related to the best performance.

A consistent finding in this set of model tests is that the more individuals perceive their good performance as externally controllable (e.g. task easiness), the more they avoid driving. This relationship was not present in the third model only, in which the dependent variable is Traffic Jam. It is interesting that the effect of locus of causality/controllability works through increased External Control, but not decreased Personal Control (with the exception of the fourth model, that is Intercity Driving, which is related to both). It may be useful to think Personal and External Control as Locus of Causality at this point. Reasons of good performance, regardless of its controllability, may be thought to reside within the person, hence taken for granted. On the other hand, if reasons of good performance are thought to reside outside the individual, then the extent of controllability of those reasons may play a

role in the outcome. In support of that, both correlation coefficients and the covariance in the models regarding best evaluations show that Personal Control and Stability had a positive relationship, whereas that of External Control and Stability was lower in strength and in negative direction.

4.3.2. Mediational Models for the Worst Performance

Indirect effect of Negative Affect on the relationship between External Control and driving avoidance was significant for Traffic Jam, and Unfamiliarity and Responsibility. In other words, as the causes of the worst performance is perceived as more Externally Controllable, individuals experience a higher level of Negative Affect, which in turn result in increased avoidance of Traffic Jam, and Unfamiliarity and Responsibility. Additionally, Personal Control had direct negative effect and Stability had direct positive effect on Experience and Technical Skills. Put another way, as individuals evaluate their worst performance as more Personally Controllable and less Stable over time, they less avoid situations requiring Experience and Technical Skills.

As discussed in the previous section, understanding the reasons of past failures play a critical role in achievement in the future (Weiner, 2010). For this reason, mediational model may have worked better in the context of worst performance. As in the case of best performance, the effect originated from External Control, rather than Personal Control. Put another way, perception that bad performance is externally controllable lead to increased aversive feelings (such as fear, anger, guilt), which lead to avoidance of Traffic Jam, and Unfamiliarity and Responsibility in driving. This was not surprising in the case of the worst performance: taking the previously mentioned attributional biases into consideration (Fındık et al., 2016), it is no surprise that drivers attribute undesirable consequences to external conditions, while attributing desirable consequences to internal ones. Furthermore, previous work suggests that both Locus of Causality and Controllability dimensions particularly relate to affective outcomes such as anger, guilt or shame (Weiner, 2000). Considering this, mediator role of Negative Affect in the face of bad performance is in line with previous literature.

4.3.3. Overall Discussion of the Mediational Models

Taken as a whole, results of this study show that attributional model is more useful for explaining driving avoidance in the context of the worst performance as compared to the best performance. This is in line with previous work by Weiner (2010). The results show that the

influence of causal attributions on driving avoidance is carried through Negative Affect. Specifically, increased External Control leads to increased Negative Affect (i.e. aversive feelings such as anger, guilt, shame), which then leads to increased avoidance behavior. This mechanism did not work for all types of self-regulatory driving behaviors. However, it worked similarly in both significant models, indicating some degree of consistency in the results. Self-regulation is a complex construct that is affected by a wide range of dispositional and situational factors (Molnar et al., 2015). For this reason, it is possible that factors other than the attributional processes play a role in explaining the 3 non-significant behavior types, which are Experience and Technical Skills, Adverse Weather Conditions, and Intercity Driving.

Even if the model as a whole was not successful in the context of the best performance, a consistent direct relationship is observed between External Control and self-regulation in driving. This implies that affective evaluations being omitted in the context of the best performance. It is possible that the cognitive evaluation trajectory (i.e. expectancy) is followed in such cases instead of affective evaluation trajectory (i.e. emotion). In support of this view, Försterling (2001, p. 113) state that the role of emotions is relatively small when external attributions are made to success. However, failure is accompanied by a wider array of feelings and these emotions are stronger when external attributions are made (Försterling, 2001, p. 115). It is also possible that the measurement tool used to assess affective evaluations (i.e. I-PANAS-SF) is not comprehensive enough to capture the array of emotions elicited by attributions. According to a review by Graham (1991), different attributional dimensions are associated with a distinct set of emotions. Specifically, Locus of Causality mostly elicits esteem-related emotions (e.g. pride, incompetence), Controllability mostly leads to social emotions (e.g. gratitude, shame, guilt, anger), and Stability is associated with expectation-related emotions (e.g. relaxation, hopelessness). Positive Affect items of I-PANAS-SF are alert, inspired, determined, attentive, and active; whereas Negative Affect items are upset, hostile, ashamed, nervous, and afraid. The items do not seem to fully cover attribution-dependent emotions, especially for success conditions, (e.g. pride, confidence, activation, relaxation, gratitude, surprise), which may have resulted in the lack of significance in the model.

For both the direct relationships in the best performance (i.e. success) context and the indirect relationships in the worst performance (i.e. failure) context, the prominent attributional dimension was External Control. In other words, avoidance is increased when both good performance (direct effect) and bad performance (indirect effect) is regarded as

externally controllable. This finding indicates that beliefs about the external conditions have a more profound impact on behavior compared to beliefs about internal conditions. As discussed above, this might be related to the consideration of internal factors as by default controllable, whereas external factors as controllable depending on the situation. From this perspective, the finding that controllability relates to the concepts of learned helplessness, moral judgments, and legal decisions (Weiner, 2018), puts it to a critical position in its relation to driving self-regulation.

4.4. Limitations

This study has a number of limitations. To begin with, it has most drawbacks listed by Molnar and her colleagues (2015) that driving self-regulation literature suffers from: narrowing the operationalization of the concept down to avoidance behaviors, using a cross-sectional design, and employing self-report measurements. Although self-regulatory driving behaviors are more than simply avoiding a set of tasks, avoidance behavior is particularly relevant to achievement motivation research. An achievement behavior is one that aiming either to demonstrate high performance or to avoid demonstrating low performance (Nicholls, 1984). Therefore, avoidance behaviors can be easily linked with achievement-related antecedents in the context of driving. The issue of examination of a limited set of behaviors are thought to be overcome by the selection of self-regulation measurement in this study. To specify, E-DMQ-A covers a wide array of external and internal driving conditions. The item pool of the tool is expanded in its most current version with the additional items that are created based on interviews with drivers. Nonetheless, problems with cross-sectional design and use of self-report measurement tools persist. Due to the cross-sectional design, results should be interpreted with caution and causality should not be inferred. Additionally, the analytic method used in this study can be criticized for trimming the path models. Still, this technique is often used in data analysis in previous work in the field of social sciences for providing a parsimony (Craig, Fardouly, & Rapee, 2022; Ökten, 2016; Perrin, Sutter, Trujillo, Henry, & Pugh Jr, 2020; Taşkesen, 2022; Yalım Yaman, 2014). Future research can examine the relationship between attributions, affect, and self-regulatory driving behavior using different design, measurement, and analytic tools.

Another limitation of this study is related to the structure of the mediational models. The model of Weiner (1990) includes cognitive evaluations (i.e. expectations) as the second mediator, along with affective evaluations (i.e. emotions). Expectations were not included in this study; hence it can be claimed that the mechanism underlying self-regulatory driving

behaviors is not fully explored. However, later work by Weiner (2010) points to contradictory views in terms of the role of expectancy in the attribution framework. Specifically, he claims that the relationship between expectation and motivation might be changing depending on the nature of behavioral outcome. Taking the concerns raised by Weiner into consideration, role of expectancy is not investigated in this study.

4.5. Contributions, Implications, and Future Research

Despite its limitations, this study contributes to the literature in a number of ways. To the best of the author's knowledge, it is the first study to investigate the role of attributions in conjunction with affect in driving self-regulation. Previous work examined how of a range of demographic and psychological variables is associated with self-regulatory driving behaviors (Ang et al., 2019a; Gwyther, & Holland, 2012; Kostyniuk, & Molnar, 2008). However, current study is the first to investigate the role of causal attributions and affect in these behaviors. Another contribution is the inclusion of drivers from all ages. Previous work show that both young and old drivers regulate their driving, though they differ in terms of the extent and the content (Azık, 2015; Gwyther, & Holland, 2012; Naumann et al., 2011). Though less often, even middle-aged drivers display such behaviors (Gwyther, & Holland, 2012). Performance decline and adaptive strategies aimed at counteracting this decline can occur at any age. For this reason, this study adopted a comprehensive approach in participant selection. Comprehensive approach in participant selection allowed the examined relationships to be discussed independent from and beyond age, making the current study distinct from the previous ones. Despite the variability in age and other demographic variables, the sample is still not representative of the population, hence future research on this topic is encouraged. Finally, attribution studies are most common in the achievement contexts of education (Graham, 1991) and sports (Allen et al., 2009). However, despite being an achievement context (Mascret et al., 2020), much less is known about the functionality of the theory in driving context. Current study is an addition to few that clarify the underlying mechanism behind traffic-related behaviors.

The findings of this study can provide a basis for both practitioners and researchers. This study shows that people's causal beliefs about their performance are associated with their behavior. Further research can be conducted in laboratory or natural settings to see whether the current results apply to the field. Weiner (2010) and Graham (1991) stated that behavioral change is possible through attribution interventions or re-attribution trainings in a number of contexts such as academic performance and physical exercise. Such a training can

also be designed for drivers who self-regulate, particularly avoid driving. Combining re-attribution training with additional compensatory strategies, safe driving can be maintained. In that sense, this study can also inspire other researchers to test attributional constructs in the context of other behaviors related to traffic. Association between attributions and safety-related behavioral outcomes can be investigated. Also, the role of expectancy can be clarified. Considering the previous research regarding the critical role of demographic variables in self-regulation literature, age, sex, or experience-based group comparisons can be done to see if these groups differ in the attribution-affect-behavior links.

4.6. Conclusions

There is a rich literature about the antecedents of driving self-regulation. However, current study is the first one to investigate the role of causal attributions in explaining driving self-regulation. Using the causal attributional mechanism as the theoretical framework, this study provides additional knowledge on the reasons why drivers self-regulate. One distinguishing feature of the study is that it includes participants from all ages. Most of the previous studies on driving self-regulation either only included older drivers or made age-based comparisons. Considering the finding that drivers from all age groups self-regulate their driving (Gwyther, & Holland, 2012), this study examined the mechanism of driving self-regulation across all age groups. By doing so, the concept is not confined to older drivers, rather approached as beyond an age-related phenomenon.

The analyses yield a number of critical results. The most apparent finding is that drivers' causal and affective evaluations about the best and the worst performance differentially influence their self-regulatory behaviors. Moreover, this influence prominently originates from beliefs about External Control. Specifically, whereas External Control has a direct effect in the case of the best performance evaluations; it has an indirect effect in the case of the worst performance evaluations. In other words, if the individual believes that his/her performance is controllable by external factors (e.g. chance, task difficulty, other drivers), he/she self-regulates more. When the reasons of the worst performance are evaluated as externally controllable, Negative Affect mediates this relationship. This finding emphasizes that drivers' beliefs about external factors play an important role in shaping their avoidance behaviors. Not the concerns about the internal factors, but the concerns about the external factors seem to determine whether one would self-regulate while driving or not.

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APPENDICES

APPENDIX A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

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MIDDLE EAST TECHNICAL UNIVERSITY

13 EYLÜL 2022

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Bahar ÖZ

Danışmanlığını yürüttüğünüz Gizem FINDIK'ın "**Sürücülükte iyi ve kötü performansa dair nedensel açıklamalar, psikolojik ve davranışsal çıktılar arasındaki ilişki**" başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay **0474-ODTUİAEK-2022** protokol numarası ile onaylanmıştır.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Mine MISIRLISOY
Başkan

Doç. Dr. İ.Semih AKÇOMAK
Üye

Dr. Öğretim Üyesi Müge GÜNDÜZ
Üye

Dr. Öğretim Üyesi Şerife SEVİNÇ
Üye

Dr. Öğretim Üyesi Murat Perit ÇAKIR
Üye

Dr. Öğretim Üyesi Süreyya ÖZCAN KABASAKAL
Üye

Dr. Öğretim Üyesi A. Emre TURGUT
Üye

APPENDIX B. DEMOGRAPHIC QUESTIONS AND BASELINE AFFECT

1. Yaşınız: _____

2. Cinsiyetiniz: ☐ Erkek ☐ Kadın

3. Aşağıdakilerden hangisi aylık gelir düzeyinizi tanımlar? ☐ Gelirim yok ☐ Belirtiniz:____

4. Aşağıdakilerden hangisi eğitim seviyenizi tanımlar? ☐ Okuryazar ☐ İlkokul mezunu ☐ Ortaokul mezunu ☐ Lise mezunu ☐ Üniversite mezunu ☐ Lisansüstü mezunu ☐ Öğrenci (Belirtiniz):____ ☐ Diğer (Belirtiniz):____

5. Kaç yıldır ehliyet sahibisiniz? _____ yıl

6. Geçen yıldan bu yana yaklaşık olarak toplam kaç kilometre araç kullandınız? _____km

7. Bütün hayatınız boyunca yaklaşık olarak toplam kaç kilometre araç kullandınız? _____km

8. Genel olarak, ne sıklıkla araç kullanırsınız?

☐ Hemen hemen her gün ☐ Haftada 3-4 gün ☐ Haftada 1-2 gün
☐ Ayda birkaç kez ☐ Çok nadir

9. Son üç yılda kaç kez araç kullanırken **aktif olarak** (sizin bir araca, bir yayaya veya herhangi bir nesneye çarptığınız durumlar) kaza yaptınız? (hafif kazalar dâhil)_____ kez

10. Son üç yılda kaç kez araç kullanırken **pasif olarak** (bir aracın ya da bir yayanın size çarptığı durumlar) kaza geçirdiniz? (hafif kazalar dâhil)_____ kez

11. Son üç yılda aşağıdaki trafik cezalarını kaç kere aldığınızı belirtiniz.

Yanlış park etme:_____ Hız ihlali:_____ Kırmızıda geçme:_____
Hatalı sollama:_____ Diğer (belirtiniz):_____

12. Aşağıda sıralanan ifadeleri, normalde kendinizi nasıl hissettiğinizi düşünerek değerlendiriniz.

1. Çok az veya hiç 2. Biraz 3. Ortalama 4. Oldukça 5. Çok fazla

1)	Aktif	1 - 2 - 3 - 4 - 5
2)	Kararlı	1 - 2 - 3 - 4 - 5
3)	Dikkatli	1 - 2 - 3 - 4 - 5
4)	İlhamlı (yaratıcı düşüncelerle dolu)	1 - 2 - 3 - 4 - 5
5)	Uyanık (dikkati açık)	1 - 2 - 3 - 4 - 5
6)	Korkmuş	1 - 2 - 3 - 4 - 5
7)	Sinirli	1 - 2 - 3 - 4 - 5
8)	Mutsuz	1 - 2 - 3 - 4 - 5
9)	Düşmanca	1 - 2 - 3 - 4 - 5
10)	Utanmış	1 - 2 - 3 - 4 - 5

APPENDIX C. MEASUREMENT OF CAUSAL AND AFFECTIVE EVALUATIONS ABOUT PERFORMANCE

1A. Bir sürücü olarak, araç kullanırken en iyi yaptığınızı düşündüğünüz şey nedir? (Yalnızca 1 cevap veriniz ve aşağıdaki soruları bu cevap temelinde değerlendiriniz.) _____

1B. Aşağıda sıralanan ifadeleri, en iyi yaptığınızı belirttiğiniz şeyi yaparken kendinizi nasıl hissettiğinizi düşünerek değerlendiriniz.

1. Çok az veya hiç 2. Biraz 3. Ortalama 4. Oldukça 5. Çok fazla

1)	Aktif	1 - 2 - 3 - 4 - 5
2)	Kararlı	1 - 2 - 3 - 4 - 5
3)	Dikkatli	1 - 2 - 3 - 4 - 5
4)	İlhamlı (yaratıcı düşüncelerle dolu)	1 - 2 - 3 - 4 - 5
5)	Uyanık (dikkati açık)	1 - 2 - 3 - 4 - 5
6)	Korkmuş	1 - 2 - 3 - 4 - 5
7)	Sinirli	1 - 2 - 3 - 4 - 5
8)	Mutsuz	1 - 2 - 3 - 4 - 5
9)	Düşmanca	1 - 2 - 3 - 4 - 5
10)	Utanmış	1 - 2 - 3 – 4 - 5

1C. En iyi yaptığınız şeyi yaparken en çok hangi duyguyu hissediyorsunuz? (Örneğin; mutlu, şaşırmış, öfkeli ve benzeri) _____

1D. Sizce şu anda en iyi yaptığınızı düşündüğünüz şey konusunda gelecekteki performansınız nasıl olacak?

Çok kötü. 1 - 2 - 3 - 4 - 5 Çok iyi.

1E. Sizce araç kullanırken en iyi yaptığınız şeyin bu olmasının en önemli nedeni nedir? (Yalnızca 1 cevap veriniz.) _____

1F. Lütfen bu soruyu yukarıda yazmış olduğunuz nedeni düşünerek yanıtlayınız. Aşağıdaki maddeler sizin performansınızı etkileyen belirttiğiniz neden hakkındaki izlenim veya görüşlerinizle ilgilidir. Belirttiğiniz nedeni en iyi ifade ettiğinizi düşündüğünüz açıklamayı 1-9 arası rakamlardan birini işaretleyerek belirtiniz.

Sizin dışınızdaki koşulların bir özelliğini yansıtır	1-2-3-4-5-6-7-8-9	Sizin bir özelliğinizi yansıtır
Sizin tarafınızdan yönetilemez	1-2-3-4-5-6-7-8-9	Sizin tarafınızdan yönetilebilir
Geçicidir	1-2-3-4-5-6-7-8-9	Daimidir
Sizin tarafınızdan düzene sokulamaz	1-2-3-4-5-6-7-8-9	Sizin tarafınızdan düzene sokulabilir
Üzerinde başkalarının kontrolü yoktur	1-2-3-4-5-6-7-8-9	Üzerinde başkalarının kontrolü vardır
Sizin dışınızdadır	1-2-3-4-5-6-7-8-9	İçsel bir nedendir
Zaman içerisinde değişkendir	1-2-3-4-5-6-7-8-9	Zaman içerisinde istikrarlıdır
Diğer insanların gücü altında değildir	1-2-3-4-5-6-7-8-9	Diğer insanların gücü altındadır
Başkalarıyla alakalı bir şeydir	1-2-3-4-5-6-7-8-9	Sizinle alakalı bir şeydir
Üzerinde güç sahibi değilsiniz	1-2-3-4-5-6-7-8-9	Üzerinde güç sahibisiniz
Değiştirilebilir	1-2-3-4-5-6-7-8-9	Değiştirilemez
Başkaları tarafından düzene sokulamaz	1-2-3-4-5-6-7-8-9	Başkaları tarafından düzene sokulabilir

2A. Bir sürücü olarak, araç kullanırken <u>en kötü yaptığınızı</u> düşündüğünüz şey nedir? (Yalnızca 1 cevap veriniz ve aşağıdaki soruları bu cevap temelinde değerlendiriniz.)

_____

2B. Aşağıda sıralanan ifadeleri, <u>en kötü yaptığınızı belirttiğiniz şeyi yaparken kendinizi nasıl hissettiğinizi</u> düşünerek değerlendiriniz.

1. Çok az veya hiç 2. Biraz 3. Ortalama 4. Oldukça 5. Çok fazla

1) Aktif 1 - 2 - 3 - 4 - 5
2) Kararlı 1 - 2 - 3 - 4 - 5
3) Dikkatli 1 - 2 - 3 - 4 - 5
4) İlhamlı (yaratıcı düşüncelerle dolu) 1 - 2 - 3 - 4 - 5

5) Uyanık (dikkati açık) 1 - 2 - 3 - 4 - 5
6) Korkmuş 1 - 2 - 3 - 4 - 5
7) Sinirli 1 - 2 - 3 - 4 - 5
8) Mutsuz 1 - 2 - 3 - 4 - 5
9) Düşmanca 1 - 2 - 3 - 4 - 5
10) Utanmış 1 - 2 - 3 – 4 - 5

2C. En kötü yaptığınız şeyi yaparken en çok hangi duyguyu hissediyorsunuz? (Örneğin; mutlu, şaşırmış, öfkeli ve benzeri) _____

2D. Sizce şu anda en kötü yaptığınızı düşündüğünüz şey konusunda gelecekteki performansınız nasıl olacak?
Çok kötü. 1 - 2 - 3 - 4 - 5 Çok iyi.

2E. Sizce araç kullanırken en kötü yaptığınız şeyin bu olmasının <u>en önemli nedeni</u> nedir? (Yalnızca 1 cevap veriniz.) _____

2F. Lütfen bu soruyu yukarıda yazmış olduğunuz nedeni düşünerek yanıtlayınız. Aşağıdaki maddeler sizin performansınızı etkileyen belirttiğiniz neden hakkındaki izlenim veya görüşlerinizle ilgilidir. Belirttiğiniz nedeni en iyi ifade ettiğinizi düşündüğünüz açıklamayı 1-9 arası rakamlardan birini işaretleyerek belirtiniz.

Sizin dışınızdaki koşulların bir özelliğini yansıtır	1-2-3-4-5-6-7-8-9	Sizin bir özelliğinizi yansıtır
Sizin tarafınızdan yönetilemez	1-2-3-4-5-6-7-8-9	Sizin tarafınızdan yönetilebilir
Geçicidir	1-2-3-4-5-6-7-8-9	Daimidir
Sizin tarafınızdan düzene sokulamaz	1-2-3-4-5-6-7-8-9	Sizin tarafınızdan düzene sokulabilir
Üzerinde başkalarının kontrolü yoktur	1-2-3-4-5-6-7-8-9	Üzerinde başkalarının kontrolü vardır
Sizin dışınızdadır	1-2-3-4-5-6-7-8-9	İçsel bir nedendir
Zaman içerisinde değişkendir	1-2-3-4-5-6-7-8-9	Zaman içerisinde istikrarlıdır

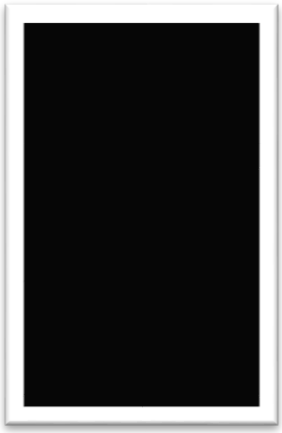
Diğer insanların gücü altında değildir	1-2-3-4-5-6-7-8-9	Diğer insanların gücü altındadır
Başkalarıyla alakalı bir şeydir	1-2-3-4-5-6-7-8-9	Sizinle alakalı bir şeydir
Üzerinde güç sahibi değilsiniz	1-2-3-4-5-6-7-8-9	Üzerinde güç sahibisiniz
Değiştirilebilir	1-2-3-4-5-6-7-8-9	Değiştirilemez
Başkaları tarafından düzene sokulamaz	1-2-3-4-5-6-7-8-9	Başkaları tarafından düzene sokulabilir

APPENDIX D. DRIVING SELF-REGULATION MEASUREMENT

Aşağıda araç kullanırken karşılaşılması muhtemel, tehlikeli olabilecek bazı koşullar verilmiştir. Lütfen bir sürücü olarak bu durumlardan ne sıklıkla kaçındığınızı belirtiniz.

	1-Hiçbir zaman	2-Nadiren	3-Bazen	4-Sık sık	5-Her zaman
Yağmurlu gecelerde araç kullanmaktan					
Yağmurlu havalarda araç kullanmaktan					
Geceleri araç kullanmaktan					
Trafik yoğunluğunun yüksek olduğu saatlerde araç kullanmaktan					
Sisli/puslu havalarda araç kullanmaktan					
Trafik yoğunluğunun yüksek olduğu yollarda araç kullanmaktan					
Uzun yol sürüşlerinden					
Otoyollarda araç kullanmaktan					
Tünellerde araç kullanmaktan					
Diğer kişilerin araçlarını kullanmaktan					
Araçta çocuk yolcu varken araç kullanmaktan					
Araçta yalnızken araç kullanmaktan					
Araçta yetişkin yolcu varken araç kullanmaktan					
Aşina olduğum yollarda araç kullanmaktan					
Okul giriş/çıkış saatlerinde araç kullanmaktan					
Aşina olmadığım yollarda araç kullanmaktan					
Şerit değiştirmekten					
Yol yapım çalışmalarının olduğu bölgelerde araç kullanmaktan					
Paralel park etmekten					
Sağa dönüşlerden					
Dönel kavşaklarda araç kullanmaktan					

APPENDIX E. CURRICULUM VITAE



Gizem Fındık

Birth Place/Date:

Address:

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EDUCATION

Doctorate (2016-2023) Psychology Department, Middle East Technical University, GPA:4.00 (Advisor: Assoc. Prof. Bahar Öz)

Bachelor (2019-2023) Occupational Health and Safety Department (Distant Education), İstanbul University, GPA:3.70

Master (2014-2016) Psychology Department, Middle East Technical University, GPA:4.00 (Advisor: Assoc. Prof. Timo J. Lajunen)

Bachelor (2009-2014) Psychology Department, Middle East Technical University, GPA:3.85

MASTER'S THESIS

Job stress, burnout, and aberrant driving among professional drivers of old age, Middle East Technical University/2016

Advisor: Assoc. Prof. Timo Juhani Lajunen

WORK EXPERIENCE

Lecturer (2023-Ongoing), Turkish National Police Academy, Psychology Department, Ankara/Turkey

Managing Editor (2018-Ongoing), Journal of Traffic and Transportation Research, https://dergipark.org.tr/en/pub/tuad

Research and Teaching Assistant (2015-2023), Middle East Technical University, Psychology Department, Ankara/Turkey

Visiting Scholar (2017), MSCA-RISE-2014 EU Project, Road Safety Institute Panos Mylonas, Athens/Greece

Visiting Scholar (2016), MSCA-RISE-2014 EU Project Virginia Tech Transportation Institute, Virginia Polytechnic Institute and State University, Virginia/United States of America

PROJECTS

Researcher (2023-Ongoing) - Turkish Academy of Sciences (TÜBA), Turkish Science Terms Dictionary Project, Psychology Terms Working Group.

Researcher (2015-2018) – EU Project (MSCA-RISE-2014) Marie Sklodowska-Curie European Union Horizon 2020 Research and Innovation Programme, TraSaCu Project (Traffic Safety Cultures and the Safe Systems Approach towards a Cultural Change Research and Innovation Agenda for Road Safety).

PUBLICATIONS

- **Fındık, G.**, Kaçan, B., Solmazer, G., Ersan, Ö., Üzümcüoğlu, Y., Azık, D., … Xheladini, G. (2022). A comparison of the relationship between individual values and aggressive driving in five countries. Journal of Transportation Safety and Security, 14(3), 430-452. DOI: 10.1080/19439962.2020.1784341

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- Azık., D., Ersan, Ö., **Fındık, G.**, Kaçan, B., Solmazer, G., Üzümcüoğlu. Y., DanelliMylona, Delli, G., Dhrami, K., Georgogianni, D., Janku, E., Krasniqi, E. B., Krasniqi, M., Lajunen, T. Makris, E., Öz, B., Özkan, T., Pashkevich, A., Pashkevich, M., Salamon, B., Shubenkova, K. van Strijp-Houtenbos, M., Volynets, A., ve Xheladinic, G. (2018). Model of traffic cultures and impact (Deliverable 4.1) for Traffic Safety Cultures and the Safe Systems Approach Towards a Cultural Change Research and Innovation Agenda for Road Safety (TraSaCu) Project, 1-228.

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Fındık, G., Lajunen, T., Öz, B. ve Özkan, T. (2015, Temmuz). Well-being, health, and driver behaviours among elderly professional drivers. The 14th International Conference on Mobility and Transport for Elderly and Disabled Persons (TRANSED), Lizbon, Portekiz.

AWARDS AND CERTIFICATES

The Scientific and Technological Research Council of Turkey-National MSc/MA Scholarship Program, 2014-2016

VOLUNTARY WORK

“European Voluntary Service”, Greece, March 2014-September 2014

“Open Houses” Voluntary Work Camp, Germany, August 2012-September 2012

COMPUTER SKILLS

SPSS, EQS, AMOS, MAXQDA, MS Office Programs

LANGUAGES

Turkish – Native Language, **English** - Advanced, **Greek (Modern)** - Beginner

APPENDIX F. TURKISH SUMMARY/TÜRKÇE ÖZET

Araç sürücüleri, trafik sistemine kişinin araç kullanmak için belirli bir yetkinlik ve bilgi seviyesinin üzerinde olduğundan emin olunmasını hedefleyen bir belgelendirme süreci sonrasında trafiğe katılabilmektedir. Bu, sürücü grubunun belirli bir minimum performans seviyesinin üzerinde olmasını sağlar. Bu minimum seviyenin ötesinde ise yaş, cinsiyet, deneyim, tutumlar ve kişilik gibi bazı bireysel farklılıklar, sürücülerin beceri seviyesindeki çeşitlilikle ilişkilenir (Lajunen, & Summala, 1995; Özkan, Lajunen, Chliaoutakis, Parker, & Summala, 2006). Sürücüler arasındaki bireysel farklılıklardaki çeşitlilik, güvenli sürüş için gerekli becerilerde de heterojenlik ile sonuçlanabilir. Becerideki heterojenliğin bir doğurgusu, aynı sürüş görevinin bazıları için zor bazıları içinse oldukça basit olmasıdır.

Sürücüler, araç kullanırken karşılaştıkları zorluklarla başa çıkmak için öz-düzenleyici davranışlarda bulunabilirler (Stalvey, & Owsley, 2000). Bu davranışlar kapasite değişimlerine uyum sağlayacak şekilde sürüş davranışlarını düzenlemeyi içerir (Charlton, Oxley, Fildes, Oxley, & Newstead, 2003) ve zorlu durumlar karşısında sürüşü azaltma ya da tamamen bırakma biçiminde ortaya çıkar (Ang et al., 2019a). Kapasitedeki değişimler yalnızca ileri yaşla ilişkilendirilse de, öz-düzenleyici davranışlar yaşlılara ek olarak genç sürücülerde de, orta-yaştaki sürücülere kıyasla daha fazla görülmektedir (Gwyther, & Holland, 2012; Naumann, Dellinger, & Kresnow, 2011).

Sürücülükte öz-düzenleyici davranışların öncülü olabilecek bireysel farklılık değişkenlerinden biri nedensel atıflar, yani başarı ve başarısızlığa dair algılanan sebeplere ilişkin bir dizi değerlendirmedir. Bu çalışmanın da odağını oluşturan birey seviyesinde en etkili araştırmaların yapıldığı çıktı başarı motivasyonudur. Weiner tarafından ortaya koyulan modelin erken sürümlerine göre, bir olayın nedenleri 2 temel boyut üzerinde değerlendirilir: nedensellik odağı ve istikrar (Försterling, 2001, p. 111). Sırasıyla bireyler, nedenin kişinin kendinden mi yoksa çevreden mi kaynaklandığını ve zaman içinde değişen mi yoksa kalıcı mı olduğunu değerlendirirler. Nedenlerin bu boyutlar üzerinden değerlendirilmesi duygusal ve bilişsel çıktılara yol açar, bu çıktılar ise gelecekteki davranışları şekillendirir (Weiner, 1990, p. 9).

Mascret, Nicolleau ve Ragot-Court'a (2020) göre, sürücülük başarı bağlamının kıstaslarını karşıladığından (bireysel yetkinlikle ilişkili olmasından ve yetkinliğin değerlendirilmesinden,

sonucun bireye bağlı olmasından ve başarının hem toplumca değerli görülmesi hem de belirsiz olmasından dolayı), bir başarı bağlamı olarak düşünülebilir. Bununla bağlantılı şekilde, mevcut çalışma da sürücülüğü bir başarı bağlamı olarak kabul etmekte ve öz-düzenleyici sürücü davranışlarını başarı (iyi sürüş performansı) ve başarısızlık (kötü sürüş performansı) çerçevesinde incelemektedir. Bireylerin trafikte başarıya yaklaştığı (sürücü olarak iyi performans sergileme) ve başarısızlıktan kaçındığı (sürücü olarak kötü performans sergileme), bunu yaparken de öz-düzenleyici davranışlar sergilediği varsayılmaktadır.

Karayolu trafiği, nedensel atıfların araştırıldığı bağlamlardan biridir. Örneğin, Britt ve Garrity (2006) öfke uyandıran olayları sabit sebeplere atfetmenin öfke ve saldırgan davranışa yol açtığını raporlamıştır. Bu bulgu, nedensel atıfların trafikte hem duygusal hem de davranışsal çıktılarla ilişkilendiğine işaret etmektedir. Kontrol odağı trafikle bağlantılı çıktılarla ilişkisi bakımından daha popüler bir kavramdır. Töre, Kaçan-Bibican ve Özkan (2022), riskli sürücü davranışları ile trafik bağlamına özgü iki farklı kontrol odağı ölçeği arasındaki ilişkiyi incelemişlerdir. Özkan ve Lajunen'in (2005) ölçeğindeki iç kontrol odağının hata ve ihlallerle pozitif yönde ilişkili olduğunu, ancak bu ilişkilerin Montag ve Comrey'in (1987) ölçeği ile ölçüldüğünde istatistiksel olarak anlamsız olduğunu bulmuşlardır. Öte yandan, Montag ve Comrey'in (1987) dış kontrol odağının hata ve ihlallerle pozitif yönde ilişkili olduğu, ancak Özkan ve Lajunen'in (2005) ölçeği kullanıldığında bulguların karışık olduğu bulunmuştur. Trafik bağlamında kontrol odağı ve davranışsal çıktılar arasındaki ilişkiyi inceleyen çalışmalar sayıca zengin olsa da kavramsal belirsizlik sonuçları yorumlamayı zorlaştırmaktadır.

Önceki kısımlarda da söz edildiği üzere, bilişsel değerlendirmeler ile birlikte duygusal değerlendirmeler, atıfların psikolojik çıktılarından birini oluşturmakta ve davranışsal çıktılarla ilişkilenmektedir. Atıflar, duygusal değerlendirmeler ve davranışlar arasındaki ilişki takım sporları (Allen, Jones, & Sheffield, 2009), akademik özgüven (Robins, & Pals, 2002), ebeveynlik davranışları (Chavira, López, Blacher, & Shapiro, 2000; Dadds, Mullins, McAllister, & Atkinson, 2003), depresif hastalara yardım etme davranışı (Yao, & Siegel, 2021), tüketici davranışı (Zielke, 2014) ve kişilerarası stil (Zijlmans, Embregts, Bosman, & Willems, 2012) gibi farklı bağlamlarda ele alınmıştır. Duyguların rolü trafikle bağlantılı davranışlarla ilişkisi bakımından da araştırılmıştır. Örneğin Hu, Xie ve Li (2013), negatif duygudurumın riskli sürücülük ile ilişkili olduğunu bulmuşlardır. Pêcher, Lemercier ve Cellier'in (2011) derleme çalışması, öfkenin çoğunlukla risk alma ve saldırgan davranışlarla, üzgünlük ve ruminasyonun kazaya karışma ve performans düşüşü ile ilişkili olma eğiliminde olduğunu raporlamaktadır. Ek olarak kaygının karmaşık sonuçlar ortaya koyduğu, bazı

çalışmalarda kaygının riskli sürüş ile ilişkilendiği, bazılarında ise defansif ve tedbirli olma ile ilişkilendiği belirtilmiştir. Pêcher ve arkadaşları (2011), pozitif duygudurumın trafik bağlamındaki rolüne ilişkin alanyazında eksiklik olduğuna işaret etmektedir.

Riskli sürücülükle ilgili belirsiz sonuçlara ek olarak, duygudurumın, özellikle kaygının, sürüşten kaçınma ile ilişkisini inceleyen bazı çalışmalar bulunmaktadır. Örneğin Gwyther ve Holland (2012) kaçınma düzeyi ile ölçülen öz-düzenleyici sürücü davranışlarının, sürüşle ilgili kaygı ve endişe düzeyi ile ölçülen negatif duygusal tutumlar arttıkça arttığını raporlamıştır. Duygusal tutumlar ve öz-düzenleyici sürücü davranışları arasındaki ilişki Wong, Smith ve Sullivan'ın (2016) çalışmasında da bulunmuştur. Bu çalışmalar trafik bağlamında kaygının kaçınma şeklindeki öz-düzenleme ile olası ilişkisini vurgulamaktadır.
Duygudurum ve sürücü davranışları arasındaki ilişkiyi inceleyen zengin alanyazına rağmen, atıfsal süreçleri bu ilişkiye dahil eden çalışma sayısı sınırlıdır. Arslan'ın (2018) tezi kontrol odağı ve başa çıkma stratejileri arasındaki ilişkide duygudurumın rolünü araştırmıştır. Bir diğer tez çalışması olan Wickens'ın (2009) çalışması ise, Weiner'in modelini özellikle saldırgan ve prososyal sürüşe odaklanarak trafik bağlamında ele almaktadır. Yukarıda söz edildiği üzere, duygular nedensel atıflar ve davranışsal çıktılar arasında bir köprü vazifesi görmektedir. Bu bağlantı, diğer davranışlara ek olarak, trafik bağlamı ile ilişkili davranışlarla da kurulmuştur. Bu nedenle, nedensel atıflarla davranışlar arasındaki ilişkiyi inceleyen gelecek çalışmalarda da duyguları dahil etmek anlamlı görünmektedir.

Bu çalışmanın amacı, öz düzenleyici sürücü davranışlarının altta yatan nedenlerini araştırmaktır. Öz-düzenleyici davranış süreçlerini araştırırken, mevcut çalışma temelini Weiner'in (1990) atıf teorisi üzerine inşa etmektedir ve bu da mevcut çalışmanın eşsiz katkılarından biridir. Öz-düzenleyici davranışların öncüllerini inceleyen önceki çalışmalar çoğunlukla teorik bir temelden yoksundur. Buna istisna olabilecek birkaç çalışmada, Planlı Davranış Kuramı bileşenleri ve öz-düzenleyici davranışlar arasındaki ilişki ele alınmıştır (Chen ve ark., 2022; Gwyther, & Holland, 2012; Wong ve ark., 2016). Bir diğer çalışma, öz-düzenleyici davranış ölçeği geliştirmede Seçim, Optimizasyon ve Telafi Teorisinden faydalanmıştır (Yeoh ve ark., 2016). Fakat, atıfla ilgili kavramların öz-düzenleyici davranışlar ile ilişkisini inceleyen bir çalışma alanyazında mevcut değildir. Bununla beraber, hiçbir önceki çalışma, öz-düzenleyici sürücü davranışlarını başarı motivasyonu bağlamında ele almamıştır.

Mevcut çalışma, sürüşteki en iyi ve en kötü performansa dair nedensel atıflar, bu atıfların duygusal sonuçları (Pozitif Duygudurum ve Negatif Duygudurum) ve bunlarla ilişkili

davranışsal sonuçlar (Kaçınma düzeyi ile ölçülen öz-düzenleyici sürücü davranışları) arasındaki ilişkiyi incelemeyi hedeflemektedir.

Yöntem

Örneklem 18 ve 70 (*Ort.* = 37.68, *SS* = 15.84) yaş arasında değişen 400 aktif sürücüden oluşmaktadır. Bu 400 katılımcının %54.5'ini erkekler (*N* = 2818), %45.5'ini ise kadınlar (*N* = 182) oluşturmaktadır. Katılımcılardan %2.3'ü ilkokul mezunu, %1.8'i ortaokul mezunu, %13.8'i lise mezunu, %35.8'i üniversite mezunu, %17.3'ü lisansüstü mezunu ve %29.3'ü mevcut öğrencilerden oluşmaktadır. Katılımcılar ortalama 15.88 (*SS* = 14.04) yıldır sürücü belgesi sahibi olup bir önceki yıldan beri ortalama 12274 (*SS* = 37918) kilometre araç kullanmışlardır.

Değişkenlerin ölçülmesi için bir anket bataryası oluşturulmuştur. Batarya, bilgilendirilmiş onam formu ile başlamaktadır ve çalışmaya katılmayı kabul eden katılımcılar ölçüm araçlarına yönlendirilmiştir. Bu araçlar demografik bilgi formu, Nedensel Boyutlar Ölçeği-II, Uluslararası Pozitif ve Negatif Duygu Ölçeği Kısa Formu ve Genişletilmiş Sürücü Hareketlilik Anketi-Kaçınma'dır.

Demografik Bilgi Formu, katılımcılarla ilgili arka plan bilgilerini edinmeyi hedefleyen soruları içermektedir. Yaş, cinsiyet, eğitim seviyesi, gelir seviyesi, sürücü belgesi sahibi olma süresi, kilometre cinsinden yıllık sürüş miktarı, kilometre cinsinden hayat boyu sürüş miktarı ve kaza geçmişi, bu kısımda alınan bazı temel bilgilerdir.

Nedensel Boyutlar Ölçeği (CDS) ilk olarak Russell (1982) tarafından geliştirilmiş, daha sonra McAuley, Duncan ve Russell (1992) tarafından revize edilmiştir. CDS, bireylerin olayların nedenlerini nasıl algıladıklarını değerlendirmek üzere tasarlanmıştır. Ölçek bir nitel bir de nicel kısımdan oluşmaktadır. Nitel kısımda katılımcı belirli bir olay tanımlar (bu çalışmada tanımlanan olaylar sürüşteki en iyi ve en kötü olunan yönlerdir) ve bu olayın en belirgin nedenini belirtir. Nicel kısımda ise katılımcı belirtmiş olduğu nedeni birtakım boyutlar üzerinde değerlendirir. McAuley ve arkadaşları (1992) tarafından revize edilen sürüm, 12 madde ile ölçülen 4 boyuttan oluşmaktadır (Nedensellik odağı-3 madde, İstikrar-3 madde, İçsel kontrol-3 madde, Dışsal kontrol-3 madde). Nedensellik odağı, bir olayın nedeninin bireyin kendisinden mi yoksa kendisi dışındaki etmenlerden mi kaynaklandığına ilişkindir. Sabitlik boyutu bir olayın nedeninin değişmez mi yoksa zamanla değişebilir mi olduğunu yansıtır. İç kontrol ve dış kontrol sırasıyla bir olayın nedeninin kişinin kendisi ve

diğer bireyler tarafından ne derece kontrol edilebilir olduğunu ifade eder. Her bir madde 9 noktalı Likert tipi ölçek üzerinde değerlendirilmektedir ve yüksek skorlar artan iç nedensellik odağını, artan istikrarı, artan içsel kontrol edebilirliği ve artan dışsal kontrol edebilirliği ifade etmektedir. Ölçeğin revize edilmiş hali Türkçeye Serdar (2005) tarafından çevrilmiştir. Ölçeğin nitel kısmı bu çalışma için yeniden tasarlanmıştır. Özellikle, nitel kısımda katılımcılardan sürüş deneyimlerine ilişkin 2 konuyu belirtmeleri istenmiştir: performanslarının en iyi olduğunu düşündükleri yönleri ve performanslarının en kötü olduğunu düşündükleri yönleri. En iyi ve en kötü performans sergiledikleri yönler tanımladıktan sonra, bu yönlerde en iyi ve en kötü olmalarının en önemli nedenini belirtmeleri istenmiştir. Sonrasında bu 2 nedenin nedensel boyutlar üzerinde değerlendirilmesi için CDS-II'nin nicel kısmı sunulmuştur.

Pozitif ve Negatif Duygu Ölçeği (PANAS) ilk olarak Watson, Clark ve Tellegen (1988) tarafından bireylerin duygusal deneyimlerini ölçmeyi hedefleyen 20 maddelik bir ölçek olarak ortaya koyulmuştur. Uluslararası güvenirliği ortaya koyulmuş kısa formu ise daha sonra Thompson (2007) tarafından öne sürülmüştür. Bu kısa form 5 noktalı Likert tipi ölçek üzerinde değerlendirilen 10 sorudan oluşmaktadır (1=Asla, 5=Daima). Orijinal PANAS'ta olduğu üzere, I-PANAS-SF de Pozitif Duygudurum (5 madde) ve Negatif Duygudurum (5 madde) olmak üzere 2 alt boyuttan oluşmaktadır. Pozitif Duygudurum aktif ve uyanık olma gibi duyguları temsil etmektedir. Negatif Duygudurum ise öznel stres ve memnuniyetsizlikle karakterizedir. PANAS'ın Türkçe versiyonu Gençöz (2000) tarafından ortaya koyulmuştur. I-PANAS-SF'nin 10 maddesinin çevirisi bu tezde kullanılmak üzere Gençöz'ün (2000) çalışmasından alınmıştır. Bu çalışmada I-PANAS-SF katılımcılara ilk olarak demografik bilgi formunun içinde temel duygudurum düzeyini ölçmek amacıyla sunulmuştur. Sonrasında ikinci ve üçüncü kez CDS-II'nin nitel kısımları içinde sunulmuştur. Spesifik olmak gerekirse, katılımcılardan I-PANAS-SF'yi en iyi (ikinci kez doldurdukları kısım) ve en kötü (üçüncü kez doldurdukları kısım) sürüş performansı sergiledikleri yönleri belirttikten sonra doldurmaları istenmiştir.

Genişletilmiş Sürücü Hareketlilik Anketi-Kaçınma (E-DMQ-A), Wong ve arkadaşları (2015) tarafından, sağlığın bozulması nedeniyle güvensiz olarak algılanan sürüş durumlarından kaçınmayı içeren öz-düzenleme stratejilerini ölçmek üzere ortaya koyulmuştur. E-DMQ-A'nın ilk sürümü 5 noktalı Likert tipi ölçek (1=Asla, 5=Daima) üzerinde değerlendirilen 21 maddeden oluşsa da, Wong ve arkadaşları (2015) tarafından yürütülen analizler sonucunda 7 madde düşürülmüş, 14 maddelik ve 2 alt boyutlu bir ölçek olarak kullanılmıştır. Wong ve arkadaşları (2015) bu 2 boyutu Dış Sürüş Çevresi ve İç Sürüş Çevresi olarak adlandırmıştır.

Dış Sürüş Çevresine ilişkin 10 madde, çevresel koşullar veya aracın dışında kalan etmenler tarafından etkilenen sürüş durumlarını yansıtmaktadır. İç Sürüş Çevresine ilişkin kalan 4 madde, aracın içerisindeki etmenler tarafından etkilenen sürüş durumlarını yansıtmaktadır. E-DMQ-A'nın önceki çalışmalarda Türkçe sürümüne yazarlarca rastlanmamıştır. Bu nedenle, ölçeğin tam hali (21 maddelik hali) yazar tarafında Türkçeye çevrilmiş ve sonrasında Trafik ve Ulaşım Psikolojisi alanında çalışmalar yürüten ikinci bir araştırmacı tarafından tekrar İngilizceye çevrilmiştir. Orijinal ve İngilizceye çevrilmiş sürümler arasındaki farklar asgari olduğundan, ölçeğin Türkçe çevirisi çalışma kapsamında kullanılmıştır.

Bu çalışma için etik izin, Orta Doğu Teknik Üniversitesi İnsan Araştırmaları Etik Kurulu tarafından alınmıştır. Onay alındıktan sonra, hazırlanan anket bataryası olası katılımcılara bir çevrimiçi veri toplama platformu olan Qualtrics aracılığı ile oluşturulmuş bir bağlantı adresi ile dağıtılmıştır. Bağlantı adresi sosyal medya platformlarında da paylaşılmıştır. Ek olarak, adres Orta Doğu Teknik Üniversitesi öğrencilerinin ekstra ders puanı karşılığında anket doldurduğu bir platform olan SONA üzerinden de paylaşılmıştır. Bu nedenle veri toplama sürecinde kartopu ve elverişlilik örnekleme yöntemleri kullanılmış ve süreç 2022 yılının Ekim ayında başlayıp 2023 yılının Şubat ayında sona ermiştir.

Sonuçlar

Veri analizine başlamadan önce veri seti düzenlenmiş ve temizlenmiştir. Yaş, eğitim seviyesi yıllık maruz kalma, hayat boyu maruz kalma gibi değişkenler için girilen tüm kelime dizisi türü veriler sayısal formata dönüştürülmüştür. Tamsayı yerine sayı aralığı şeklinde girilen veriler için alt ve üst limitin aritmetik ortalaması alınmıştır. Daha önce trafik bağlamında ve Türkiye örnekleminde kullanılmadıkları için sırasıyla CDS-II ve E-DMQ-A'nın faktör yapıları incelenmiştir. Bunun için temel eksenler faktörlemesi yöntemi ve promax döndürme tekniği kullanılmıştır. Faktör analizi bulguları temelinde her bir çalışma değişkeni için alt boyut skorlarının ortalamaları hesaplanmıştır. Hem CDS-II'nin hem de I-PANAS-SF'nin en iyi ve en kötü değerlendirmeleri arasındaki grup farklılıkları, bağımlı gruplar t-testi kullanılarak incelenmiştir. Bu test, en iyi ve en kötü performansa ilişkin değerlendirmelerin ayrı ayrı mı yoksa birleştirilmiş şekilde mi ele alınmasının daha uygun olacağını tespit etmek amacıyla yapılmıştır. CDS-II ve E-DMQ-A için en uygun faktör yapıları tespit edilip CDS-II ve I-PANAS-SF için en uygun kullanım şekli belirlendikten sonra çalışma değişkenleri arasındaki ilişkilerin araştırılması için Pearson korelasyon katsayıları hesaplanmıştır. Bu noktaya kadar tüm analizler SPSS programının 28. sürümü kullanılarak yapılmıştır. Kalan

analizler, yani aracı yol analizleri, AMOS programının 23. sürümü kullanılarak yapılmıştır. Bu modellerde bağımsız değişkenler nedensel boyutlar, aracı değişkenler duygudurum alt boyutları ve bağımlı değişkenler sürüşte kaçınma alt boyutlarıdır. Yaş, cinsiyet ve temel duygu seviyesinin etkileri aracı yol modellerinde kontrol edilmiştir.

En iyi performansa ilişkin CDS-II maddeleri için Kaiser-Meyer-Olkin katsayısı .86 ve Bartlett testi anlamlıdır (χ^2 (66) = 1604.46, p < .001). Ön sonuçlar temelinde 1 ve üzeri eigenvalue değerine sahip 3 faktör bulunmaktadır. Yamaç grafiği de 3 faktörlü çözümü önermiştir. Eigenvalue ve yamaç grafiği sonuçlarının tutarlı olması nedeniyle 3 faktörlü yapı uygun bulunmuştur. Elde edilen 3 faktörden ilki verideki varyansın %37.69'unu, ikincisi %12.96'sını ve üçüncüsü %10.39'unu açıklamaktadır. İlk faktör, orijinal CDS-II'deki nedensellik odağı ve içsel kontrolü oluşturan 6 maddenin birleşiminden oluşmaktadır. İkinci ve üçüncü faktörlerin her biri 3 maddeden oluşmakta, sırasıyla orijinal ölçekteki dışsal kontrol ve istikrar maddeleri ile örtüşmektedir.

En kötü performansa ilişkin CDS-II maddeleri için Kaiser-Meyer-Olkin katsayısı .85 ve Bartlett testi anlamlıdır (χ^2 (66) = 2329.76, p < .001). Ön sonuçlar temelinde 1 ve üzeri eigenvalue değerine sahip 3 faktör bulunmaktadır. Yamaç grafiği de 3 faktörlü çözümü önermiştir. Eigenvalue ve yamaç grafiği sonuçlarının tutarlı olması nedeniyle 3 faktörlü yapı uygun bulunmuştur. Elde edilen 3 faktörden ilki verideki varyansın %38.12'sini, ikincisi %19.01'ini ve üçüncüsü %12.44'ünü açıklamaktadır. İlk faktör, orijinal CDS-II'deki nedensellik odağı ve içsel kontrolü oluşturan 6 maddenin birleşiminden oluşmaktadır. İkinci ve üçüncü faktörlerin her biri 3 maddeden oluşmakta, sırasıyla orijinal ölçekteki dışsal kontrol ve istikrar maddeleri ile örtüşmektedir.

Genişletilmiş Sürücü Hareketlilik Anketi-Kaçınma ölçeğinin 21 maddesi için promax döndürmesi kullanılarak tek bir temel eksenler faktörlemesi yapılmıştır. Kaiser-Meyer-Olkin katsayısı .90 ve Bartlett testi anlamlıdır (χ^2 (210) = 5366.42, p < .001). Ön sonuçlara göre 1 ve üzeri eigenvalue değerine sahip 5 faktör bulunmuştur. Yamaç grafiği 3 faktörlü bir sonuç önermiştir. Eigenvalue ve yamaç grafiği sonuçları arasındaki tutarsızlık göz önünde bulundurularak paralel analiz yapılmıştır. Paralel analiz 6 faktörlü bir sonuç önermiştir. Beş faktörlü yapının en yorumlanabilir çözüm olduğu düşünülerek bu yapı kabul edilmiştir. Bu 5 faktörden ilki verideki varyansın %40.76'sını, ikincisi %12.34'ünü, üçüncüsü %7.20'sini, dördüncüsü %5.38'ini ve beşincisi %4.81'ini açıklamaktadır. İlk faktör, araç kullanırken yürütülen sıradan görevleri temsil eden 7 maddeden oluştuğu için Deneyim ve Teknik Beceriler olarak adlandırılmıştır. İkinci faktör, zorlayıcı hava koşullarını temsil eden 4

maddeden oluştuğu için Olumsuz Hava Koşulları olarak adlandırılmıştır. Üçüncü faktör, yüksek trafik yoğunluğunu temsil eden 2 maddeden oluştuğu için Trafik Sıkışıklığı olarak adlandırılmıştır. Dördüncü faktör, otoyol koşullarını temsil eden 3 maddeden oluştuğu için Şehirlerarası Sürüş olarak adlandırılmıştır. Son olarak, beşinci faktör, ekstra çaba gerektiren 3 maddeden oluştuğu için Aşina Olunmayan ve Sorumluluk Gerektiren Durumlar olarak adlandırılmıştır.

En iyi ve en kötü performansa ilişkin nedensel değerlendirmeler arasındaki olası farkları incelemek için bağımlı gruplar t-testi yapılmıştır. T-testlerde katılımcıların en iyi ve en kötü performans değerlendirmeleri, CDS-II'nin her 3 alt boyutu (yani İçsel Kontrol, Dışsal Kontrol ve İstikrar) için karşılaştırılmıştır. Sonuçlara göre, en iyi ve en kötü performansa dair değerlendirmeler arasındaki farklar İçsel Kontrol ($t(399) = 4.78$, $p < .001$) ve İstikrar ($t(399) = 15.51$, $p < .001$) için anlamlıdır; ancak Dışsal Kontrol için anlamlı düzeyde fark bulunmamaktadır ($p = .16$). Özellikle, en iyi performansa dair nedensel değerlendirmeler (İçsel Kontrol için $M = 6.71$, $SD = 1.67$; İstikrar için $M = 6.14$, $SD = 1.78$), en kötü performansa dair değerlendirmelere (İçsel Kontrol için $M = 6.12$, $SD = 1.96$; İstikrar için $M = 4.28$, $SD = 1.93$) kıyasla her iki alt boyutta da daha yüksek puanlanmıştır.

En iyi ve en kötü performansa ilişkin duygudurum değerlendirmeleri arasındaki olası farkları incelemek için bağımlı gruplar t-testi yapılmıştır. T-testlerde katılımcıların en iyi ve en kötü performans değerlendirmeleri, I-PANAS-SF'nin her 2 alt boyutu (yani Pozitif Duygudurum ve Negatif Duygudurum) için karşılaştırılmıştır. Sonuçlara göre, en iyi ve en kötü performansa dair değerlendirmeler arasındaki farklar hem Pozitif Duygudurum ($t(399) = 19.55$, $p < .001$) hem de Negatif Duygudurum ($t(399) = -15.21$, $p < .001$) için anlamlıdır. Özellikle, en iyi performansa dair Pozitif Duygudurum değerlendirmesi ($M = 3.91$, $SD = .59$), en kötü performansa dair değerlendirmeye ($M = 3.03$, $SD = .88$) kıyasla daha yüksek puanlanmıştır. Öte yandan, Negatif Duygudurum en kötü performans bağlamında ($M = 2.24$, $SD = .87$) en iyi performans bağlamına ($M = 1.61$, $SD = .61$) kıyasla daha yüksek bulunmuştur.

Korelasyon analizi sonuçları göstermektedir ki, en iyi performansa dair atıflar ile kaçınma boyutları arasındaki ilişkilerin çoğu anlamlıyken, en kötü performansa dair atıflar ile kaçınma boyutları arasındakilerin çoğu istatistiksel olarak anlamsızdır. Ayrıca, duygudurum değerlendirmeleri ve davranışsal çıktılar arasındaki ilişkide ters bir desen görülmektedir. Özellikle, en iyi performansa ilişkin Pozitif Duygudurum (sırasıyla $r = -.17$, $p < .01$; $r = -.11$, $p < .05$; $r = -.10$, $p < .05$; $r = -.14$, $p < .01$; $r = -.19$, $p < .01$) E-DMQ-A alt boyutlarıyla en iyi

performansa dair Negatif Duyguduruma kıyasla (Deneyim ve Teknik Beceriler için $r = .27$, $p < .01$; Şehirlerarası Sürüş için $r = .19$, $p < .01$) daha yüksek sayıda anlamlı ilişki göstermiştir. Öte yandan, en kötü performansa ilişkin Negatif Duygudurum (sırasıyla $r = .17$, $p < .01$; $r = .13$, $p < .05$; $r = .17$, $p < .05$; $r = .15$, $p < .01$; $r = .24$, $p < .01$) E-DMQ-A alt boyutlarıyla en kötü performansa ilişkin Pozitif Duygudurumа (Trafik Sıkışıklığı için $r = -.14$, $p < .01$) kıyasla daha yüksek sayıda anlamlı ilişki göstermiştir.

Bağımlı değişkenin Deneyim ve Teknik Beceriler olduğu ilk modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (5) = 4.05, p = .54). Ki-kare değerinin serbestlik derecesine oranı .81 olup iyi bir uyum düzeyine işaret etmektedir. CFI 1.00, NFI .99 ve RMSEA .00 [95%GA (.00, .06)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %35'ini, Negatif Duygudurumdaki varyansın %28'ini ve Deneyim ve Teknik Becerilerdeki varyansın %15'ini açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.16 ve .55 arasında değişmektedir. İçsel Kontrolün Negatif Duygudurum üzerindeki (β = .05, $p < .01$), Pozitif Duygudurumın Deneyim ve Teknik Beceriler üzerindeki (β = -.16, $p < .05$), Negatif Duygudurumın Deneyim ve Teknik Beceriler üzerindeki (β = .19, $p < .01$) ve Dışsal Kontrolün Deneyim ve Teknik Beceriler üzerindeki (β = .05, $p < .01$) direkt etkisi anlamlı bulunmuştur. İndirekt etkiler istatistiksel olarak anlamsızdır.

Bağımlı değişkenin Olumsuz Hava Koşulları olduğu ikinci modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (8) = 6.22, p = .62). Ki-kare değerinin serbestlik derecesine oranı .78 olup iyi bir uyum düzeyine işaret etmektedir. CFI 1.00, NFI .99 ve RMSEA .00 [95%GA (.00, .05)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %35'ini, Negatif Duygudurumdaki varyansın %28'ini ve Olumsuz Hava Koşullarındaki varyansın %9'unu açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.07 ve .55 arasında değişmektedir. İçsel Kontrolün Pozitif Duygudurum üzerindeki (β = .05, $p < .01$) ve Dışsal Kontrolün Olumsuz Hava Koşulları üzerindeki (β = .07, $p < .01$) direkt etkisi anlamlı bulunmuştur. İndirekt etkiler istatistiksel olarak anlamsızdır.

Bağımlı değişkenin Trafik Sıkışıklığı olduğu üçüncü modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (9) = 6.32, p = .71). Ki-kare değerinin serbestlik derecesine oranı .70 olup iyi bir uyum düzeyine işaret etmektedir. CFI 1.00, NFI .99 ve RMSEA .00 [95%GA (.00, .04)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %35'ini, Negatif Duygudurumdaki varyansın %28'ini ve Trafik

Sıkışıklığındaki varyansın %5'ini açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.22 ve .55 arasında değişmektedir. Dışsal Kontrolün Pozitif Duygudurum üzerindeki (β = .05, p < .01) direkt etkisi anlamlı bulunmuştur. İndirekt etkiler istatistiksel olarak anlamsızdır.

Bağımlı değişkenin Şehirlerarası Sürüş olduğu dördüncü modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (6) = 5.10, p = .53). Ki-kare değerinin serbestlik derecesine oranı .85 olup iyi bir uyum düzeyine işaret etmektedir. CFI 1.00, NFI .99 ve RMSEA .00 [95%GA (.00, .06)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %35'ini, Negatif Duygudurumdaki varyansın %28'ini ve Şehirlerarası Sürüşteki varyansın %19'unu açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.15 ve .55 arasında değişmektedir. İçsel Kontrolün Pozitif Duygudurum üzerindeki (β = .05, p < .01), İçsel Kontrolün Şehirlerarası Sürüş üzerindeki (β = -.08, p < .01) ve Dışsal Kontrolün Şehirlerarası Sürüş üzerindeki (β = .05, p < .03) direkt etkisi anlamlı bulunmuştur. İndirekt etkiler istatistiksel olarak anlamsızdır.

Bağımlı değişkenin Aşina Olunmayan ve Sorumluluk Gerektiren Durumlar olduğu beşinci modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (7) = 5.68, p = .58). Ki-kare değerinin serbestlik derecesine oranı .81 olup iyi bir uyum düzeyine işaret etmektedir. CFI 1.00, NFI .99 ve RMSEA .00 [95%GA (.00, .05)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %35'ini, Negatif Duygudurumdaki varyansın %28'ini ve Aşina Olunmayan ve Sorumluluk Gerektiren Durumlardaki varyansın %20'sini açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.17 ve .55 arasında değişmektedir. İçsel Kontrolün Pozitif Duygudurum üzerindeki (β = .05, p < .01) ve Dışsal Kontrolün Aşina Olunmayan ve Sorumluluk Gerektiren Durumlar üzerindeki (β = .07, p < .01) direkt etkisi anlamlı bulunmuştur. İndirekt etkiler istatistiksel olarak anlamsızdır.

Bağımlı değişkenin Deneyim ve Teknik Beceriler olduğu altıncı modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (5) = 4.04, p = .54). Ki-kare değerinin serbestlik derecesine oranı .81 olup iyi bir uyum düzeyine işaret etmektedir. CFI 1.00, NFI .99 ve RMSEA .00 [95%GA (.00, .06)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %21'ini, Negatif Duygudurumdaki varyansın %27'sini ve Deneyim ve Teknik Becerilerdeki varyansın %10'unu açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.04 ve .57 arasında değişmektedir. İçsel Kontrolün Pozitif Duygudurum üzerindeki (β = .09, p < .01),

Dışsal Kontrolün Pozitif Duygudurum üzerindeki (β = .06, p < .01), İstikrarın Pozitif Duygudurum üzerindeki (β = .04, p = .04), Dışsal Kontrolün Negatif Duygudurum üzerindeki (β = .05, p = .01), İstikrarın Deneyim ve Teknik Beceriler üzerindeki (β = .05, p = .03) ve İçsel Kontrolün Deneyim ve Teknik Beceriler üzerindeki (β = -.04, p = .03) direkt etkisi anlamlı bulunmuştur. İndirekt etkiler istatistiksel olarak anlamsızdır.

Bağımlı değişkenin Olumsuz Hava Koşulları olduğu yedinci modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (7) = 6.82, p = .45). Ki-kare değerinin serbestlik derecesine oranı .98 olup iyi bir uyum düzeyine işaret etmektedir. CFI 1.00, NFI .99 ve RMSEA .00 [95%GA (.00, .06)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %21'ini, Negatif Duygudurumdaki varyansın %27'sini ve Olumsuz Hava Koşullarındaki varyansın %8'ini açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.08 ve .57 arasında değişmektedir. İçsel Kontrolün Pozitif Duygudurum üzerindeki (β = .09, p < .01), Dışsal Kontrolün Pozitif Duygudurum üzerindeki (β = .06, p < .01), İstikrarın Pozitif Duygudurum üzerindeki (β = .04, p = .04) ve Dışsal Kontrolün Negatif Duygudurum üzerindeki (β = .06, p = .01) direkt etkisi anlamlı bulunmuştur. İndirekt etkiler istatistiksel olarak anlamsızdır.
Bağımlı değişkenin Trafik Sıkışıklığı olduğu sekizinci modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (7) = 7.88, p = .34). Ki-kare değerinin serbestlik derecesine oranı 1.13 olup iyi bir uyum düzeyine işaret etmektedir. CFI 1.00, NFI .98 ve RMSEA .02 [95%GA (.00, .07)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %21'ini, Negatif Duygudurumdaki varyansın %27'sini ve Trafik Sıkışıklığındaki varyansın %7'sini açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.23 ve .57 arasında değişmektedir. İçsel Kontrolün Pozitif Duygudurum üzerindeki (β = .09, p < .01), Dışsal Kontrolün Pozitif Duygudurum üzerindeki (β = .06, p < .01), İstikrarın Pozitif Duygudurum üzerindeki (β = .04, p = .04), Dışsal Kontrolün Negatif Duygudurum üzerindeki (β = .06, p = .01) ve Negatif Duygudurumın Trafik Sıkışıklığı üzerindeki (β = .15, p = .03) direkt etkisi anlamlı bulunmuştur. Dışsal Kontrol ile Trafik Sıkışıklığı arasındaki ilişkide Negatif Duygudurumın indirekt etkisi istatistiksel olarak anlamlıdır (β = .01, p = .04).

Bağımlı değişkenin Şehirlerarası Sürüş olduğu dokuzuncu modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (7) = 10.37, p = .17). Ki-kare değerinin serbestlik derecesine oranı 1.48 olup iyi bir uyum düzeyine işaret etmektedir. CFI .99, NFI .98 ve RMSEA .04 [95%GA (.00, .08)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %21'ini, Negatif Duygudurumdaki varyansın %27'sini

ve Şehirlerarası Sürüşteki varyansın %15'ini açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.23 ve .57 arasında değişmektedir. İçsel Kontrolün Pozitif Duygudurum üzerindeki (β = .09, p < .01), Dışsal Kontrolün Pozitif Duygudurum üzerindeki (β = .06, p < .01), İstikrarın Pozitif Duygudurum üzerindeki (β = .04, p = .04) ve Dışsal Kontrolün Negatif Duygudurum üzerindeki (β = .06, p = .01) direkt etkisi anlamlı bulunmuştur. İndirekt etkiler istatistiksel olarak anlamsızdır.

Bağımlı değişkenin Aşina Olunmayan ve Sorumluluk Gerektiren Durumlar olduğu onuncu modelde ki-kare testi istatistiksel olarak anlamsızdır (χ^2 (7) = 7.24, p = .41). Ki-kare değerinin serbestlik derecesine oranı 1.03 olup iyi bir uyum düzeyine işaret etmektedir. CFI 1.00, NFI .99 ve RMSEA .01 [95%GA (.00, .06)] değerine sahiptir ve bu değerler de iyi bir model uyumunun göstergeleridir. Model Pozitif Duygudurumdaki varyansın %21'ini, Negatif Duygudurumdaki varyansın %27'sini ve Aşina Olunmayan ve Sorumluluk Gerektiren Durumlardaki varyansın %21'ini açıklamaktadır. Budanmış modelde bulunan direkt yol katsayıları -.17 ve .57 arasında değişmektedir. İçsel Kontrolün Pozitif Duygudurum üzerindeki (β = .09, p < .01), Dışsal Kontrolün Pozitif Duygudurum üzerindeki (β = .06, p < .01), İstikrarın Pozitif Duygudurum üzerindeki (β = .04, p = .04), Dışsal Kontrolün Negatif Duygudurum üzerindeki (β = .06, p = .01) ve Negatif Duygudurumın Aşina Olunmayan ve Sorumluluk Gerektiren Durumlar üzerindeki (β = .13, p = .02) direkt etkisi anlamlı bulunmuştur. Dışsal Kontrol ile Aşina Olunmayan ve Sorumluluk Gerektiren Durumlar arasındaki ilişkide Negatif Duygudurumın indirekt etkisi istatistiksel olarak anlamlıdır (β = .01, p = .02).

Tartışma

Bu çalışma, alanyazında ilk kez öz-düzenleyici sürücü davranışlarını, nedensel atıflar ve duygudurum ile ilişkisine odaklanarak tüm yaş gruplarını kapsayacak şekilde ele almıştır. Önceki çalışmalar öz düzenleyici sürücü davranışlarının farklı öncüllerini araştırmışlardır. Ancak bu çalışma öz-düzenleyici davranışların öncüllerini nedensel atıflar çerçevesinde inceleyen ilk çalışmadır. Sürücülüğü bir başarı bağlamı kabul ederek, sürüş performansına ilişkin nedensel atıflar ve öz düzenleyici sürücü davranışları ilişkisi araştırılmıştır. Ayrıca duygudurumın aracı rolü incelenmiştir.

Çalışma kapsamında CDS-II ve E-DMQ-A'nın faktör yapıları incelenmiştir. Sonuçlar, CDS-II için 3 faktörlü yapının en uygun, E-DMQ-A için ise 5 faktörlü yapının en yorumlanabilir olduğunu ortaya koymuştur.

Orijinalde CDS-II'nin Nedensellik Odağı, İçsel Kontrol, Dışsal Kontrol ve İstikrar olmak üzere 4 faktörlü bir yapısı bulunmaktadır. Fakat bu çalışmada bulunan 3 faktör İçsel Kontrol, Dışsal Kontrol ve İstikrardır. Diğer bir deyişle, Nedensellik Odağı ve İçsel Kontrol maddeleri bir faktörde bir araya gelmiştir. Ayrıca bu yapının, hem en iyi hem de en kötü performansa dair değerlendirmelerde tutarlı olduğu bulunmuştur ki bu da iyi ve kötü performansın nedenlerinin aynı 3 boyut üzerinde yorumlandığına işaret etmektedir. Nedensellik Odağı ve İçsel Kontrol maddeleri aynı boyuta aynı yönde yüklendiğinden katılımcıların kendilerinden kaynaklanan nedenleri trafik bağlamında kendileri tarafından kontrol edilebilir gördüğü öne sürülebilir. Orijinal teoride ise bu durum daha farklıdır: yetenek ve efor kişinin kendinden kaynaklanan nedenler olsa da yetenek kontrol edilemezken efor edilebilir (Weiner, 2000). Bir diğer perspektiften bakıldığında, Nedensellik Odağı ve İçsel Kontrol maddeleri aynı boyuta aynı yönde yüklendiğinden katılımcıların dışarıdan kaynaklanan nedenleri trafik bağlamında kendileri tarafından kontrol edilemez gördüğü öne sürülebilir. Bazı dışsal nedenler için (örneğin diğerlerinin yardım etmesi), içsel kontrol edilebilirlik diğer dışsal nedenlere (örneğin şans) göre daha yüksektir. Bireyler, (kontrol edemese de) alacakları yardımın düzeyini yardım isteyerek ya da istemeyerek değiştirebilirler. Ancak bulgulara göre katılımcılar trafik bağlamında bu şekilde düşünmemişlerdir.

Wong ve arkadaşları (2015) E-DMQ-A'nın Dış Sürüş Çevresi ve İç Sürüş Çevresi olmak üzere 2 faktörden oluştuğunu belirtmişlerdir. Bu çalışmada 5 faktör ortaya çıkmıştır: Deneyim ve Teknik Beceriler, Olumsuz Hava Koşulları, Trafik Sıkışıklığı, Şehirlerarası Sürüş ve Aşina Olunmayan ve Sorumluluk Gerektiren Durumlar. İç Sürüş Çevresine ait maddelerin çoğu Deneyim ve Teknik Becerilere yüklenirken Dış Sürüş Çevresine ait maddelerin çoğu bu çalışmada bulunan diğer 4 boyuta yüklenmiştir. Olası bir açıklama, sürücülerin dış koşulları daha rafine şekilde yorumlamış olabileceğidir. Bu durum, mevcut çalışma örnekleminin geniş bir yaş yelpazesine sahip olmasından kaynaklanmış olabilir. Wong ve arkadaşları (2015) ölçüm aracının faktör yapısını yalnızca 65 yaş ve üzeri sürücülerde incelemiştir. Fakat mevcut çalışmaya her yaştan sürücü dahil edilmiştir. Bu fark, maddelerin yorumlanmasında daha yüksek çeşitlilik ve farklılaşmaya yol açmış olabilir.

Çalışmanın sonuçları, bireylerin en iyi ve en kötü performansın nedenlerini farklı şekilde açıkladığını göstermiştir. Özellikle, iyi performansın nedenlerini kötü performansınkilere kıyasla daha kontrol edilebilir ve istikrarlı olarak algılamışlardır. Bu, trafik ortamından kendini yükseltme yanlılığını gösteren önceki çalışmalar ile tutarlıdır (Fındık, Uslu, Öz, Lajunen, & Özkan, 2016). Şaşırtıcı olmayan bir biçimde, en iyi performans gösterilen sürüş görevinde en kötü performans sergilenene kıyasla daha yüksek Pozitif Duygudurum

raporlanmıştır. Öte yandan, en kötü performans sergilenen sürüş görevinden sonra en iyi performans sergilenene kıyasla daha yüksek Negatif Duygudurum raporlanmıştır. Bu farklılıklar, başarı ve başarısızlık bağlamlarında nedensel atıfların ve duygusal değerlendirmelerin farklı özellikler gösterdiğine işaret etmektedir. Bu nedenle davranışsal çıktılarla olan ilişkilerinde ayrı şekilde incelenmeleri gerekmektedir.

Bir bütün olarak incelendiğinde, bu çalışmanın sonuçları atıf modelinin sürüşten kaçınma davranışlarını en kötü performans bağlamında incelemenin en iyi performans bağlamında incelemeye göre daha kullanışlı olduğunu göstermektedir. Bu, Weiner (2010) tarafından yapılan önceki çalışmalar ile tutarlıdır. Bulgular, nedensel atıfların kaçınma üzerindeki etkisinin Negatif Duygudurum üzerinden taşındığını göstermiştir. Özellikle, artan Dışsal Kontrol artan Negatif Duyguduruma yol açmakta, bu da daha sonra artan kaçınma davranışlarına neden olmaktadır. Bu mekanizma, tüm öz-düzenleyici sürücü davranışları türlerinde çalışmamıştır. Ancak istatistiksel olarak anlamlı olan her iki modelde de benzer şekilde çalıştığından bulgularda bir miktar tutarlılık olduğundan söz edilebilir. Öz-düzenleme çok çeşitli bireysel ve durumsal etmenden etkilenen karmaşık bir kavramdır (Molnar et al., 2015). Bu nedenle atıf süreçleri dışındaki diğer etmenlerin istatistiksel olarak anlamsız bulunan 3 davranış tipini, yani Deneyim ve Teknik Beceriler, Olumsuz Hava Koşulları ve Şehirlerarası Sürüşü açıklıyor olması mümkündür.

Model en iyi performans bağlamında bir bütün olarak başarılı olmasa da, Dışsal Kontrol ve Öz-düzenleyici sürücü davranışları arasında tutarlı bir direkt ilişki olduğu gözlenmiştir. Bu durum, en iyi performans bağlamında duyguların devreden çıkarıldığına işaret etmektedir. Bu gibi durumlarda duygusal değerlendirme yörüngesi (yani duygudurum) yerine bilişsel değerlendirme yörüngesinin (yani beklenti) izleniyor olması mümkündür. Bu görüşü destekleyecek şekilde, Försterling (2001, p.113) başarıya yapılan dışsal atıflarda duygunun rolünün görece düşük olduğunu belirtmektedir. Ancak, başarısızlık daha geniş bir duygu yelpazesi ile ilişkilidir ve bu duygular dışsal atıflar yapıldığında daha kuvvetlidir (Försterling, 2001, p. 115). Duygusal değerlendirmeleri ölçmede kullanılan ölçüm aracının (I-PANAS-SF) atıflar tarafından tetiklenen duygu yelpazesini yeterli düzeyde kapsamıyor olması da muhtemeldir.

Hem en iyi performans (yani başarı) bağlamındaki direkt hem de en kötü performans (yani başarısızlık) bağlamındaki indirekt ilişkiler için öne çıkan atıf boyutu Dışsal Kontroldür. Diğer bir deyişle, hem iyi performans (direkt etki) hem de kötü performans (indirekt etki) dışsal olarak kontrol edilebilir algılandığında kaçınma artmaktadır. Bu bulgu, dış koşullara

dair inançların davranış üzerinde iç koşullara dair inançlara kıyasla daha belirgin bir etki yaptığına işaret etmektedir. Yukarıda da tartışıldığı üzere, bu durum içsel etmenlerin kontrol edilebilir varsayılması, dışsal etmenlerin ise duruma göre kontrol edilebilir görülmesinden kaynaklanıyor olabilir.

APPENDIX G. THESIS PERMISSION FORM/TEZ İZİN FORMU

ENSTİTÜ / INSTITUTE

Fen Bilimleri Enstitüsü / Graduate School of Natural and Applied Sciences ☐

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TEZİN ADI / TITLE OF THE THESIS (**İngilizce** / English): THE BEST, THE WORST, AND THE AVOIDANT: THE RELATIONSHIP BETWEEN CAUSAL AND AFFECTIVE EVALUATIONS ABOUT DRIVING PERFORMANCE AND SELF-REGULATORY DRIVER BEHAVIORS

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