THE RELATIONSHIP BETWEEN TRAUMATIC LIFE EXPERIENCES, LOCUS OF CONTROL AND DRIVER BEHAVIORS

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ABSTRACT

THE RELATIONSHIP BETWEEN TRAUMATIC LIFE EXPERIENCES, LOCUS OF CONTROL AND DRIVER BEHAVIORS

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The aim of the current study was to investigate effects of traumatic life experience on driver behaviors by measuring their world assumption and posttraumatic growth and to evaluate indirect effect of locus of control between world assumptions and driver behaviors. The total of 533 Turkish drivers participated to study and they were assigned to study groups in terms of reported traumatic experience. In traffic trauma group, there was 120 drivers who reported experiencing only traffic accident. 231 drivers who experience traumatic experience except for traffic accident were assigned to general trauma group. In control group, there was 120 drivers who reported any traumatic experience. To determine assignment to groups Traumatic Events Checklist was used. Also, participants were expected to answer the World Assumption Scale, the Posttraumatic Growth Inventory, Driver Behavior Questionnaires, the Multidimensional Traffic Locus of Control Scale, and Rotter's Locus of Control Scale.

The results showed that the groups were differed on the Randomness and total WAS score. Subscales of the WAS and TLOC has predictive power on errors, violations and positive driver behaviors. In addition, it was found that traffic locus of control mediated the relationship between world assumptions and driver behaviors. Limitations and contributions of the study were discussed in light of the literature.

Keywords: traumatic experiences, driver behaviors, world assumptions, locus of control

ÖZ

TRAVMATİK HAYAT TECRÜBELERİ, KONTROL ODAĞI VE SÜRÜCÜ DAVRANIŞLARI ARASINDAKİ İLİŞKİ

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Bu çalışmanın amacı sürücülerin dünyaya ilişkin varsayımlarını ve travma sonrası büyüme seviyesini ölçerek travmatik hayat tecrübelerinin sürücü davranışları üzerindeki etkisini incelemek ve kontrol odağının bu olaylar ve sürücü davranışları arasındaki dolaylı etkisini değerlendirmektir. Çalışmaya 533 Türk sürücü katılmış ve belirttikleri travmatik hayat tecrübelerine göre çalışma gruplarına atanmışlardır. Trafik kazası travmaları grubunda, sadece trafik kazası yaşadıklarını belirten 120 sürücü vardır. 231 sürücü trafik kazası dışında herhangi bir olay yaşadığını belirtmiş ve genel travma grubuna atanmıştır. Kontrol grubu ise travmatik bir olay yaşamadığını belirten 182 sürücüden oluşmaktadır. Grup atamaları Travmatik Olaylar Kontrol Listesi'ne göre yapılmıştır. Ayrıca, sürücülerden Dünyaya İlişkin Varsayımlar Ölçeği, Travma Sonrası Büyüme Envanteri, Sürücü Davranış Anketi, Çok Boyutlu Trafik Kontrol Odağı Ölçeği ve Rotter'ın Kontrol Odağı Ölçeğini doldurmaları istenmiştir. Sonuçlar

gruplar arası farkın sadece Rastlantısallık ve toplam Dünyaya İlişkin Varsamlar Ölçeği'nde ortaya çıktığını göstermiştir. Dünyaya İlişkin Varsamlar Ölçeği'nin ve Çok Boyutlu Trafik Kontrol Odağı Ölçeği'nin alt boyutları hataları, ihlalleri ve olumlu sürücü davranışlarını yordama gücüne sahiptir. Ek olarak, Çok Boyutlu Trafik Kontrol Odağı dünyaya ilişkin varsayımlar ve sürücü davranışları arasında aracı değişken rolündedir. Çalışmayı kısıtlayan olası faktörler ve çalışmanın katkıları ilgili literatür ışığında tartışılmıştır.

Anahtar Kelimeler: travmatik olaylar, sürücü davranışları, dünyaya ilişkin varsayımlar, kontrol odağı

To Ali, Mualla, İsmail & Baran…

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INTRODUCTION

Road traffic accidents cause fatal numbers of death and injuries all over the world as well as Turkey. Also, apart from loss of lives, traffic accidents entail economic, social and psychological damages. For example, crashes harm public property and environment or the survivors of road traffic accidents sustain permanent disabilities which require rehabilitation, and regular treatment (Blanchard & Hickling, 1998). Moreover, social or psychological cost of victims and their relatives add new issues to traffic accidents. Especially, survivors from fatal accidents have difficulties such as posttraumatic stress disorders, depression, or other psychological disorders for years (Koren, Arnon, & Klein, 2001). The results show the issue that road traffic accidents are universal problem which should be evaluated in the scope of scientific light.

1.1 Underlying Mechanisms of Road Traffic Accidents

Many researches and different methods about traffic accidents tried to investigate underlying mechanisms of road traffic accidents. Because of the interactive nature of traffic, related factors with the causation of traffic accidents are classified as human factor, environmental factor, vehicle and interactions of them (Evans, 2004) but it was proposed that human factor take responsibility of 90% of road traffic accidents (Lewin, 1982). Human factor in traffic implies two main driver acts; driver behavior and driver skills, both of them are related with accident involvement in the literature. However, it was also founded that driver behaviors are more likely to affect accident risk than driver skills after the learning period of driving (Lajunen, 1997; Evans, 1996). Thus, after driver behaviors are found as fundamental cause of accidents, they have become important concept in traffic studies because it is appreciated that specific driver

behaviors that can be cause of accidents should be evaluated to prevent future accidents (Lajunen, 1997). For understanding and preventing the different accident factors, detailed classification of these different individual's behaviors is crucial.

1.1.1 Driver Behaviors

Driver behaviors implies what driver usually does and include driving habits and choices (Evans, 2004). In 1990, Reason (1990) classified driver behaviors by taking into account three factors; intention, the sequence of behaviors, and whether or not behaviors succeed the goal. This classification and differentiation of driver behavior had ground for the Manchester Driver Behavior Questionnaire (DBQ) which measured self-reported aberrant driver behaviors. According to Reason and colleques (1990), errors are defined as "the failure of planned actions to accomplish intended goal", and violations are stated as "deliberate deviations from those practices believed necessary to sustain the safety of potentially hazardous system" (Reason et al., 1990). Additionally, errors are related with cognitive process and performance limits of the drivers, violations are more related with social environment and motivational component and they reflect habits and style of the drivers (Aberg & Rimmo, 1998). Lawton and colleques (1997) divided violations into two scale as aggressive and ordinary violations in terms of reasons to commit violations. When aggressive violations include an interpersonally aggressive element, ordinary violations imply deviation from safe driving deliberately but not in aggressive content. The other study revealed "slips and lapses" as third factor of DBQ. Slips and lapses which are involuntary deviations in the action include attention and memory failures. When errors and violations have danger potential to oneself and others, slips and lapses have only consequences for the person who produces them (Reason et al., 1990).

Moreover, Özkan and Lajunen (2005) stated that there are some behaviors in driving which cannot be classified aberrant behaviors. These behaviors can be taking care other road users or helping and being polite them in traffic environments. Thus, they added new category as positive driver behaviors which advance traffic safety and smooth driving (Özkan & Lajunen, 2005).

The studies showed that violations significantly predict accidents (Parker et al., 1995), parking and speeding tickets (Mesken et al., 2002); the lapses predicted traffic accidents among older drivers (Parker et al., 2000), and positive driver behaviors were negatively associated with violations and aggressive driving (Özkan & Lajunen, 2005).

1.2 Influencing Factors of Driver Behaviors

Several factors influencing driver behavior have investigated in the literature. Contextual factors like attitudes, beliefs, general motives and needs have found to be related individual's driving behaviors (Elander, West & French, 1993). According to findings of previous studes, locus of control is important influencing factor of driver behaviors among other factors so it was evaluated in detail in the present thesis study.

1.2.1 Locus of Control

Locus of control (LOC) which is habitual cognitive processing style reflects an enduring belief about the consequences of actions. The construct was developed by Rotter expresses individual differences to explain contingency between action and outcomes. People generally perceive situations to be under their own control (internal locus of control) or under outside forces (external locus of control) (1966). External locus of control is related to attributing responsibility for their actions to other individuals, luck, chance or situational factors, while internal locus of control is more likely associated with attribution of outcomes to stable, internal factors (Rotter, 1966).

Not surprisingly, it was expected that internals and externals differentiate in their behaviors but there are contradictory results in the literature. For example, Montag and Comrey found that externals more likely endanger traffic environment because of their passive tendencies in terms of personal precautions but internals take more responsibility for their actions and alter negative actions (1987). Moreover, empirical studies showed that people who high on internal locus of control tend to regular seat belt use (Hoyt, 1973). They are also more likely be alert when driving in the traffic (Lajunen & Summala, 1995). On the contrary, the other study indicated that overconfidence and overestimation own abilities made internals more dangerous in the

traffic (Arthur & Doverspike, 1992). The possible explanation of inconsistent results originated that transformation of Rotter's concept into specific situations may be unsuccessful (Özkan & Lajunen, 2005).

In response, two separate locus of control scales in driving was developed by Montag and Comrey (1987); Driving Internality (DI) and Driving Externality (DE). According to Montag and Comrey's results, collisions were negatively related with DI, positively associated with DE. Moreover, Arthur, Barett and Alexander (1991) founded in the meta-analysis that internal locus of control was negatively related with accident involvement. However, the other studies which conducted with DI and DE scales, failed to find any relationship between locus of control and accident involvement (Iversen & Rundmo, 2002; Arthur & Doverspike, 1992). Thus it was showed that transforming locus of control scale into traffic specific concept revealed methodological issues. For example, single bipolar distinction of locus of control may be unsuccessful to correspond the complexities of driving. After these theoretical assumptions, Özkan and Lajunen (2005) developed with 348 Turkish drivers *Multidimensional Traffic Locus of Control Scale (T-LOC)* which was designed to ask the source of control when driving. The scale includes four subscales which are the Self (attribution of causes of accidents to oneself), Vehicle and Environment (attribution of causes of accidents external factors), Other Drivers (attribution of causes of accidents to other drivers), and Fate (attribution of causes of accidents fate or bad luck). According to scale development study, internal locus of control orientation "self" was related with accidents, offences, violations and errors while "other drivers" was negatively associated with errors, "vehicle and environment" was positively related with offences and errors when measured by Multidimensional Traffic Locus of Control Scale. In the other study, the T-LOC revealed three factor solutions which were external, self, and vehicle and environment and it was founded that self scale was negatively correlated with driving and safety skills, fate scale was positively associated with offences and violations (Doğan, 2006). In addition, Warner, Özkan and Lajunen (2010) conducted a study with 223 Swedish drivers to examine factor structure of TLOC. According to findings of study, they founded that three of the factors (other drivers, vehicle/environment, and fate) correspond to the same

factors found by Özkan and Lajunen (2005), but original self factor was divided as own skills and own behaviors. Moreover, own behavior and vehicle/environment predicted speeding behavior on 90 km/h roads (Warner, Özlan & Lajunen, 2010).

Previous studies in the literature obtained different results about locus of control and behavior pattern. It was obvious that domain-specific measurements can get more accurate findings than general ones. Moreover, the researcher suggested different ideas about accuracy of locus of control concept. For example, Yagil (2001) claimed that external locus of control indirectly affects intentions of violations through positive attitudes toward violations. Thus, the finding supported the idea that the link between locus of control and driving behavior could be indirect rather than direct. Moreover, Özkan and Lajunen (2005) discussed the difference between their findings and Montag and Comrey's (1987) study's. They claimed that involvement highly traumatic experience can trigger the defense mechanisms of drivers so after the accident, they might begin to attribute reason of accidents to external factors. The idea was in the line with the Rotter's explanation which interaction of individuals with their current environment is a source of generalized learning rely on past experience and future expectation (Rotter, 1971). In relation to Rotter's explanation, the study which conducted with steelworkers who were forced into unemployment found evidence that life-altering events and life transitions affect a person's locus of control (Legerski, Cornwall, & O'Neil, 2006). In the light of these findings, it can be assumed that important life events can affect individual's perception about causes of situations so their attributions can influence their behavior. Thus, apart from driving-related factors psychological conditions of drivers were examined in the study.

1.2.2 Past Histories of Drivers

1.2.2.1 Highly Stressful and Traumatic Events

Although driver can be negatively or positively affected traffic-related stimuli, they can transfer their emotions, stress, or anxiety from daily life to traffic environment. Gulian, and friends (1989) stated that interpretation of driving situations can be affected by factors unrelated to driving because unresolved "nondriving" problems

carry forward into the traffic context and events are more likely to be interpreted as negative. In the literature, there are studies which examine the relationship between accident involvement and major life events or daily hassles. For example, financial difficulties (Norris et al., 2000), bereavement and divorce (Selzer & Vinokur, 1974) found to be associated with higher crash risk. Moreover, McMurray (1970) evaluated the driving records of 410 drivers over a 7 years and founded traffic violations and accident involvement were significantly higher for divorce proceeding group than greater driving population.

On the other hand, some researchers also claimed that highly stressful or traumatic events can modify people's behaviors positively. In the traffic context, Mayou and friends (1993) stated that near misses and accidents can affect driver behavior but the more serious the accidents the stronger the effects. They also conducted a study with 296 traffic accident victims, and they reported that many drivers felt they had become safer, drive more slowly, and carefully, pay attention to other drivers, road conditions, weather, distance and junctions. In the study, drivers explained their innocence about accident and said they became aware of the unpredictable behaviors of others. (Mayou, Simkin, & Threlfall, 1991). In this regard, the other study which conducted with fatal crash survivors showed that victims reported more cautious driving and greater sense of responsibility toward others (Foeckler et al., 1978). However, Rajalin and Summala (1997) conducted a study with 245 Finnish drivers who survived a fatal accident and found that car drivers increased by 16 % and heavy-vehicle drivers decreased by 27% of their total number of offences. In addition, 38 % of drivers reported that they changed their behavior for a short time because of sense of fear and 5 drivers stated change of their driver behavior permanently. However, in the study, Rajalin and Summala (1997) discussed that involvement in a fatal crash causes decreasing amount of driving rather than changing driving habits.

The studies revealed mixed result in respect of traumatic and highly stressful experiences and their behavioral effects. Thus, it can be assumed that experienced events might have indirect influence on behaviors rather than direct effect. Ho and colleques (2000) stated that drivers who accept responsibility of the traffic accidents

were associated with higher level of well-being and perceive future adverse events under their own control. Cognitive evaluations can play a crucial role between adverse events and how person is affected after this event.

1.3 Effects of Traumatic Events

The experience of traumatic event can have devastating consequences on the psychological and physical state of the victims. Several theorists investigate the psychological, cognitive and behavioral influences of these events in the trauma literature.

1.3.1 The World Assumption Theory

In the early 1990s, Janoff-Bulman revealed the world assumption theory to explain psychological experience of trauma survivors. According to theory, people live in socially organized groups so everyone is born with the tendency of positive core beliefs about the benevolence of people in the caring world (Jonaff-Bulman, 1989). These basic beliefs and assumptions which serve as a type of protection about the nature of the world. These beliefs and assumptions which are based on people's experience in the world reflect and guide people's interactions and allow them to function effectively. Moreover, the world assumptions form expectations about how people make plans, perceive other people and situations, anticipate future and interpret new information (Janoff-Bulman, 2006). Majority of people hold these basic assumptions on the individual and implicit level (Janoff-Bulman, 1985).

Janoff- Bulman and her colleagues have identified core beliefs which are pervasive, abstract, general and shape fundamental conceptual system. These three core beliefs can be summarized as "benevolence of the world", "meaningfulness of the world", and "worthiness of self" (Janoff-Bulman, 2006).

Benevolence of the World

The term of "world is benevolent" refers that people generally tend to view the world and people live in there as good and caring. The assumption includes two general assumptions: the benevolence of the impersonal world and benevolence of people.

People believe that they live in a safe world with generally good and kind people. Moreover, they belief in personal invulnerability which expressed as “it can’t happen to me”. However, people who experience trauma begin to view world and other people as “bad” and tend to respond accordingly. The view of invulnerability turns the “It can happen to me”. The benevolent world view of the trauma victim is replaced with a malevolent world (Janoff-Bulman, 1985).

Meaningfulness of the World

The second assumption which implies perceiving the world as meaningful, comprehensive and structural is comprised of three general assumptions. First, people believe that distribution of outcomes are depend on principle of “justice”. This principle helps people identify why certain events happen to certain people. The second, people believe that they have “control” over the circumstances of events by controlling their actions. This belief enhances meaningfulness by perceiving events as out of control and not random. However, in the case of trauma, victims feel themselves powerless in the world and they can’t explain occurrence of traumatic event. The third principle is “chance” which indicates the belief that events happen in random way (Janoff-Bulman, 1985). Janoff-Bulman proposed that people who experience any traumatic event may perceive the world as unfair, uncontrollable so they begin to respond to the world accordingly (1992).

Worthiness of the Self

The last assumption means that people perceive themselves as good, moral and decent people. Thus, they feel personal invulnerability because their good actions determine their outcomes. This assumption includes principle of justice, controllability and chance. “Justice” refers to self-evaluation of character, considering morality. “Control” includes evaluating situations and wisdom, considering competence and appropriateness. “Chance” means perception of self as lucky or unlucky. Any traumatic experience can be questioned people’s sense of control and self-worth and felt fear, powerless and loss of autonomy.

According to The World Assumption Theory, the core beliefs about world and self are the least likely to be challenged because people are generally unaware of these assumptions. Small modifications can be formed by interacting with other people and the world but general themes remain coherent. However, people are unprepared when their assumptions and beliefs are questioned by a contradictory experience which can "shatter" the inner world of individuals (Janoff-Bulman, 1992). Thus, reprocessing requires to integrate event-related information into the beliefs or assumptions which people have developed (Linley & Joseph, 2004). According to Janoff-Bulman's theory, losing basic assumptions after traumatic experiences is fundamental factor of development of post-traumatic stress. Traumatic events which produce traumatic response are defined as "directly experiences threats to survival and self-presentation and outside of ordinary" (Jonaff-Bulman, 1992). Thus, exposing to these traumatic experiences can alter a people's view of world, self and others so changing views can shape the individuals' behavioral repertory (Janoff-Bulman, 1989).

The studies in the literature confirmed Janoff-Bulman's The World Assumption Theory. For example, the study which conducted with occupant near the nuclear plant showed that people who occupant in the area reported more negative world assumptions, especially control and faith principles, than other people who moved away from the area (Prince-Embury & Rooney, 1995). The other study showed that traumatized group experienced people and environment as less benevolent and the world as less meaningful when comparing nontraumatized group (Magwaza, 1999). Likewise, trauma was found significantly associated with "meaningfulness of the world" among incarcerated offenders (Maschi & Gibson, 2012).

1.3.2 The Posttraumatic Growth (PTG)

Although the trauma literature has primarily focused on the negative consequences of traumatic events, research on positive changes of traumatic events has conducted. The term is the Posttraumatic Growth which describes the experienced positive psychological changes as a result of struggling with highly challenging events (Tedeschi & Calhoun, 1996). PTG is used to imply further step of individual than previous state of functioning so the term has been conceptualized as consequences of

traumatic experiences and coping strategy (Affleck & Tennen, 1996). According to Tedeschi and Calhoun (2004), sense of understanding, acceptance a growth is produced by cognitive effort to reconstruct core beliefs which guide individual's action and create a sense about purpose of life a, develop new assumption about the world and new meaning.

The posttraumatic growth can be experienced in the large range of life domain so Tedeschi and Calhoun (1996) conceptualized these domains into five general categories: *Greater appreciation of life* can be observed as changing sensation about priorities. *Changes in relationship with others* occurs by becoming more self-disclosing and emphatic for others. *Greater sense of personal strength* can be observed after the coping with traumatic events, and people perceive themselves stronger and confident. *Recognition of new possibilities* is identifying new and different option of life. *Spiritual changes* indicate commitment with spiritual and philosophic domains of life.

In the literature, several factors such as socio-demographic and personality characteristics associated with PTG were identified. Moreover, event-related factors were found to be related with growth. For instance, the perceived severity of the event was found to be related with posttraumatic growth. Several studies reported that higher perceived severity of the event was related with experienced more growth (Kesimci, Göral, & Gençöz, 2005; Tedeschi & Calhoun, 2004). In addition, timing of the traumatic event is an important factor in the development of posttraumatic growth. Weiss (2004) indicated that the passage of time after the event was negatively related with PTG.

1.4 Aim of the Current Study

As mentioned before, stressful life events such as divorce, financial problems, bereavement can be influential on involvement in traffic accidents by affecting drivers' stress, anxiety and daily routine. Moreover, it was also found that fatal traffic accidents can modify driver's behavior. However, there was no study about how traumatic life events effect traffic related behaviors. Thus, the main purpose of the current study is

to investigate the effects of traumatic life events on driver behavior. The study composed of three group which are drivers who experienced traffic accident, drivers who experience other traumatic events except from traffic accidents, and control group who report no traumatic experience. Therefore, it can be deduced what type of event or events can affect driver behavior.

In the literature, interpretation of stressful events found to be important factor rather than just experiencing the event. Thus, it is aimed to identify mediation effect of locus of control on the relationship between people's world assumption and driver behavior.

Moreover, the study aimed to examine whether posttraumatic growth is associated with more positive driver behavior and less aberrant driver behavior. The study also tries to show whether experience from personal life is transferred into traffic specific context.

CHAPTER II

METHOD

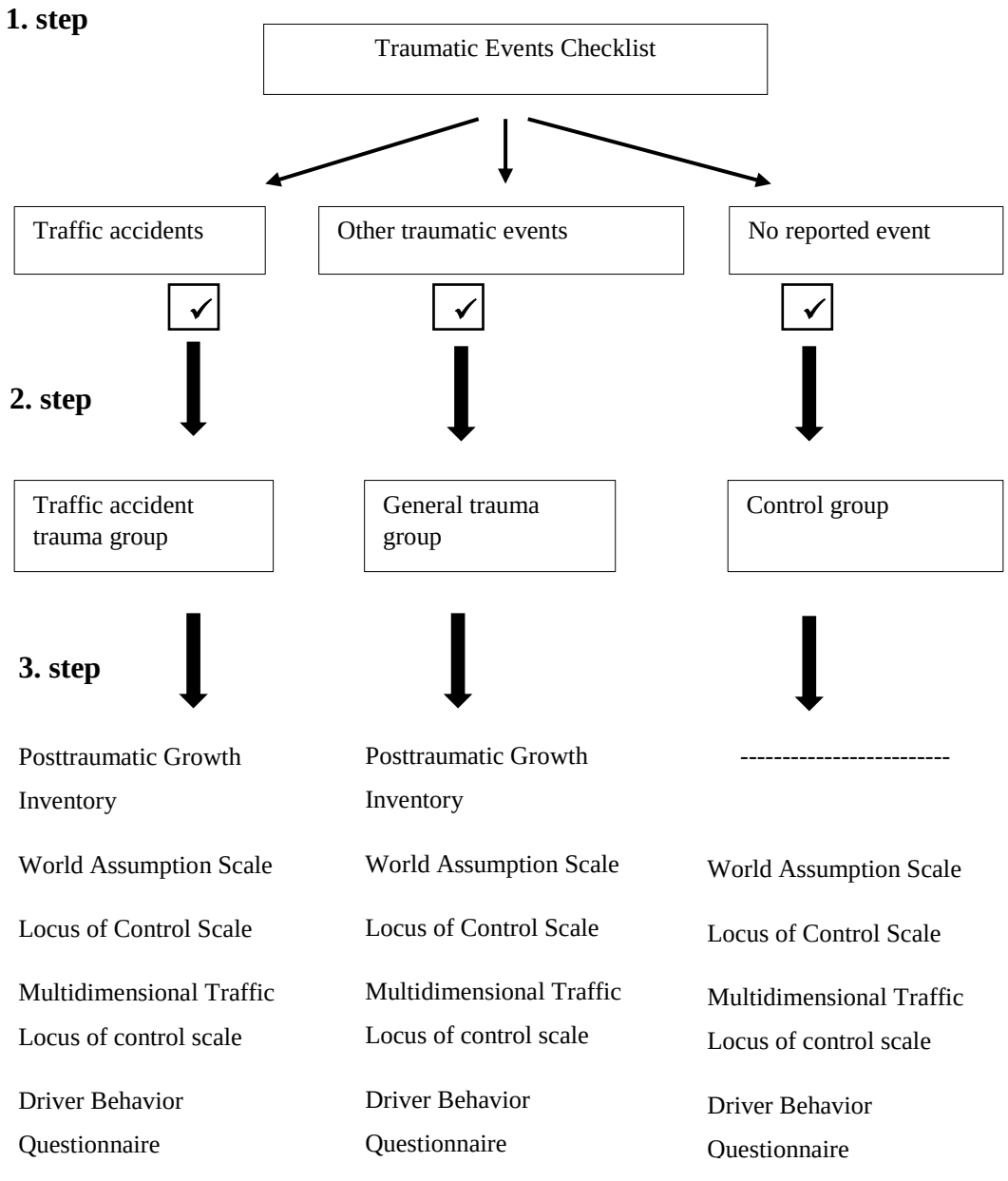

Figure 1: *The assignment of the groups*

2.1 Participants

The study was conducted with 533 Turkish people who have driving license in Turkey. Their ages ranged between 18 to 66 (*M* = 29.92, *SD* = 9.11) and with range of 1- 42 years driving experience (*M* = 8.88, *SD* = 7.47). The females represent 38.1% (*N* = 203) and males represents 63.7% (*N* = 330) of the sample. In terms of education level, 16 participants graduated from primary school (3%), 9 participants graduated from secondary school (1.7%), 118 people graduated from high school (22.1%), 288 of the participants had bachelor degree (54%), 87 participants had master degree (16.3%), 15 of the participants had doctorate degree (2.8%). The mean value of participants' last year mileage was 10846.65 km (*SD* = 27196.31 km). Moreover, the 92.5 percent preferred vehicle type was passenger cars among participants (*N* = 493). In the study, there were three groups as traffic accident trauma group, general trauma group and control group.

For traffic accident group (*N* =120), participants' age ranged from 18 to 56 (*M* =28.38, *SD* = 7.68). The group consisted of 36 females (30%) and 84 males (70%) Turkish drivers who had 7.98 mean value of driving experience (*SD* = 7.4). The mean value of participants' last year mileage was 12466.7 km (*SD* = 23029.18 km). For general trauma group (*N* = 231), the age range of participants was between 18 to 66 (*M* = 29.9, *SD* = 8.79). The females represent 101 (43.7%) and males represent 130 (56.3%) of the group. The mean value of driving experience of participants was 8.82 (*SD* = 7.2) and last year mileage was 10483.64 (*SD* = 35236.3).

For control group (*N* = 182), sample age range was between 19 to 64 (*M* = 30.93, *SD* = 10.23). The sample consisted of 66 females (36.3%), 116 males (63.7%) Turkish drivers whom the mean value of driving experience 9.54 (*SD* = 7.78). Participants had 9985.86 km last year mileage mean (*SD* = 15498.1 km). Frequencies, percentages, means and standard deviations of participants were presented in Table 1 and Table 2.

Table 1: *Frequencies and percentages of study groups and participants*

Demographic variables	**Frequencies/Percentages**							
	Traffic trauma g.		**G. trauma g.**		**Control g.**		**General**	
	N	**%**	***N***	**%**	***N***	**%**	***N***	**%**
Gender								
Male	84	70	130	56.3	116	63.7	330	61.9
Female	36	30	101	43.7	66	36.3	203	38.1
Total	120	100	231	100	182	100	533	100
Education								
Primary	4	3.3	3	1.3	9	4.9	16	3
Secondary	1	.8	5	2.2	3	1.6	9	1.7
High	30	30	54	23.4	34	18.7	118	22.1
Bachelor	70	58.3	127	55	91	50	288	54
Master	11	9.2	36	15.6	40	22	87	16.3
Doctorate	4	3.3	6	2.6	5	2.7	15	2.8
Total	120	100	231	100	182	100	533	100
City of resistance								
Metropolis	29	24.2	59	25.5	40	22	128	24
Big city	55	45.8	117	50.6	77	42.3	249	46.7
City	33	27.5	45	19.5	59	32.4	137	25.7
Town	1	.8	10	4.3	4	2.2	15	2.8
Village	2	1.7	-	-	2	1.1	4	.8
Total	120	100	231	100	182	100	533	100
Type of vehicle								
Motorcycle	2	1.7	5	2.2	6	3.3	13	2.4
Truck	1	.8	1	.4	1	.5	3	.6
Automobile	111	92.5	213	92.2	169	92.9	493	92.5
Taxi	1	.8	2	.9	2	1.1	5	.9
Dolmush	2	1.7	3	1.3	-	-	5	.9
Bus	3	2.5	3	1.3	3	1.6	9	1.7
Heavy vehicle	-	-	3	1.3	1	.5	4	.8
Other	-	-	1	.4	-	-	1	.2
Total	120	100	231	100	182	100	533	100

Table 2: *Means and standard deviations (SD) of study groups and participants*

Demographic variables	**Means/Standard Deviations**							
	Traffic trauma g.		**General trauma g.**		**Control g.**		**General**	
	M	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
Age	28.38	7.68	29.9	8.79	30.93	10.23	29.92	9.11
Driver license year	7.98	7.4	8.82	7.2	9.54	7.78	8.88	7.47
Last year mileage	12466.7	23029.18	10483.64	35236.3	9985.86	15498.1	10846.7	27196.3
Last 3-year:								
Active accidents	.58	.93	.6	1.04	.7	1.08	.64	1.03
Passive accidents	.54	1.07	.48	1.01	.34	.73	.45	.94
Parking ticket	.25	.57	.29	.77	.27	.77	.27	.73
Overtakig ticket	.09	.49	.02	.15	.01	.08	.03	.26
Speeding ticket	.5	1.05	.51	1.28	.4	.72	.47	1.07
Others	.29	.65	.31	.95	.16	.52	.26	.77

2.2 Procedure

After the getting ethic permission from METU Human Subjects Ethics Committee, the data of the present study was collected from drivers via snowball sampling. To collect data from internet users, Qualtrics Online Survey Software was used and hard copy surveys were distributed to drivers in Manisa to reach drivers who can not access Internet. The data collection process lasted from 15 December 2015 to 1 March 2016.

Participants were informed that answers would be used for scientific publications only and anonymity would be protected with inform consent. Participants who accept voluntary participation, the package of questionnaires were delivered. In the package, demographic measures, Traumatic Events Checklist, The World Assumptions Scale, Locus of Control Scale, Posttraumatic Growth Inventory, Driver Behavior Questionnaire, and Multidimensional Traffic Locus of Control Scale were delivered in terms of answers of participants.

As condition of the present study, after the filling demographic measures, participants who mark the "traffic accident" on Traumatic Events Checklist were assigned to traffic accident trauma group, participants who mark any event except from "traffic accident" were assigned the general trauma group. Drivers who were assigned the one of the trauma groups were wanted to fill The World Assumptions Scale, Locus of Control Scale, Posttraumatic Growth Inventory, Driver Behavior Questionnaire, and Multidimensional Traffic Locus of Control Scale. In the study, participants who report no traumatic event were assigned to control group and they were asked to answer the all scales except Posttraumatic Growth Inventory. The assignment of the groups was presented in Figure 1.

2.3 Instruments

2.3.1. Demographic measures

Participants were answered questions about their age, gender, highest level of completed education, and geographic location and most frequently used car types. They were also asked their last year mileage, number of offences and questions about whether they have involved in passive or active traffic accident in last three years.

2.3.2. Traumatic Events Checklist

The items of list were checked by participants to determine experienced traumatic life events. The number of items vary study to study in terms of aim of the research but traumatic events were determined in terms of prevalence and frequencies of events in Turkey.

The list contains 10 items and one open-ended question for expressing traumatic event which missing in the list. The events are; *traffic accidents, the other accidents except for traffic accidents, natural disaster, physical assault, sexual assault, military combat or presence in battlefield, imprisonment, exposing torture, life threatening illness and unexpected death of loved one* (Tüfekçi, 2011).

In addition to checklist, if the participants checked any item on the list, they were asked to answer event-related questions. For each item, severity of event, perceived level of past and current stress about the event were wanted to ranked on 7-point-Likert measurement. Moreover, additional questions about time passage over the experience

and whether psychological diagnosis and treatment were received after the experience were asked. These additional questions were arranged in the Qualtrics Online Survey Software; they were displayed in terms of their previous answers.

2.3.3. The World Assumption Scale (WAS)

The scale was developed by Janoff-Bulman (1989) to measure the basic assumptions that people have about the world, themselves, and their surrounding world. It is a 32-item checklist on a 6-point Likert scale and responses ranged from strongly disagree (1) to strongly agree (6), the higher scores indicate more positive assumptions about world. The scale consists of 8 subscales which are benevolence of world, benevolence of people, self-worth, self-control, randomness, justice, luck, controllability of the world.

The Turkish translation and adaptation study was conducted by Yılmaz (2006). In the study, it was founded that original version of scale revealed six factors structure with Turkish participants. The new version of scale consists of 25 item and six factors (benevolence, justice, luck, randomness, self-worth, control). The internal consistency of the scale was found to be .70, and the test-retest reliability coefficient was .58. (Yılmaz, 2006). Factor analysis results and internal reliability coefficients of the scale for study groups are shown in the Result section.

2.3.4. Locus of Control Scale (LOC)

Internal-External Locus of Control Scale contains 29 force-choice items and each items have a or b choices (Rotter, 1996). Six items are not computed in scoring process because they are buffer. Scoring range of the scale is between 0-23, the higher scores indicate the external locus of control.

The translation and adaptation of the scale was conducted by Dağ (1991). The psychometrics properties of the scale are sufficient; .71, test-retest reliability coefficient was calculated as .83.

2.3.5. Posttraumatic Growth Inventory (PTGI)

PTGI was developed by Tedeschi and Calhoun (1996) in order to measure positive changes after the traumatic experiences of the individuals. It has 21- items and five subscales which are new possibilities, relational growth, personal strength, spiritual change and appreciation of life. Responses are ranged from 0 (I did not experience this

change) to 6 (I experienced this change to a very great degree), the higher scores indicate the higher posttraumatic growth. Internal consistency of the scale was .90 and test-re-test reliability was .71.

Dirik and Karancı adapted the scale into Turkish culture (2008) and found internal consistency of scale was .93. The five-factor of the inventory are new possibilities (a=0.81), relational growth (a= 0.84), personal strength (a=0.79), spiritual change (a=0.63), and appreciation of life (a=0.83). For current study, factor analysis results and internal reliability coefficients of the scale for study groups are shown in the Result section.

2.3.6. Driver Behavior Questionnaire (DBQ)

Driver Behavior Questionnaire which was developed by Reason and colleagues was used to measure aberrant driver behaviors (1990). DBQ consists of 28 questions and 4 subscales which are errors (8 items), ordinary violations (8 items), slip and lapses (8 items) and aggressive violations (4 items).

DBQ was translated and adapted to Turkish by Lajunen and Özkan (2004). In the Turkish sample 9 items loaded on errors (α = 0.81), 10 items loaded on ordinary violations (α = 0.86), 5 items loaded on slips and lapses (α = 0.56) and 3 items loaded on aggressive violations (α = 0.71) (Lajunen & Özkan, 2004).

In addition to DBQ, Positive Driver Behavior Scale which consists 14 items, was developed to measure positive behaviors of drivers by Özkan and Lajunen (2005). Thus, original form and additional Positive Driver Behavior Scale was used in the current study. Questionnaire responses ranged from never (1) to almost always (6). Factor analysis results and internal reliability coefficients of the scale for study groups are shown in the Result section.

2.3.7. Multidimensional Traffic Locus of Control Scale (T-LOC)

The scale which was developed by Özkan and Lajunen (2005) translated into Turkish by two psychologists. In the scale, a list of possible causes of accidents were given a participants and wanted to rate from 1 (not at all possible) to 5 (highly possible). The sub dimensions of the scale are “Other Drivers” (causes of accidents attributed to other drivers), “Self” (causes of accidents attributed to oneself), “Vehicle and Environment” (causes of accidents attributed to external factors) and “Fate” (causes of accidents

attributed to fate or bad luck). The alpha reliability of factors was 0.79, 0.78, 0.69, and 0.44. Factor analysis results and internal reliability coefficients of the scale for study groups are shown in the Result section.

CHAPTER III

RESULTS

3.1 Factor Structures of Instruments

In this section, factor structures of used instruments which are Driver Behavior Questionnaire, World Assumption Scale, Multidimensional Traffic Locus of Control Scale, Rotter's Locus of Control Scale, and Posttraumatic Growth Inventory were tested to evaluate the structures on Turkish population. Factor analysis of scales were performed in traffic accident trauma group, general trauma group and control group separately.

3.1.1 The World Assumption Scale Factor Structure

To analyze group differences in the factor solutions, factor analysis of the scale was performed for each group.

For traffic accident trauma group, 120 cases were tested by Principle Axis Factoring (PFA) with Varimax rotation method. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .712 and Bartlett's Test of Sphericity was significant (df = 300, p < .001) which shows items are factorable. Examination of scree plot and eigenvalues provided five factor solution of the scale.47.48 % of variance was explained by five factor solution. There were no cross loading items lower than .30.

First factor (α = .84) consisted of 5 items which explained 19.28 % variance. The factor was labelled as "Benevolence". The second factor (α = .76) had 8 items and explained 10.55 % of variance. The name of the factor was "Controllability". 4 of the items belonged to third factor (α = .84) which was named as "Luck" and explained 7.36 % of variance. The fourth factor which was labelled as "Self-worth" consisted of 4 items (α = .72). The factor explained 6.13 % of variance. The last factor (α = .69) which name was "Randomness" consisted of 4 items and explained 4.17 % of variance. Factor loadings of WAS for traffic accident trauma group was shown in Table 3.

Table 3: *Traffic accidents trauma group - factor loadings of WAS based on principal axis factoring analysis with Varimax rotation*

	Components					Communalities
Items	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**	
WAS 23	.778					.651
WAS 19	.763					.697
WAS 20	.714					.536
WAS 6	.711					.547
WAS 2	.581					.425
WAS 8		.715				.585
WAS 14		.581				.452
WAS 22		.575				.387
WAS 16		.537		.354		.504
WAS 4		.527				.327
WAS 9		.467				.240
WAS 17		.332				.242
WAS 12		.313				.135
WAS 7			.886			.796
WAS 11			.871			.817
WAS 25			.603			.441
WAS 15			.586			.471
WAS 24				-.652		.444
WAS 21				.603		.481
WAS 13				-.602		.422
WAS 5				-.487		.369
WAS 10					.769	.614
WAS 3					.744	.578
WAS 1					.454	.249
WAS 18	-.427				.432	.459
Eigenvalues	4.819	2.638	1.84	1.533	1.043	
Percent of explained variance	19.277%	10.551%	7.358%	6.126%	4.172%	
Reliability	.84	.76	.84	.72	.69	

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1= Benevolence, Factor 2= Controllability, Factor 3= Luck, Factor 4= Self-worth, Factor 5=Randomnnes

General trauma group with 231 samples was tested by Principle Axis Factoring and Varimax rotation method. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .781 and Bartlett's Test of Sphericity was significant (df = 300, p < .001). In the analysis, extraction eigenvalues provided six factor which explained 47.48 % of variance but eigenvalue of one factor was lower than 1. Thus, PFA with Varimax rotation was run by forcing the factor number as five. After second analysis, one item "*I usually behave in ways that are likely to maximize good results for me."* did not load on any factor so item 12 was excluded from scoring. The five solution explained the 50.22 % of variance.

In the factor analysis for general trauma group, first factor (α = .87) consisted of five items which were generally about benevolence of world and people. Thus the factor was named as "Benevolence" and explained 19.79 % of variance. The second factor (α = .86) had 4 items and it was named as "Luck". The factor explained the 9.34 % of variance. The third factor (α = .77) which named as "Controllability" consisted of 7 items and explained 7.28 % of variance. 4 items formed fourth factor (α = .74) and explained 5.51 % variance. The factor name was "Randomness". The last factor (α = .67) consisted of 4 items and named as "Self-worth". The 4.51 % of variance was explained by fifth factor. Factor loadings of WAS for general trauma group was shown in Table 4.

Table 4: *General trauma group - factor loadings of WAS based on principal axis factoring analysis with Varimax rotation*

	Components					**Communalities**
Items	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**	
WAS 2	.834					.728
WAS 6	.794					.664
WAS 23	.690					.626
WAS 20	.640					.500
WAS 19	.614					.529
WAS 7		.843				.732
WAS 11		.791				.688
WAS 15		.761				.663

Table 4 *(continued)*

Items	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**	
WAS 25		.594				.457
WAS 16			.643			.499
WAS 14			.617			.428
WAS 22			.614			.415
WAS 8			.552			.356
WAS 4			.516			.291
WAS 17			.490			.330
WAS 9			.446			.257
WAS 12						.186
WAS 10				.753		.610
WAS 3				.698		.530
WAS 1				.576		.355
WAS 18				.523		.343
WAS 21					.652	.484
WAS 24					-.587	.363
WAS 13					-.480	.333
WAS 5					-.470	.242
Eigenvalues	4.947	2.335	1.821	1.376	1.128	
Percent of explained variance	19.789%	9.340%	7.284%	5.506%	4.51%	
Reliability	.87	.86	.77	.74	.67	

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1= Benevolence, Factor 2= Luck, Factor 3= Controllability, Factor 4=Randomnnes, Factor 5= Self-worth

182 cases in *control group* was performed by Principle Axis Factoring with Varimax rotation method. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .762 and Bartlett's Test of Sphericity was significant (df = 300, p < .001). In the analysis, six factors which explained 51.81 % variance were extracted but five of them had eigenvalues more than 1. Moreover, scree plot provided five factor so the analysis was performed again by forcing the factor number as five. For the final analysis, five factor solution which explained 48.74 % variance was used. There were no cross loading items lower than .30.

In the five factor solution of the scale for control group, first factor (α = .78) consisted of 8 items and explained 19.27 % of the variance. The factor was named as "Controllability". The second factor (α = .86) had 4 items and labelled as "Benevolence". 10.49 % of variance explained by this factor. Also, 4 items formed third factor (α = .87) which was "Luck". Third factor explained 7.6 %variance. Fourth factor (α = .71) had 4 items which was "Self-worth". 6.11 % of variance was explained by this factor. Last factor (α = .70) which named as "Randomness" consisted of 4 items and explained 5.23% variance. Factor loadings of WAS for control group was shown in Table 5.

Table 5: *Control group - factor loadings of WAS based on principal axis factoring analysis with Varimax rotation*

	Components				**Communalities**
Items	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**
WAS 16	.781				.634
WAS 14	.741				.587
WAS 17	.677				.540
WAS 22	.610				.426
WAS 8	.464				.302
WAS 4	.369				.212
WAS 9	.340				.219
WAS 12	.326				.194
WAS 6		.809			.670
WAS 19		.740			.631
WAS 2		.738			.557
WAS 23		.648			.604
WAS 20	.318	.557			.422
WAS 7			.857		.784
WAS 11			.830		.705
WAS 15			.736		.582
WAS 25			.706		.539
WAS 24				.779	.613
WAS 13				.613	.408
WAS 5				.579	.391

Table 5 *(continued)*

Items	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**	
WAS 21				-.477		.374
WAS 3					.833	.708
WAS 10					.762	.619
WAS 1					.504	.266
WAS 18					.355	.196
Eigenvalues	4.817	2.623	1.91	1.527	1.307	
Percent of explained variance	19.266%	10.493%	7.64%	6.11%	5.227%	
Reliability	.78	.86	.87	.71	.70	

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1= Controllability, Factor 2= Benevolence, Factor 3= Luck, Factor 4= Self-worth, Factor 5= Randomnnes

3.1.2 Posttraumatic Growth Inventory Factor Structure

The factor structure of Posttraumatic Growth Inventory was analyzed by Principle Axis Factoring Analysis (PFA) with Varimax rotation. However, since component correlations were higher than .50, Direct Oblimin was chosen as rotation method. The factor analysis of the instrument was performed for traffic accident trauma group and general trauma group which report any traumatic event in the checklist.

For *traffic accident trauma group*, The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .906 and Bartlett's Test of Sphericity was significant (df = 210, p < .001) which indicated that the items were factorable. Factor number was observed as three by using eigenvalues but the last factor's eigenvalue was lower than 1. Also, examination of scree plot showed that two factor solution was more applicable for this scale. Thus, Principle Axis Factoring Analysis with Direct Oblimin rotation method was performed again by forcing factor number as two. For the final analysis, two factor solution which explained 57.15 % variance was used. There were no cross loading items lower than .30.

First factor (α = .94) which explained 51.80 % variance consisted of 12 items. The items of the factor were indicated possible personal strength change after negative

events so the factor was named as “Personal strength”. The second factor (α = .91) consisted of 9 items. The factor explained 5.35 % variance and was related with possible other-related changes after negative events so the factor was labelled as “Relational growth”. The factor loadings of PTGI for traffic accident trauma group was presented in Table 6.

Table 6: *Traffic accident trauma group - factor loadings of PTGI based on principal axis factoring analysis with Direct Oblimin rotation*

	Components		**Communality**
Items	**Factor 1**	**Factor 2**	
PTGI 4	**.824**		.679
PTGI 10	**.789**		.594
PTGI 3	**.725**		.649
PTGI 2	**.725**		.425
PTGI 19	**.666**		.650
PTGI 11	**.645**	.302	.757
PTGI 7	**.637**		.648
PTGI 1	**.630**		.308
PTGI 9	**.572**		.569
PTGI 12	**.571**		.405
PTGI 5	**.519**		.540
PTGI 13	**.484**	.413	.661
PTGI 20		**.844**	.729
PTGI 21		**.734**	.435
PTGI 15		**.731**	.646
PTGI 6		**.662**	.421
PTGI 17		**.585**	.558
PTGI 8		**.559**	.457
PTGI 14	.386	**.491**	.633
PTGI 18	.384	**.482**	.618
PTGI 16	.401	**.465**	.617

Table 6 *(continued)*

Items	**Factor 1**	**Factor 2**
Eigenvalues	10.878	1.123
Percent of explained variance	51.799	5.347
Reliability	.94	.91

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1= Personal strength, Factor 2= Relational growth

For *general trauma group*, The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .908 and Bartlett's Test of Sphericity was significant (df = 210, p < .001), which shows factorable items. By using extraction eigenvalues, factor number was found as four but two of them only had eigenvalues which higher than 1. Also, examination of scree plot suggested two factor solution. Thus, Principle Axis Factoring Analysis with Direct Oblimin rotation method was performed again by forcing factor number as two. According to final version of the factor analysis, 45.18 % of variance was explained and there were no cross loading items lower than .30. But item 15 (*Having compassion for others*) was excluded from the scale because it was loaded both factors with loading vales of .382 and .386 respectively.

First factor (α = .91) consisted of 14 items and explained 39.47 % variance. The factor name was "Personal strength". The second factor (α = .82) which explained 5.71 % variance had 6 items and labeled as "Relational growth". The factor loadings of PTGI for general trauma group was presented in Table 7.

Table 7: *General trauma group - factor loadings of PTGI based on principal axis factoring analysis with Direct Oblimin rotation*

	Components		**Communality**
Items	**Factor 1**	**Factor 2**	
PTGI 10	**.812**		.565
PTGI 11	**.740**		.676
PTGI 7	**.728**		.516
PTGI 19	**.692**		.481
PTGI 13	**.673**		.634

Table 7 *(continued)*

Items	**Factor 1**	**Factor 2**	
PTGI 17	**.576**		.466
PTGI 1	**.572**		.248
PTGI 12	**.566**		.284
PTGI 16	**.554**		.466
PTGI 4	**.544**		.503
PTGI 2	**.535**		.377
PTGI 5	**.518**		.379
PTGI 18	**.489**		.381
PTGI 3	**.392**		.339
PTGI 21		**.736**	.477
PTGI 20		**.685**	.493
PTGI 8		**.651**	.517
PTGI 6		**.512**	.298
PTGI 9	.314	**.486**	.493
PTGI 14	.345	**.422**	.448
PTGI 15	.382	.386	.447
Eigenvalues	8.289	1.198	
Percent of explained variance	39.743	5.707	
Reliability	.91	.82	

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1= Peersonal strength, Factor 2= Relational growth

3.1.3 Driver Behavior Questionnaire Factor Structure

Factor analysis was conducted for Driver Behavior Questionnaire and for each group.

For *traffic accident trauma group* with 120 cases, the items of scale were factorable because Kaiser-Meyer-Olkin of Sampling Adequacy was .808 and Bartlett's Test of Sphericity was significant (df = 666, p < .001). Then, Principle Axis Factoring Analysis with Varimax rotation was performed. Extraction eigenvalues suggested 5 factor solution, but scree plot and theoretical framework of DBQ showed that three factor can be used for appropriate factor structure. Thus, the analysis was repeated by

forcing factor number as three and the final version explained 41.21 % variance. Two items were no load any factor which were item 3 (*Intending to drive to destination A, you "wake up" to find yourself on the road to destination B, perhaps because the latter is your more usual destination)* and item 9 *(Fail to your rear-view mirror before pulling out, changing lanes etc.)*. Moreover, two items were excluded from the analysis because they loaded both factors which were item 4 *(Drive when you suspect you might be over the legal blood alcohol limit)* and item 29 *(Drive so close to the car in front that it would be difficult to stop in an emergency).*

The first factor (α = .90) consisted of 16 items and explained 23.55 % variance. The factor was named as "Errors". The second factor (α = .89) which was labelled as "Positive driver behaviors" had 9 items and explained 12.15 % variance. The last factor (α = .85) which explained 4.52 % variance consisted of 8 items and named as "Violations". The factor loadings of DBQ for traffic accident trauma group was presented in Table 8.

Table 8: *Traffic accident trauma group- factor loadings of DBQ based on principal axis factoring analysis with Varimax rotation*

	Components			**Communality**
Items	**Factor 1**	**Factor 2**	**Factor 3**	
DBQ 18	**.716**			.587
DBQ 16	**.675**			.473
DBQ 7	**.660**			.503
DBQ 6	**.633**			.440
DBQ 1	**.624**			.412
DBQ 13	**.616**			.390
DBQ 20	**.596**			.414
DBQ 19	**.595**			.400
DBQ 36	**.584**			.367
DBQ 28	**.565**			.416
DBQ 15	**.551**			.391
DBQ 5	**.535**		.403	.450
DBQ 23	**.492**		.315	.342

Table 8 *(continued)*

Items	**Factor 1**	**Factor 2**	**Factor 3**	
DBQ 22	**.437**		.325	.301
DBQ 10	**.410**			.177
DBQ 35	**.376**			.181
DBQ 3*				.137
DBQ 9*				.053
DBQ 12		**.793**		.640
DBQ 33		**.775**		.643
DBQ 30		**.736**		.586
DBQ 2		**.709**		.510
DBQ 24		**.688**		.509
DBQ 17		**.684**		.474
DBQ 11		**.622**		.425
DBQ 26		**.585**		.376
DBQ 34		**.456**		.209
DBQ 32			**.686**	.503
DBQ 37			**.668**	.469
DBQ 25			**.647**	.464
DBQ 21	.363		**.646**	.549
DBQ 27			**.620**	.472
DBQ 31	.450		**.552**	.517
DBQ 14			**.508**	.323
DBQ 8			**.474**	.318
DBQ 4*	.417		.466	.397
DBQ 29*	.456		.457	.431
Eigenvalues	8.713	.4.864	1.672	
Percent of explained variance	23.547%	13.146%	4.52%	
Reliability	.90	.89	.85	

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1= Errors, Factor 2= Positive driver behaviors, Factor 3= Violations

For the *general trauma group* factor analysis was conducted with 231 cases. Kaiser-Meyer-Olkin of Sampling Adequacy was .902 and Bartlett's Test of Sphericity was significant (df = 666, p < .001) which indicated that items were factorable. Then, Principle Axis Factoring Analysis (PFA) with Varimax rotation was conducted. Extraction eigenvalues and scree plot suggested three factor solution for this scale and explained 41.92 % variance. The item 9 *(Fail to your rear-view mirror before pulling out, changing lanes etc.)* loaded lower than .30 so it was excluded from the analysis. Moreover, item 37 *(Disregard the speed limit on a motorway)* was loaded on two factors, with .384 on the first factor and .367 on the third factor, so it was excluded from further analyses.

The first factor (α = .92) had 20 items and explained 26.78 % variance. The factor was named as "Errors". Second factor (α = .88) was "Positive driver behaviors" consisted of 9 items and explained 12.11 % variance. The last factor (α = .79) which explained 3.03 % variance consisted of 6 items. The name of factor was "Violations". The factor loadings of DBQ for general trauma group was presented in Table 9.

Table 9: *General trauma group- factor loadings of DBQ based on principal axis factoring analysis with Varimax rotation*

	Components			**Communality**
Items	**Factor 1**	**Factor 2**	**Factor 3**	
DBQ 28	**.756**			.583
DBQ 18	**.756**			.624
DBQ 20	**.735**			.583
DBQ 7	**.728**			.578
DBQ 19	**.711**			.533
DBQ 15	**.670**			.487
DBQ 16	**.650**			.484
DBQ 5	**.642**			.486
DBQ 6	**.604**			.398
DBQ 13	**.600**			.401
DBQ 36	**.587**			.346
DBQ 31	**.583**			.430

Table 9 *(continued)*

Items	**Factor 1**	**Factor 2**	**Factor 3**	
DBQ 21	**.578**		.337	.473
DBQ 10	**.503**		.384	.406
DBQ 22	**.495**		.395	.402
DBQ 1	**.481**			.260
DBQ 23	**.477**			.272
DBQ 35	**.475**			.262
DBQ 4	**.432**		.329	.304
DBQ 37*	.384		.367	.285
DBQ 3	**.326**			.140
DBQ 9*				.066
DBQ 33		**.748**		.596
DBQ 12		**.740**		.550
DBQ 30		**.738**		.598
DBQ 24		**.710**		.511
DBQ 2		**.670**		.476
DBQ 17		**.627**		.400
DBQ 11		**.618**		.407
DBQ 26		**.580**		.340
DBQ 34		**.569**		.327
DBQ 14			**.633**	.480
DBQ 8			**.559**	.361
DBQ 29	.467		**.522**	.497
DBQ 27	.423		**.510**	.441
DBQ 32	.315		**.509**	.381
DBQ 25			**.461**	.339
Eigenvalues	9.909	4.479	1.122	
Percent of explained variance	26.78%	12.106%	3.033%	
Reliability	.92	.88	.79	

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1= Errors, Factor 2= Positive driver behaviors, Factor 3= Violations

Factor analysis was also conducted for *control group* with 182 cases. Firstly, Kaiser-Meyer-Olkin of Sampling Adequacy was .829 and Bartlett's Test of Sphericity was significant (df = 666, p < .001), which showed that items were factorable. Then, Principle Axis Factoring Analysis with Varimax rotation was conducted. Using eigenvalues suggested five factor solution for this group but by examining scree plot and theoretical base of Driver Behavior Scale, three factor solution was decided. Thus, the factor analysis with Varimax rotation was run again by forcing factor numbers as three. 33.79 % variance was explained by the final structure. However, two items which were item 9 *(Fail to your rear-view mirror before pulling out, changing lanes etc.)* and item 4 *(Drive when you suspect you might be over the legal blood alcohol limit)* were excluded from the scale because their loading were lower than .30. In addition, item 21 (*Become angered by another driver and give chase with the intention of giving him/her a piece of your mind*) excluded from further analysis because it was load three factors.

First factor for control group (α= .87) consisted 17 items and explained 20. 74 % variance. The factor was named as "Errors". The second factor (α= .82) which was "Positive driver behaviors" had 9 items and explained 8.32 % variance. The third factor (α= .79) consisted of 8 items and it was labelled as "Violations". 4.73 % of variance was explained by this factor. The factor loadings of DBQ for control group was presented in Table 10.

Table 10: *Control group- factor loadings of DBQ based on principal axis factoring analysis with Varimax rotation*

	Components			**Communality**
Items	**Factor 1**	**Factor 2**	**Factor 3**	
DBQ 16	**.686**			.518
DBQ 15	**.659**			.446
DBQ 28	**.623**			.431
DBQ 18	**.605**			.486
DBQ 6	**.576**			.363
DBQ 20	**.570**	-.367		.482
DBQ 19	**.563**			.385

Table 10 *(continued)*

Items	**Factor 1**	**Factor 2**	**Factor 3**	
DBQ 13	**.546**			.387
DBQ 1	**.537**			.346
DBQ 7	**.525**			.313
DBQ 36	**.512**			.288
DBQ 31	**.501**		.398	.411
DBQ 3	**.468**			.243
DBQ 35	**.440**			.209
DBQ 10	**.426**			.221
DBQ 21*	.423	-.342	.331	.405
DBQ 5	**.334**			.160
DBQ 23	**.315**			.150
DBQ 9*				.063
DBQ 33		**.699**		.505
DBQ 12		**.623**		.393
DBQ 2		**.603**		.411
DBQ 30		**.592**		.360
DBQ 11		**.590**		.375
DBQ 17		**.588**		.388
DBQ 24		**.535**		.305
DBQ 26		**.522**		.275
DBQ 34		**.410**		.171
DBQ 14			**.763**	.616
DBQ 32			**.606**	.394
DBQ 25			**.545**	.307
DBQ 29	.425		**.533**	.484
DBQ 37			**.523**	.304
DBQ 22			**.482**	.303
DBQ 27			**.476**	.264
DBQ8			**.455**	.208
DBQ 4*				.134

Table 10 *(continued)*

Items	Factor 1	Factor 2	Factor 3
Eigenvalues	7.673	3.077	1.752
Percent of explained variance	20.738%	8.316%	4.734%
Reliability	.87	.82	.79

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1= Errors, Factor 2= Positive driver behaviors, Factor 3= Violations

3.1.4 Multidimensional Traffic Locus of Control Scale Factor Structure

Factor analysis for TLOC with 17 items was computed for each study groups.

For *traffic accident trauma group*, firstly it was shown that Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .835 and Bartlett's Test of Sphericity was significant (df = 136, p < .001). After deciding the factorable scale, Principle Axis Factoring Analysis with Varimax rotation method was performed. Extraction eigenvalues and scree plot suggested three factors for this group. The structure of the scale explained 52.6 % of variance and there were no loading items lower than .30. However, item 12 (*Whether or not I get into car accident depends mostly on bad weather or lighting conditions*) and item 13 (*Whether or not I get into car accident depends mostly on a mechanical failure in the car*) were excluded from the further analysis because they loaded approximately equally more than one factors.

The first factor of the scale was "External factors" had 7 items and explained 35.43 % variance. The internal reliability of the items was .90. the second factor consisted of 5 items which was named as "Self factor" and internal reliability of the factor was .86. The last factor which explained 7.24 % variance consisted of 3 items and it was labelled as "Fate factor". Internal reliability for the items was .60. The factor loadings of TLOC for traffic accident trauma group trauma group was shown in Table 11.

Table 11: *Traffic accident trauma group - factor loadings of TLOC based on principal axis factoring analysis with Varimax rotation*

	Components			**Communality**
Items	**Factor 1**	**Factor 2**	**Factor 3**	
TLOC 15	**.815**			**.727**
TLOC 4	**.794**			**.672**
TLOC 8	**.789**			**.691**
TLOC 3	**.722**			**.542**
TLOC 14	**.708**			**.567**
TLOC 10	**.650**			**.458**
TLOC 6	**.590**		.313	**.504**
TLOC 12*	.519	.495		**.541**
TLOC 16		**.793**		**.682**
TLOC 9		**.764**		**.621**
TLOC 7	.303	**.719**		**.620**
TLOC 2		**.715**		**.558**
TLOC 1		**.597**		**.373**
TLOC 13*	.321	.419	.310	**.375**
TLOC 17			**.621**	**.410**
TLOC 5			**.575**	**.338**
TLOC 11			**.508**	**.266**
Eigenvalues	6.023	1.689	1.230	
Percent of explained variance	35.432%	9.935%	7.235%	
Reliability	.90	.86	.60	

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1=External factors Factor 2= Self factor, Factor 3= Fate factor

In the *general trauma group*, TLOC was analyzed for the factor structure. Firstly, to decide factor analysis Kaiser-Meyer-Olkin Measure of Sampling Adequacy (.898) Bartlett's Test of Sphericity (df = 136, p < .001) were calculated. After getting significant results, Principle Axis Factoring Analysis with Varimax rotation was performed. Three factor was decided as factor number by observing eigenvalues and scree plot. 55.59 % of variance was explained by the three factor solution of the scale.

There were no cross loading items lower than .30 but item 13 (*Whether or not I get into car accident depends mostly on a mechanical failure in the car*) was excluded from the further analysis because it loaded .390 on first factor and .456 on second factor.

First factor (α= .91) which had 8 items was "External factors". 39. 86 % of variance was explained by the factor. The second factor consisted of 5 items. The factor (α = .88) was named as "Self factor" and explained 8.63 % variance. The last factor which was labelled as "Fate factor" had 3 items. The factor explained 7.1% variance and internal reliability was .74. The factor loadings of TLOC for general trauma group trauma group was shown in Table 12.

Table 12: *General trauma group - factor loadings of TLOC based on principal axis factoring analysis with Varimax rotation*

	Components			**Communality**
Items	**Factor 1**	**Factor 2**	**Factor 3**	
TLOC 4	**.809**			.680
TLOC 8	**.760**	.341		.694
TLOC 15	**.707**	.340		.616
TLOC 14	**.700**	.387		.646
TLOC 3	**.693**			.503
TLOC 6	**.668**			.514
TLOC 10	**.566**	.353		.449
TLOC 12	**.515**	.391		.446
TLOC 7		**.832**		.778
TLOC 9		**.801**		.703
TLOC 16		**.746**		.615
TLOC 2	.324	**.706**		.613
TLOC 13*	.390	.456		.394
TLOC 1	.316	**.447**		.300
TLOC 17			**.806**	.658
TLOC 5			**.673**	.457

Table 12 *(continued)*

Items	**Factor 1**	**Factor 2**	**Factor 3**	
TLOC 11			**.613**	.393
Eigenvalues	6.777	1.467	1.206	
Percent of explained variance	39.862%	8.628%	7.097%	
Reliability	.91	.88	.74	

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1=External factors Factor 2= Self factor, Factor 3= Fate factor

For *control group*, Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .842 and Bartlett's Test of Sphericity was significant (df = 136, p < .001) which indicates items were factorable. Then Principle Axis Factoring Analysis was conducted with Varimax rotation method. By using extraction eigenvalues and scree plot, three factor solution was decided. 52. 43 % of variance was explained final version of factor structure and there were no cross loading items lower than .30. However, item 10 (*Whether or not I get into car accident depends mostly on if other drivers drive too close to my car*) was excluded from the analysis since it loaded .495 on first factor and .460 on second factor.

First factor (α = .87) consisted of 8 items which was "External factors". 35.68 % of variance was explained by the factor. The second factor was labelled as "Self factor" had 5 items. Internal reliability of items was .85 and explained 10.65 % variance. The last factor (α = .77) had 3 items and was named as "Fate factor". 6.11 % of variance was explained by the last factor. The factor loadings of TLOC for control group trauma group was shown in Table 13.

Table 13: *Control group - factor loadings of TLOC based on principal axis factoring analysis with Varimax rotation*

	Components			**Communality**
Items	**Factor 1**	**Factor 2**	**Factor 3**	
TLOC 15	**.762**	.325		.692
TLOC 4	**.744**			.602
TLOC 14	**.701**	.370		.649

Table 13*(continued)*

Items	Factor 1	Factor 2	Factor 3	
TLOC 8	**.661**	.371		.575
TLOC 3	**.644**			.446
TLOC 13	**.567**			.433
TLOC 12	**.552**			.410
TLOC 10*	.495	.460		.474
TLOC 6	**.426**		.338	.308
TLOC 7		**.785**		.700
TLOC 16		**.778**		.654
TLOC 9		**.767**		.687
TLOC 2	.348	**.559**		.440
TLOC 1		**.479**		.265
TLOC 17			**.744**	.573
TLOC 5			**.719**	.520
TLOC 11			**.682**	.488
Eigenvalues	6.065	1.811	1.039	
Percent of explained variance	35.677%	10.654%	6.112%	
Reliability	.87	.85	.77	

Note. Factor loadings < .3 are suppressed. Factor labels. Factor 1=External factors Factor 2= Self factor, Factor 3= Fate factor

3.2 Bivariate Correlations between Study Variables of Study Groups

3.2.1 Bivariate Correlations between Study Variables of Traffic Accident Trauma Group

Traffic accident trauma group's descriptive statistics and the correlation matrix was shown in the Table and Table. Bivariate correlations were calculated for demographic variables and other study variables.

Errors were positively correlated with violations (r = .50, p <.01), fate domain of traffic locus of control score (r = .20, p <.01), and relational growth (r = .21, p <.05), but

negatively correlated with positive driver behaviors (r = -.21, p <.05), total traffic locus of control score (r = -.19, p <.05), external-traffic locus of control (r = -.33, p <.01), self-worth (r = -.45, p <.01) domain of WAS. When examining significance of positive driver behaviors, it was found that positive driver behaviors were positively associated with external (r = .51, p <.01), self *(*r = .28, p <.01) domain of traffic locus of control, and self-worth (r = .21, p <.05).

External traffic locus of control was significantly and positively correlated with self TLOC (r = .45, p <.01), and self-worth (r = .36, p <.01). Fate domain of traffic locus of control was positively correlated with Rotter's LOC (r = .28, p <.01). Rotter's locus of control was examined with other variables and it was found that it was negatively correlated with benevolence (r = -.33, p <.01), controllability (r = -.33, p <.01), self-worth (r = -.20, p <.05), and relational growth (r = -.26, p <.01) but positively correlated with randomness (r = .31, p <.01).

Benevolence was positively associated with controllability (r = .31, p <.01), self-worth (r = .30, p <.01), relational growth (r = .26, p <.01, but negatively related with randomness (r = -.19, p <.05). Also, controllability was found to be positively correlated with luck (r = .32, p <.01), self-worth (r = .28, p <.01), personal strength change *(*r = .23, p <.05), relational growth (r = .36, p <.01). The other domain, luck, was also positively related with self-worth (r = .24, p <.01), and relational growth *(*r = .24, p <.05). Moreover, self-worth was negatively correlated with randomness (r = -.30, p <.01).

The bivariate correlations were computed also for personal strength change. It was found that there was a positive relationship between self- related change and relational growth (r = .80, p <.01). Moreover, it was positively correlated with total PTGI score (r = .96, p <.01). Relational growth was also correlated with total PTGI score (r = .93, p <.01). Bivariate correlations of the variables in traffic accident trauma group was shown in Table 14.

Table 14: *Bivariate correlations of variables in traffic accident trauma group*

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1.Age	1												
2.Gender	.056	1											
3.Education	.017	-.218*	1										
4.Mileage	.103	.200*	-.049	1									
5.Total accident	-.80	.163	-.091	.330**	1								
6.Parking ticket	.152	.157	-.228	.276**	.041	1							
7.Overtaking ticket	-.065	.047	-.071	.596**	.214*	.220*	1						
8.Speeding ticket	.082	.259**	.006	.453**	.328**	.239**	.373**	1					
9.Other tickets	.037	.150	-.136	.130	.274	.231	.073	.473**	1				
10.Errors	-.055	.148	-.232*	.106	.076	.055	-.045	.181*	.278**	1			
11.Positive beh.	.156	.172	.175	-.097	.115	.031	-.259**	-.083	-.045	-.211*	1		
12.Violations	-.011	.357**	-.306**	.151	.200*	.092	-.164	.214	.248**	.504**	.145	1	
13.DBQ	.056	.329**	-.153	.065	.191	.087	-.244**	.141	.233*	.657**	.526**	.773**	1

Table 14 *(continued)*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
14. External	.203*	-.008	.136	-.072	.118	-.026	-.175	-.044	-.004	-.330**	.514**	.009	.115
15.Self	.287**	.008	.115	-.011	-.119	-.042	-.057	-.071	-.067	-.067	.280**	-.061	.103
16.Fate	-.287**	-.107	.006	.058	.040	-.106	.042	-.077	-.059	.195*	-.097	.071	.084
17.TLOC	.208*	-.026	.146	-.036	.015	-.064	-.126	-.083	-.053	-.187*	.437**	-.011	.146
18. Rotter LOC	-.221*	-.095	-.179	-.043	.096	-.105	.068	.007	.092	.110	-.054	.112	.076
19. Benevolence	.309**	.124	.181*	.010	-.044	.125	-.030	-.019	.014	-.157	.148	-.093	-.040
20. Controllability	-.034	.221*	-.121	-.004	.132	.074	-.114	-.064	.006	-.141	.111	.107	.026
21. Luck	-.027	-.125	-.133	.103	.132	.062	.151	-.016	.025	-.096	.059	-.005	-.023
22. Self-worth	.112	-.022	.071	.146	.103	.066	.097	.034	-.006	-.454**	.205*	-.113	-.188*
23. Randomness	.101	-.112	-.119	-.032	.094	.011	-.098	.054	.054	.101	-.016	-.098	.001
24. WAS	.161	.075	-.046	.065	.144	.128	-.021	-.019	.032	-.250**	.182*	-.047	-.057
25. Personal strength	-.027	-.027	.002	.069	.030	.075	-.068	-.072	-.061	.096	.151	.071	.174
26. Relational growth	.046	.021	-.027	.040	-.119	.048	-.073	-.110	-.050	.208*	.108	.114	.230*
27. PTGI	.005	-.007	-.011	.059	-.035	.067	-.074	-.093	-.059	.152	.140	.095	.208*

Table 14 *(continued)*

Variables	14	15	16	17	18	19	20	21	22	23	24	25	26	27
14. External	1													
15.Self	.449**	1												
16.Fate	-.021	-.011	1											
17.TLOC	.839**	.811**	.225*	1										
18. Rotter LOC	-.027	-.164	.275**	-.038	1									
19. Benevolence	.082	.040	-.124	.041	-.326**	1								
20. Controllability	.167	-.026	-.020	.081	-.332**	.310**	1							
21. Luck	.178	.001	.132	.140	-.049	.148	.322**	1						
22. Self-worth	.364**	.144	-.111	.270**	-.202*	.295**	.282**	.243**	1					
23. Randomness	-.073	-.105	.150	-.015	.313**	-.192*	-.074	.030	-.301**	1				
24. WAS	.245**	.037	.001	.167	-.267**	.628**	.765**	.623**	.503**	.121	1			
25.Personal strength	.128	.065	.070	.126	-.109	.145	.234*	.175	.155	-.059	.254**	1		
26.Relational growth	.083	.153	.148	.165	-.260**	.262**	.355**	.239*	.156	-.132	.359**	.796**	1	
27. PTGI	.114	.108	.109	.151	-.183	.206*	.302**	.214	.164	-.095	.315**	.962**	.931**	1

3.2.2 Bivariate Correlations between Study Variables of General Trauma Group

Firstly, errors were positively related with violations (r = .63, p <.01), and fate dimension of traffic locus of control (r = .24, p <.01), but negatively correlated with external dimension of traffic locus of control (r = -.18, p <.01), and self-worth (r = -.29, p <.01).However, positive driver behaviors were positively correlated with external traffic locus of control (r = .43, p <.01), self-traffic locus of control (r = .13, p <.05), self-worth (r = .14, p <.05), but negatively correlated with fate traffic locus of control (r = -.16, p <.05), relational growth (r = -.18, p <.01). Violations were positively correlated with fate dimension of traffic locus of control (r = .27, p <.01), and randomness (r = .18, p <.01), but negatively related with self-worth (r = -.15, p <.0), and personal strength change (r = -.16, p <.05).

External LOC was positively correlated with self dimension (r = .62, p <.01), fate dimension (r =.16, p <.05) and controllability (r = .22, p <.01), but negatively associated with Rotter's LOC (r = -.20, p <.01). Likewise, self dimension of TLOC was positively correlated with benevolence (r = .17, p <.01), controllability (r = .20, p <.01), but negatively correlated with Rotter's LOC (r = -.20, p <.01). Moreover, other dimension of TLOC, fate, was positively correlated with Rotter's LOC (r = .20, p <.01), and randomness (r = .22, p <.01). Rotter's locus of control was negatively correlated with benevolence (r = -.39, p <.01), controllability (r = -.36, p <.01), luck (r = -.16, p <.05), but negatively related with randomness (r = .37, p <.01).

Benevolence was positively related with controllability (r = .37, p <.01), luck (r = .38, p <.01), self-worth (r = .20, p <.01), personal strength change (r = .21, p <.01), relational growth (r = .31, p <.01), negatively correlated with only randomness (r = -.16, p <.01). Moreover, controllability was positively associated with luck (r = .13, p <.05), personal strength change (r = .19, p <.01), relational growth (r = .23, p <.01). Similarly, luck was positively correlated with self-worth (r = 27, p <.01), personal strength change (r = .17, p <.05), relational growth (r = .16, p <.05). Self-worth dimension was also positively associated with personal strength change (r = .23, p <.01). Bivariate correlations of variables for general trauma group were presented in Table 15.

Table 15: *Bivariate correlations of variables in genel trauma group*

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1.Age	1												
2.Gender	.117	1											
3.Education	-.110	-.126	1										
4.Mileage	.156*	-.007	.008	1									
5.Total accident	-.112	-.041	.014	-.006	1								
6.Parking ticket	.107	-.024	.035	.033	0.76	1							
7.Overtaking ticket	.035	-.049	-.124	-.035	.186**	.139*	1						
8.Speeding ticket	.022	.091	.020	.045	.117	.192**	-.013	1					
9.Other tickets	-.106	.095	.032	-.020	.133*	.098	.014	.287**	1				
10.Errors	-.038	.033	.058	.035	.045	.134*	.122	.143*	.170**	1			
11.Positive beh.	.066	.027	.059	.061	.087	.033	-.068	-.020	-.077	-.084	1		
12.Violations	-.132*	.013	.162*	.071	.243**	.126	.039	.196*	.174**	.630**	.151*	1	
13.DBQ	-.023	.040	.113	.075	.140	.139*	.052	.133*	.114	.773**	.537**	.756**	1

Table 15 *(continued)*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
14. External	.107	.022	-.034	.071	.001	-.007	-.059	-.046	-.126	-.183**	.426**	.016	.120
15.Self	.138*	-.010	.006	.086	-.015	.028	.030	-.043	-.088	-.009	.130*	.093	.090
16.Fate	-.036	-.068	-.007	.029	-.008	.005	-.039	.035	-.027	.235**	-.140*	.272**	.147*
17.TLOC	.117	-.009	-.018	.089	-.009	.011	-.027	-.037	-.118	-.047	.262**	.120	.145*
18. Rotter LOC	-.231**	-.209**	.067	-.042	.154*	.015	.012	.000	.054	.023	-.097	.140	-.002
19. Benevolence	.337**	-.004	-.078	.028	-.186**	.036	.011	-.104	-.138*	-.026	.047	-.132	-.025
20. Controllability	.307**	.255**	-.290**	.111	-.087	.115	.057	-.010	-.040	.078	.057	-.013	.079
21. Luck	.202**	-.220	.002	.119	-.025	.055	-.023	-.023	-.131*	.100	.053	.049	.107
22. Self-worth	.100	-.182**	.080	.140*	-.068	.030	-.101	.063	-.091	-.288**	.137*	-.149*	-.151*
23. Randomness	-.133*	-.174**	.146*	-.131	.171**	-.072	.057	-.042	-.009	.102	-.030	.176**	.096
24. WAS	.337**	-.068	-.094	.096	-.093	.070	.013	-.055	-.150*	.011	.091	-.032	.046
25. Personal strength	.075	-.294**	-.103	.014	-.063	.008	-.006	.016	-.101	-.023	-.036	-.158*	-.075
26. Relational growth	.163*	-.107	-.96	-.036	-.055	.081	.024	-.009	-.071	.106	-.184**	-.038	-.042
27. PTGI	.112	-.255	-.110	-.002	-.066	.034	.004	.009	-.100	.019	-.091	-.130	-.070

Table 15 *(continued)*

Variables	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
14. External	1													
15.Self	.621**	1												
16.Fate	.164*	.125	1											
17.TLOC	.890**	.857**	.394**	1										
18. Rotter LOC	-.204**	-.203**	.203**	-.162*	1									
19. Benevolence	.053	.172**	-.112	.086	-.388**	1								
20. Controllability	.220**	.196**	-.013	.213**	-.357**	.368**	1							
21. Luck	.062	.088	.025	.083	-.161*	.383**	.129*	1						
22. Self-worth	.084	-.011	-.124	.010	-.117	.204**	.060	.265**	1					
23. Randomness	.001	-.069	.219**	.020	.369**	-.162*	-.115	.047	-.095	1				
24. WAS	.164*	.167*	-.011	.169*	-.297**	.737**	.627**	.648**	.446**	.186**	1			
25. Personal strength	.121	.058	.030	.101	-.043	.206**	.187**	.170*	.228**	-.026	.285**	1		
26. Relational growth	-.041	-.034	.112	-.011	-.034	.312**	.228**	.156*	.066	.017	.316**	.644**	1	
27. PTGI	.076	.031	.061	.071	-.043	.261**	.218**	.181**	.192**	-.013	.321**	.964**	.823**	1

3.2.3 Bivariate Correlations between Study Variables of Control Group

When examining study variables, it was found that errors was negatively associated with positive driver behaviors (r = .22, p <.01), self-worth (r = -.27, p <.01), but positively related with fate dimension of traffic locus of control (r = .25, p <.01), Rotter's locus of control (r = .19, p <.01), and randomness (r = .19, p <.01). However, positive driver behaviors were positively correlated with external (r = .40, p <.01) and self dimension of traffic locus of control (r = .20, p <.01), but negatively related with fate dimension of traffic locus of control (r = -.15, p <.05). Positive driver behaviors also positively associated with controllability (r = .21, p <.01), and self-worth (r = .35, p <.01).

External dimension of traffic locus of control was positively correlated with self dimension (r = .59, p <.01), benevolence (r = .15, p <.05), controllability (r = .32, p <.01), self-worth (r = .19, p <.05). The self dimension was positively associated with controllability (r = .27, p <.01), and total WAS score (r = .17, p <.05). It was also found that fate dimension was positively related with Rotter's locus of control (r = .24, p <.01), and randomness (r = .16, p <.05). Moreover, it was negatively related with benevolence (r = -.22, p <.01), controllability (r = -.20, p <.01), and self-worth (r = .16, p <.05).

Benevolence was positively correlated with controllability (r = .43, p <.01), luck (r = .17, p <.05), self-worth (r = .19, p <.05). Controllability was also positively correlated with luck (r = .24, p <.01). Also, luck was positively associated with randomness (r = .15, p <.05). Bivariate correlations of variables for control group were presented in Table 16.

Table 16: *Bivariate correlations of variables in control group*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Age	1												
2.Gender	.210**	1											
3.Education	-.316**	-.160*	1										
4.Mileage	.077	.214**	.023	1									
5.Total accident	-.199**	-.057	.038	.012	1								
6.Parking ticket	.003	.090	-.091	.054	.296**	1							
7.Overtaking ticket	.057	.057	-.215**	-.038	-.055	.364**	1						
8.Speeding ticket	.028	.199**	.194**	.110	.200**	.105	.062	1					
9.Other tickets	.030	.014	.123	.131	.111	.169*	-.023	.185*	1				
10.Errors	-.211**	-.047	.027	-.010	.221**	.040	-.017	.000	.098	1			
11.Positive beh.	-.099	.046	.162*	-.029	.017	-.082	-.130	.024	.041	-.219**	1		
12.Violations	-.259**	.166*	.019	-.005	.398**	.253**	.092	.224**	.088	.458**	-.087	1	
13.DBQ	-.307**	.069	.123	-.026	.323**	.085	-.050	.110	.126	.706**	.426**	.673**	1

Table 16 *(continued)*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
14. External	.034	-.174*	-.009	.023	.027	.011	.013	.005	.068	-.090	.402**	-.011	.180*
15.Self	-.073	-.056	-.007	.036	-.087	.058	.083	.012	.136	.078	.204**	.025	.184*
16.Fate	-.157*	-.063	.107	-.153*	.033	-.131	-.060	.024	.118	.249**	-.150*	.054	.092
17.TLOC	-.061	-.143	.020	-.011	-.022	.000	.035	.016	.142	.056	.290**	.021	.220**
18. Rotter LOC	-.179*	-.112	.040	-.001	.020	-.021	.038	-.002	.175*	.191**	-.058	.022	.097
18. Benevolence	.265**	.129	-.101	.171*	-.021	.021	.097	.124	-.020	.018	.083	-.081	.026
20. Controllability	.198**	.240**	-.024	.086	-.078	.008	.142	.059	.028	-.035	.205**	.020	.110
21. Luck	-.121	-.166*	.035	.076	.125	.083	.140	.005	.042	.127	.075	.025	.137
22. Self-worth	.083	.029	.076	.109	-.147*	-.044	-.003	.042	-.033	-.265**	.349**	-.114	-.008
23. Randomness	-.101	-.062	.0.87	.023	.019	.018	.050	-.041	.123	.193**	-.118	.076	.085
24. WAS	.125	.108	-.051	.124	.022	.067	.185*	.062	.045	.111	.090	.034	.140

Table 16 *(continued)*

Variables	14	15	16	17	18	19	20	21	22	23	24
14. External	1										
15.Self	.594**	1									
16.Fate	.018	.015	1								
17.TLOC	.871**	.849**	.286**	1							
18. Rotter LOC	-.079	-.018	.336**	.037	1						
19. Benevolence	.154*	.098	-.224**	.077	-.201**	1					
20. Controllability	.318**	.273**	-.202**	.264**	-.287**	.427**	1				
21. Luck	.135	.093	-.026	.116	.067	.167*	.238**	1			
22. Self-worth	.186*	.105	-.214**	.101	-.190*	.187*	.105	.109	1		
23. Randomness	-.031	-.121	.162*	-.036	.374**	-.135	-.040	.147*	-.131	1	
24. WAS	.249**	.170*	-.141	.189*	-.081	.640**	.775**	.575**	-.029	.298**	1

3.3 Descriptive Statistics

Descriptive statistics of study groups were presented in Table 17.

Table 17: *Descriptive statistics of study groups*

		Traffic acc. Trauma g.		**General trauma g.**		**Control g.**	
Variables		***M***	***SD***	***M***	***SD***	***M***	***SD***
DBQ							
	Errors	1.79	.66	1.75	.62	1.71	.54
	Violations	2.35	.88	2.22	.81	2.19	.78
	Positive driver behaviors	4.18	1.18	4.33	1.2	4.47	.97
TLOC							
	External	3.76	.81	3.8	.75	3.8	.68
	Self	3.33	1.03	3.34	1.07	3.49	.99
	Fate	2.46	.77	2.43	.89	2.34	.87
LOC		11.55	3.7	11.48	4	10.9	4.04
WAS							
	Benevolence	3.36	1.19	3.34	1.27	3.44	1.21
	Controllability	3.66	.87	3.51	.9	3.68	.9
	Luck	3.71	1.22	3.49	1.2	3.75	1.21
	Self-worth	4.9	.93	4.66	.97	4.79	.98
	Randomness	2.95	1.1	3.06	1.14	2.78	1.07
PTGI							
	Personal strength	3.59	1.2	3.98	1.02	-	-
	Relational growth	3.14	1.21	3.09	1.11	-	-

3.4 Comparison of Study Groups on Survey Items

A one-way analysis of variance (ANOVA) was conducted on surveys' items to compare differences between traffic accident trauma group, general trauma group and control group. The analyses were repeated with analysis of covariance (ANCOVA) when gender, age and last year mileage of drivers as covariates. It was founded that the results were in line with the ANOVA results so only ANOVA results were reported in the following sections.

3.4.1 Group Comparison on Items of the World Assumptions Scale

To compare differences between groups and item scores of The World Assumptions Scale (WAS), one-way analysis of variance (ANOVA) was conducted.

ANOVA results were significant for item 3 ($F(2,530) = 4.26$, $p = .015$, $\eta 2 = .016$). According to Tukey's HSD post-hoc comparison results, general trauma group ($M = 2.87$, $SD = 1.48$) had higher scores on item 3 in WAS than control group ($M = 2.47$, $SD = 1.41$). Moreover, on item 20 ($F(2,530) = 3.07$, $p = .047$, $\eta 2 = .011$), it was found that control group ($M = 3.31$, $SD = 1.44$) significantly higher than general trauma group ($M = 2.96$, $SD = 1.44$). Results were listed in Table 18

Table 18: *Group differences on WAS items*

	Traffic accident trauma group Mean (N = 120)	**General trauma group Mean (N = 231)**	**Control group Mean (N = 182)**	***F***	**Sig**
WAS 3	2.85	2.87[a]	2.47[b]	4.26	.015
WAS 20	3.05	2.96[b]	3.31[a]	3.07	.047

3.4.2 Group Comparison on Items of Driver Behavior Questionnaire (DBQ)

A one-way analysis of variance (ANOVA) was conducted to compare study groups in terms of getting scores on DBQ items.

ANOVA results showed that item 4 ($F(2,530) = 3.69$, $p = .026$, $\eta 2 = .014$) revealed significant difference between traffic accident trauma group and control group. Traffic accident trauma group ($M = 1.74$, $SD = 1.17$) get significantly higher scores than control group ($M = 1.42$, $SD = .92$). Traffic accident trauma group ($M = 1.96$, $SD = 1.16$) was also high on than general trauma group ($M = 1.7$, $SD = .91$) in terms of item 5 ($F(2,530) = 3.10$, $p = .046$, $\eta 2 = .012$). Moreover, the other group difference was shown on item 11 ($F(2,530) = 3.56$, $p = .029$, $\eta 2 = .013$). According to Tukey's HSD post-hoc comparison results, control group ($M = 4.26$, $SD = 1.67$) get higher results on the item than traffic accident trauma group ($M = 3.73$, $SD = 1.79$). Control group ($M = 4.57$, $SD = 1.67$) reported higher scores on item 17 ($F(2,530) = 4.31$, $p = .014$, $\eta 2 = .016$) than traffic accident trauma group ($M = 4.06$, $SD = 1.7$). Also, there was a difference between traffic accident trauma group and general trauma group ($M = 4.18$, $SD = 1.73$). On item 18 ($F(2,530) = 3.44$, $p = .033$, $\eta 2 = .03$), group differences between traffic accident trauma group ($M = 1.68$, $SD = .98$) and control group ($M =$

1.42, *SD* = .74) were found. In addition, study groups significantly differed from each other in terms of scores on item 21 ($F(2,530) = 9.03$, $p = .000$, $\eta 2 = .033$). People in traffic accident trauma group ($M = 1.78$, $SD = 1.2$) reported higher scores than general trauma group ($M = 1.42$, $SD = .9$) and control group ($M = 1.32$, $SD = .73$). On item 30 ($F(2,530) = 3.30$, $p = .038$, $\eta 2 = .012$), control group ($M = 4.88$, $SD = 1.41$) differed significantly from traffic accidents trauma group ($M = 4.42$, $SD = 1.75$). Lastly, there was a significant differences between study groups on item 32 ($F(2,530) = 5.69$, $p = .004$, $\eta 2 = .021$). When traffic accidents trauma group ($M = 2.68$, $SD = 1.4$) get higher scores than general trauma group ($M = 2.26$, $SD = 1.19$), it was also higher than control group ($M = 2.21$, $SD = 1.31$). Results were listed in Table 19.

Table 19: *Group differences on DBQ items*

	Traffic accident trauma group Mean (N = 120)	**General trauma group Mean (N = 231)**	**Control group Mean (N = 182)**	***F***	**Sig**
DBQ 4	1.74[a]	1.58	1.56[b]	3.69	.026
DBQ 5	1.96[a]	1.7[b]	1.76	3.1	.046
DBQ 11	3.73[b]	4.08	4.26[a]	3.56	.029
DBQ 17	4.06[b]	4.18[c]	4.57[a]	4.31	.014
DBQ 18	1.68[a]	1.56	1.42[b]	3.44	.033
DBQ 21	1.78[a]	1.42[b]	1.32[c]	9.03	.000
DBQ 30	4.42[b]	4.61	4.88[a]	3.30	.038
DBQ 32	2.68[a]	2.26[b]	2.21[c]	5.69	.004

3.4.3 Group Comparison on Items of Rotter's Locus of Control Scale (LOC)

One-way analysis of variance (ANOVA) was performed to compare study groups in terms of items of LOC.

Tukey's HSD post-hoc comparison results showed that there was a significant difference between traffic accident trauma group ($M = .28$, $SD = .45$) and control group ($M = .16$, $SD = .37$) on item 10 $F(2,530) = 3.58$, $p = .028$, $\eta 2 = .013$). Traffic accident trauma group's score was higher than control group. Moreover, traffic accident trauma group ($M = .67$, $SD = .47$) differed significantly from general trauma group ($M = .51$,

SD = .50) on item 22 *F*(2, 530) = 4.66, *p* = .01, *η2* = .017). People in general trauma group (*M* = .57, *SD* = .50) had higher scores than control group (*M* = .45, *SD* = .50) in terms of scores on item 28 (*F*(2,530) = 3.73, *p* = .025, *η2* = .014).Results were presented in Table 20

Table 20: *Group differences on LOC items*

	Traffic accident trauma group Mean (N = 120)	**General trauma group Mean (N = 231)**	**Control group Mean (N = 182)**	**F**	**Sig**
LOC 10	.28[a]	.24	.16[b]	3.58	.028
LOC 22	.68[a]	.51[b]	.55	4.66	.010
LOC 28	.47	.57[a]	.45[b]	3.73	.025

3.4.4 Group Comparison on Items of Posttraumatic Growth Inventory (PTGI)

The one-way analysis of variance was computed to compare trauma groups of study. Since the Posttraumatic Growth Inventory was answered by people who report any traumatic experience, the comparison was conducted between only traffic accident trauma group and general trauma group in terms of scores on PTGI items.

On the item 1 (*F*(1,315) = 16.8, *p* = .000, *η2* = .051), general trauma group (*M* =4.05, *SD* = 1.47) had significantly higher scores than traffic accident trauma group (*M* = 3.37, *SD* = 1.37). People in general trauma group (*M* = 3.97, *SD* = 1.4) report higher posttraumatic growth score than traffic trauma group (*M* = 3.57, *SD* = 1.44) on the item 2 (*F*(1,315) = 5.48, *p* = .020, *η2* = .017). Moreover, there was a significant difference between traffic group (M = 3.31, SD = 1.61) and general trauma group (*M* = 3.69, *SD* = 1.53) in terms of getting scores from item 7 (*F*(1,315) = 4.43, *p* = .036, *η2* = .014). Likewise, general trauma group (*M* = 4.45, *SD* = 1.44) differed significantly from traffic accident trauma group (M = 4.06, SD = 1.59) on item 10 (*F*(1,315) = 5.09, *p* = .025, *η2* = .016). Also, people in general trauma group (*M* = 4.08, *SD* = 1.39) had higher scores than people traffic group (*M* = 3.73, *SD* = 1.58) on item 11 (*F*(1,315) = 4.01, *p* = .046, *η2* = .013). On item 13 (*F*(1,315) = 6.15, *p* = .014, *η2* = .019), general trauma group (*M* = 3.72, *SD* = 1.45) revealed higher scores than

traffic group (*M* = 3.29, *SD* = 1.5). Similarly, people in general trauma group differed (*M* = 3.27, *SD* = 1.6) significantly from traffic group (*M* = 2.89, *SD* = 1.6) in terms of scores from item 14 (*F*(1,315) = 3.98, *p* = .047, *η2* = .012). General trauma group (*M* = 3.92, *SD* = 1.63) get higher scores than traffic group (*M* = 3.44, *SD* = 1.68) from item 15 (*F*(1,315) = 5.93, *p* = .015, *η2* = .018). In the same way, people in general trauma group (*M* = 3.96, *SD* = 1.52) had higher scores than traffic group (*M* = 3.58, *SD* = 1.52) on the item 16 (*F*(1,315) = 4.22, *p* = .041, *η2* = .013). In addition, it also found that there was a significant differences between general trauma group (*M* = 4.07, *SD* = 1.47) and traffic group (*M* = 3.58, *SD* = 1.54) in terms of item 17 (*F*(1,315) = 7.64, *p* = .006, *η2* = .024). Lastly, on item 19 (*F*(1,315) = 7.07, *p* = .008, *η2* = .022), general trauma group (*M* = 4.44, *SD* = 1.49) got higher scores than traffic group (*M* = 3.94, *SD* = 1.69). Results were shown in the Table 21

Table 21: *Group differences on PTGI items*

	Traffic accident trauma group Mean (N = 120)	**General trauma group Mean (N = 231)**	**F**	**Sig**
PTGI 1	3.37	4.05	16.8	.000
PTGI 2	3.57	3.97	5.48	.020
PTGI 7	3.31	3.69	4.43	.036
PTGI 10	4.06	4.45	5.09	.025
PTGI 11	3.73	4.08	4.01	.046
PTGI 13	3.29	3.72	6.15	.014
PTGI 14	2.89	3.27	3.98	.047
PTGI 15	3.44	3.92	5.93	.015
PTGI 16	3.58	3.96	4.22	.041
PTGI 17	3.58	4.07	7.64	.006
PTGI 19	3.97	4.44	7.07	.008

3.5 Comparison of Study Groups on Main Study Variables

One-way analysis of variance (ANOVA) was performed to compare traffic accident trauma group, general trauma group and control group on main study variables. To

figure out which groups differed from others, Tukey's HSD post-hoc comparison results were analyzed.

According to ANOVA results, drivers who belong to traffic accident trauma group (M = .09, SD = .49) reported higher getting number of Overtaking ticket (F(2, 529) = 4.52, p =.011, $\eta 2$ = .017) than drivers in general trauma group (M = .02, SD = .15) and control group (M = .01, SD = .07).

To figure out differences of event-related variables, comparison was done for only trauma groups. According to results, drivers in general trauma group (M= 6.03, SD = 1.85) reported higher subjective intensity of the event than drivers in traffic accident trauma group (M = 4.78, SD = 2.20) (F(1, 331) = 30.029, $\eta 2$ = .083). Moreover, subjective post-stress after the event was higher on general trauma group (M = 6.77, SD = 2.11) than traffic accident trauma group (M = 5.62, SD = 2.34) (F(1, 331) = 20.481, $\eta 2$ = .058). In addition, driver in general trauma group (M = 4.31, SD = 2.44) reported higher subjective current stress about the event than traffic accident group (M = 3.42, SD = 2.38) (F(1, 331) = 9.912, $\eta 2$ = .029).

Among sub dimensions of WAS, randomness revealed significant differences between groups. Participants who involved in general trauma group (M = 3.06, SD = 1.14) had higher scores than control group (M = 2.79, SD = 1.07) in randomness dimension (F(2,530) = 3.10, p = .046, $\eta 2$ = .012).

Moreover, study groups differed also on total WAS score (F(2,530) = 12.23, p = .000, $\eta 2$ = .044). Traffic accident trauma group (M = 3.69, SD = .58) had significantly higher world assumptions than control group (M = 3.37, SD = .58). In addition, general trauma group (M = 3.59, SD = .60) had also significantly higher scores on total WAS than control group. Results were shown in Table 22.

Table 22: *Group differences on main study variables*

	Traffic a.t.group Mean	**General t. group Mean**	**Control group Mean**	***F***	**Sig**
Passive accident	.53	.48	.34	1.815	.164
Parking ticket	.25	.29	.27	.096	.908
Overtaking ticket	.09[a]	.02[b]	.01[c]	4.519**	.011
Speeding ticket	.50	.51	.40	.651	.522
Other ticket	.29	.31	.16	2.206	.111
Intensity of the event	4.78	6.03	---	30.03***	.000
Post-stress	5.62	6.77	---	20.48***	.000
Current-stress	3.42	4.31	---	9.912***	.002
Benevolence	3.36	3.34	3.44	.326	.722
Controllability	3.66	3.51	3.68	2.040	.131
Luck	3.71	3.49	3.75	2.774	.063
Self-worth	4.91	4.66	4.79	2.683	.069
Randomness	2.95	3.06[a]	2.79[b]	3.102*	.046
WAS	3.69[a]	3.59[b]	3.37[c]	12.226**	.000

3.6 Hierarchical Multiple Regression Analyses

In the study, hierarchical multiple regression analyses were performed to show effect of study variables on dependent variables. The hierarchical multiple regression analyses were conducted for traffic accident trauma group, general trauma group and control group, separately.

3.6.1 Predictors of Driver Behaviors for Traffic Accidents Trauma Group

A hierarchical multiple regression analyses were conducted to investigate the predictors of driver behaviors which composed of errors, violations and positive driver behaviors for traffic accident trauma group. Six different hierarchical multiple regression analyses were conducted for analyzing predictors of driver behaviors.

World assumptions and posttraumatic growth were separately tested for each subscale of DBQ.

In the analyses, study variables were entered into equation in four steps. In the first step, age, gender, and last year mileage of participants were entered into the equation. In the second step, intensity of the traumatic event, and perceived post and current stress after traumatic event (event-related factors) was added into the equation. In the third step, locus of control (external, self and fate dimensions of traffic locus of control and Rotter's locus of control) was added to the equation. In the last step, world assumptions (benevolence, controllability, randomness, luck, and self-worth) were entered into the equation.

Firstly, hierarchical multiple regression analyses for predictors of errors was conducted with WAS. According to results, 3% of the variance was explained by the first step but none of the demographic variables was significant. In the second step, 3% of the variance was explained by event-related factors, variables were not significant in the block. The third step explained the 21 % of variance (R^2 = .214, F(10,97) = 2.64, p < .001). From the third step, when external dimension of traffic locus of control (β = -.400, t = -3.52, p < .001) negatively predicted errors, fate dimension of traffic locus of control (β = .223, t = 2.23, p < .05) positively predicted errors. The last step explained 34 % of variance (R^2 = .343, F(15,92) = 3.20, p < .001). Among the variables, self-worth (β = -.395, t = -3.73, p < .001) was negative predictor of errors.

The other hierarchical multiple regression analyses were conducted for predictors of violations. The first step explained 14% of variance (R^2 = .140, F(3,104) = 3.20, p < .001). When the unique effect was examined, gender (β = .346, t = 3.73, p < .001) positively predicted violations which means that male gender was a significant predictor of violations. In the model, it was found that the second step was significant (R^2 = .147, F(6,101) = 2.90, p < .05). However, F change between first and second step was not significant therefore coefficients of variables included the second step was also not significant (ΔR^2 = .007, *F change* (3,101) = .268, p = .848). Similarly, in the model, the third step was shown as significant (R^2 = .185, F(10,97) = 2.195, p < .05) but change in significance between second and third step did not reach significant

level (ΔR^2= .038, *F change* (4,97) = 1.117, p = .353). Likewise, the last step of the model was found as significant (R^2 = .261, F(15,92) = 2.17, p < .05) but F change was not significant (ΔR^2 = .077, *F change* (5,92) = 1.914, p = .100).

The predictors of positive driver behaviors were examined by using hierarchical multiple regression. In the model, the first step explained 10% of the variance (R^2 = .101, F(3,104) = 3.886, p < .05). Among the variables in the step, age (β = .232, t = 2.486, p < .05) positively predicted positive driver behaviors. In the second step, 20 % of variance was explained by the variables (R^2 = .200, F(6,101) = 4.20, p < .01). One of the event-related factor which was intensity of the event (β = .381, t = 3.45, p < .01) was a positive predictor of the positive driver behaviors. The third step which explained 62 % of the variance was also significant (R^2 = .621, F(10,97) = 6.104, p < .001). In the step, external dimension of traffic locus of control (β = .442, t = 4.401, p < .001) positively predicted the positive driver behaviors. Lastly, in the model the fourth step was shown as significant variables (R^2 = .636, F(15,92) = 4.161, p < .001), but F change between third and fourth step was not significant (ΔR^2 = .018, *F change* (5,92) = .555, p = .734). Results were shown in Table 23.

Table 23: *Hierarchical Multiple Regression Analysis for Traffic Accident Trauma Group Predicting Errors, Violations, and Positive Behaviors, Conducting with WAS*

	Dependent variables								
	Errors			**Violations**			**Positive behaviors**		
Predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 1	.035	.035		.140	.140		.101	.101	
Age			-.025			.054			.232*
Gender			.141			.346**			.184
Last year mileage			.098			.072			-.180
Step 2	.039	.004		.147	.007		.200	.099	
Intensity			-.063			.101			.381**
Post stress			.083			-.066			-.147
Current stress			-.033			-.008			-.025

Table 23 *(continued)*

	Errors			Violations			Positive behaviors		
Predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 3	.214	.175		.185	.038		.386	.187	
External			-.400**			-.052			.442**
Self			.054			-.040			.031
Fate			.223*			.032			-.092
Rotter's LOC			.079			.180			.059
Step 4	.343	.129		.261	.077		.404	.018	
Benevolence			-.105			-.164			.114
Controllability			.049			.233			.084
Luck			.030			.087			.015
Self-worth			-.395***			-.173			-.024
Randomness			-.034			-.228			.013

Note. * p <.05; ** p <.01

In addition to world assumptions, posttraumatic growth was examined in the relationship with driver behaviors in the analyses. The steps of the multiple hierarchical regression were same as the previous analyses except for third step which include posttraumatic growth variables (personal strength and relational growth).

Firstly, errors as depended variable were added into equation. The first step which include control variables was not significant. Similarly, the second step was not also significant. However, the third step explained 22% of the variance (R^2 = .222, F(10,92) = 2.624, p < .01). From the variables in the step, external dimension of traffic locus of control (β = -.411, t = -3.658, p < .001) negatively predicted errors when the fate dimension of traffic locus of control (β = .240, t = 2.379, p < .05) positively predicted errors. In the model, the last step was found significant F(12,90) = 2.798, p < .001) but F change between third and fourth steps was not significant (ΔR^2 = .050, *F change* (2,90) =3.075, p = .051).

The other hierarchical multiple regression analyses were conducted for predictors of violations. The first step explained 16 % of the variance (R^2 = .165, F(3,99) = 6.5, p <

.001). The gender (β = .402, t = 4.201, p < .001) was positively predicted violations. The other steps of the model were not significant when predicting violations.

The analysis for positive driver behavior showed that the first step explained 13 % of the variance (R^2 = .126, F(3,99) = 4.770, p < .001). Among variables in the step, age (β = .218, t = 2.321, p < .05) and gender (β = .231, t = 2.362, p < .05) positively predicted positive driver behaviors but last year mileage of the drivers (β = -.228, t = -2.325, p < .05) negatively predicted positive driver behaviors. The second step 21 % of the variance (R^2 = .207, F(6,96) = 4.187, p < .001). The intensity of the traumatic event (β = .346, t = 3.051, p < .05) positively predicted positive driver behaviors. In the third step (R^2 = .420, F(10,92) = 6.654, p < .001), external dimension of traffic locus of control (β = .473, t = 4.759, p < .001) positively predicted positive driver behaviors. The last step (posttraumatic growth variables) of the equation was not significant. The results were presented in Table 24.

Table 24: *Hierarchical Multiple Regression Analysis for Traffic Accident Trauma Group Predicting Errors, Violations, and Positive Behaviors, Conducting with PTGI*

	Dependent variables								
	Errors			**Violations**			**Positive behaviors**		
Predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 1	.026	.026		.165	.165		.126	.126	
Age			-.054			.061			.218*
Gender			.159			.402**			.231*
Last year mileage			-.028			-.008			-.228*
Step 2	.034	.007		.167	.002		.207	.081	
Intensity			-.093			.061			.346**
Post stress			.103			-.034			-.129
Current stress			-.023			-.006			-.028
Step 3	.222	.188		.202	.115		.420	.212	
External			-.411**			-.023			.473**
Self			.055			-.038			.032
Fate			.240*			.010			-.105
Rotter's LOC			.071			.186			.063

Table 24 *(continued)*

	Errors			Violations			Positive behaviors		
Predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 4	.272	.050		.232	.030		.436	.016	
Personal strength			-.073			-.019			.106
Relational growth			.305			.208			.035

Note. * p <.05; ** p <.01

3.6.2 Predictors of Driver Behaviors for General Trauma Group

Six different hierarchical multiple regression analyses were conducted to examine the predictors of errors, violations and positive driver behaviors for general trauma group. Three analyses were conducted for world assumptions and three analyses were performed for posttraumatic growth.

Firstly, hierarchical multiple regression analyses were conducted for WAS. It was found that demographic variables in the step were not statistically significant. Similarly, the event-related variables in the second step did not statistically predicted errors. In the third step, 16 % of variance was explained by the variables (R^2 = .164, F(10,197) = 3.86, p < .001). From the variables, external dimension of traffic locus of control negatively predicted errors (β = -.361, t = -4.239, p < .001) when self (β = .165, t = 1.969, p < .05) and fate (β = .298, t = 4.241, p < .001) dimension of traffic locus of control positively predicted errors. The last step of the model explained 25 % of the variance (R^2 = .250, F(15,192) = 4.277, p < .001). Although luck (β = .179, t = 2.472, p < .01) positively predicted errors, self-worth (β = -.283, t = -4.067, p < .001) negatively predicted errors.

When examining the predictors of violations, hierarchical multiple regression analysis supported that demographic variables in the first step were not statistically significant. Moreover, event-related factors in the second step did not significantly predict violations but the third step explained 11 % of the variance (R^2 = .110, F(10,197) = 2.442, p < .01). Examining the unique effect of the variables showed that fate dimension of traffic locus of control (β = .224, t = 3.09, p < .01) positively predicted

violations. The last step of the model was statistically significant but F change between third and fourth step was not significant (ΔR^2= .046, *F change* (5,192) =2.075, p = .070).

Lastly, a hierarchical multiple regression analysis was performed to analyze predictors of positive driver behaviors. The first and second step of the model was not statistically significant. The third step explained 26 % of the variance (R^2 = .261, F(10,197) = 6.972, p < .001). From the variables included in the step, external dimension of traffic locus of control (β = .582, t = 7.278, p < .001) positively predicted positive driver behaviors when self (β = -.246, t = -3.124, p < .001) and fate (β =.-.226, t = -3.415, p < .001) dimension of traffic locus of control negatively predicted positive driver behaviors. The fourth step of the model statistically significant but F change between steps did not reach the significance level (ΔR^2= .013, *F change* (5,192) = .681, p = .638). Results were presented in Table 25.

Table 25: *Hierarchical Multiple Regression Analysis for General Trauma Group Predicting Errors, Violations, and Positive Behaviors, Conducting with WAS*

	Dependent variables								
	Errors			**Violations**			**Positive behaviors**		
Predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 1	.006	.006		.035	.035		.006	.006	
Age			-.048			-.154			.040
Gender			.056			.118			.037
Last year mileage			.041			.088			.046
Step 2	.032	.026		.046	.010		.193	.031	
Intensity			-.157			-.027			.069
Post stress			-.057			-.099			.167
Current stress			.108			.114			-.180
Step 3	.164	.132		.110	.065		.261	.224	
External			-.361**			-.130			.582**
Self			.165*			.131			-.246**
Fate			.298**			.224**			-.226**
Rotter's LOC			-.059			.071			.035

Table 25 *(continued)*

	Errors			Violations			Positive behaviors		
Predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 4	.250	.087		.156	.046		.274	.013	
Benevolence			-.026			.008			.097
Controllability			.085			-.041			-.124
Luck			.179*			.139			-.027
Self-worth			-.283**			-.173			.022
Randomness			.044			.091			.028

Note. * p <.05; ** p <.01

In addition to WAS, PTGI was also examined as predictor of driver behaviors in the analyses. The steps of the multiple hierarchical regression were same as the previous analyses except for third step which include posttraumatic growth variables (personal strength and relational growth).

To evaluate predictors of errors, analysis was conducted with PTGI as another independent variable. The first and second steps of the model were not significant so it can be said that the demographic and event-related variables did not predicted errors significantly. The third step of the model explained 15 % of the variance (R^2 = .148, F(10,186) = 3.224, p < .001). Among the variables in the step, when external dimension of traffic locus of control (β = -.338, t = -3.852, p < .001) negatively predicted errors, fate dimension of traffic locus of control (β = .266, t = 3.634, p < .001) positively predicted errors. Moreover, the last step of the model founded as significant but F change between steps did not reach significance level (ΔR^2= .011, *F change* (2,184) =1.153, p = .318). Thus, variables in the last step did not predicted errors.

The other hierarchical multiple regression analyses were conducted for predictors of violations. The first and second steps of the model were not significant but the third step explained 11 % of the variance (R^2 = .107, F(10,186) = 2.235, p < .05). Fate dimension of the traffic locus of control (β = .200, t = 2.666, p < .01) positively predicted violations. The last step of the model was also significant but F change between steps was not significant (ΔR^2= .017, *F change* (2,184) =1.838, p = .162).

The lastly, positive driver behaviors were added into the equation to examine their predictors. Similarly, first and second steps were not statistically significant in the model. The third step explained the 25 % of the variance (R^2 = .245, F(10,186) = 6.051, p < .001). In the step, external dimension of the traffic locus of control (β = .547, t = 6.638, p < .001) positively predicted positive driver behaviors but self (β = -.236, t = -2.915, p < .001) and fate (β = -.220, t = -3.200, p < .001) dimensions were negative predictors of positive driver behaviors. Although it was found that the last step of the model was significant, the F change between steps did not reach the significance level (ΔR^2= .015, *F change* (2,184) =1.910, p = .151). Results were located in Table 26.

Table 26: *Hierarchical Multiple Regression Analysis for General Trauma Group Predicting Errors, Violations, and Positive Behaviors, Conducting with PTGI*

	Dependent variables								
	Errors			**Violations**			**Positive behaviors**		
Predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 1	.004	.004		.037	.037		.004	.004	
Age			-.047			-.163			.030
Gender			.037			.110			.019
Last year mileage			.036			.090			.048
Step 2	.037	.033		.053	.017		.044	.040	
Intensity			-.144			-.009			.070
Post stress			-.108			-.124			.198
Current stress			.144			.154			-.187
Step 3	.148	.111		.107	.054		.245	.202	
External			-.338**			-.130			.547**
Self			.155			.113			-.236**
Fate			.266**			.200			-.220**
Rotter's LOC			-.060			.075			.056

Table 26 *(continued)*

	Errors			Violations			Positive behaviors		
Predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 4	.398	.011		.125	.017		.261	.015	
Personal strength			-.111			-.186			.045
Relational growth			.138			.106			-.154

Note. * p <.05; ** p <.01

3.6.3 Predictors of Driver Behaviors for Control Group

For control group, study variables were entered into equation in three steps; in the first step, age, gender and last year mileage of participants were added into equation. Then locus of control variables (external, self and fate dimensions of traffic locus of control and Rotter's locus of control) was added to the equation. Lastly, world assumptions (benevolence, controllability, randomness, luck, and self-worth) were entered into the equation.

Firstly, to examine predictors of errors, a hierarchical multiple regression analysis was conducted. It was found that first step of the model was not statistically significant. The second step explained 13 % of the variance (R^2 = .126, F(7,160) = 3.293, p < .01). From the variables in the step, when external dimension of traffic locus of control (β = -.203, t = -2.13, p < .05) negatively predicted errors, self (β = .205, t = 2.203, p < .05) and fate (β = .215, t = 2.687, p < .01) dimensions positively predicted errors. The third step explained 23 % of the variance (R^2 = .233, F(12,155) = 3.93, p < .001). Although benevolence (β = .169, t = 2.051, p < .05) positively predicted errors, self-worth (β = -272, t = -3.611, p < .001) negatively predicted errors in the step.

In the other analysis, violations were added into equation as dependent variable. According to results, the only first step of the model was significant (R^2 = .128, F(3.164) = 8.042, p < .001). In the step, age (β = -.309, t = -4.143, p < .001) was a negative predictor of violations. Moreover, gender (β = .258, t = 3.392, p < .001) positively predicted violations.

The analysis for positive driver behaviors yielded that the first step of the model was not significant. The second step explained 21 % of the variance (R^2 = .214, F(7,160) = 6.220, p < .001). When external traffic locus of control (β = .473, t = 5.244, p < .001) positively predicted, fate dimension (β = -.204, t = -2.696, p < .01) negatively predicted positive driver behaviors. Moreover, the last step was also significant (R^2 = .304, F(12,155) = 5.633, p < .001). From the step, self-worth (β = -.204, t = -2.696, p < .01) positively predicted positive driver behaviors. Results were presented in Table 27.

Table 27: *Hierarchical Multiple Regression Analysis for Control Group Predicting Errors, Violations, and Positive Behaviors, Conducting with WAS*

	Dependent variables								
	Errors			**Violations**			**Positive behaviors**		
Predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 1	.044	.044		.128	.128		.015	.015	
Age			-.202			-.309**			-.097
Gender			-.035			.258**			.091
Last year mileage			.013			-.036			-.041
Step 2	.126	.082		.133	.004		.214	.199	
External			-.203*			.077			.473**
Self			.205*			-.044			-.086
Fate			.215*			.025			-.204*
Rotter's LOC			.039			-.004			.066
Step 3	.233	.107		.154	.022		.304	.090	
Benevolence			.169*			-.011			-.061
Controllability			-.017			.013			.110
Luck			.087			.033			.003
Self-worth			-.272**			-.130			.283**
Randomness			.124			.067			-.132

Note. * p <.05; ** p <.01

3.7 Mediation Analyses

Mediation analyses were performed to show mediator variable between independent and dependent variables in the current study. In this analysis, The Multidimensional Traffic Locus of Control, Rotter's Internality/Externality Locus of Control were mediator; drivers' behaviors were the outcome, and world assumptions and posttraumatic growth were independent variables.

In the analyses, firstly, age, gender and annual mileage of drivers were added as control variables. Then, in addition to these control variables, intensity of the event, post and current stress of events were added as control. If there was a difference between two analyses, both of them were reported in the mediation analyses. Moreover, mediation analyses were conducted for each study group, separately.

3.7.1 Mediation Analysis for Traffic Accident Trauma Group

Mediation analyses were conducted to test the nature of the relationships between sub dimensions of World Assumption, the Posttraumatic Growth and driver behaviors when the locus of control was mediator. In the traffic accident trauma group, there were no differences between analyses which performed with both control variables sets. Thus, in this study group, intensity of event, post and current stress of the event did not reveal significantly different results from analyses which include only age, gender and annual mileage variables as control variable.

As reported in bivariate correlations between variables, significant effects of main variables on errors, violations, and positive driver behaviors were firstly reexamined. According to table, self-worth, relational growth, external TLOC, and fate TLOC was found to be significantly related with errors. However, none of the main study variables significantly related with violations. Also, self-worth, external TLOC, and self TLOC was associated with positive driver behaviors. Thus, the total of four mediation analyses were conducted to identify significant relationships between variables.

Firstly, Self-worth was a significant predictor of errors in the DBQ (B = -.33, SE = .06, p < .001), and external traffic locus of control (B = .34, SE = .08, p < .001). External locus of control also negatively predicted errors (B = -.16, SE = .07, p = .029). These

findings were support for the mediation analysis. Predictive power of self-worth declined when controlling for external traffic locus of control (*B* = -.28, *SE* = .06, *p* < .001). 28 % of the variance was explained by the predictors *(R^2* = .28, *F*(5,109) = 8.47, *p* < .001). To test indirect effect of external traffic locus of control, Preacher and Hayes (2008)'s indirect macro with 5000 bootstrap resamples was conducted. According to model, indirect effect was also statistically significant (*B* = -.05, *SE* = .03, 95 *CI* = -.13 - .001). The Table 28 and Figure 2 showed the results.

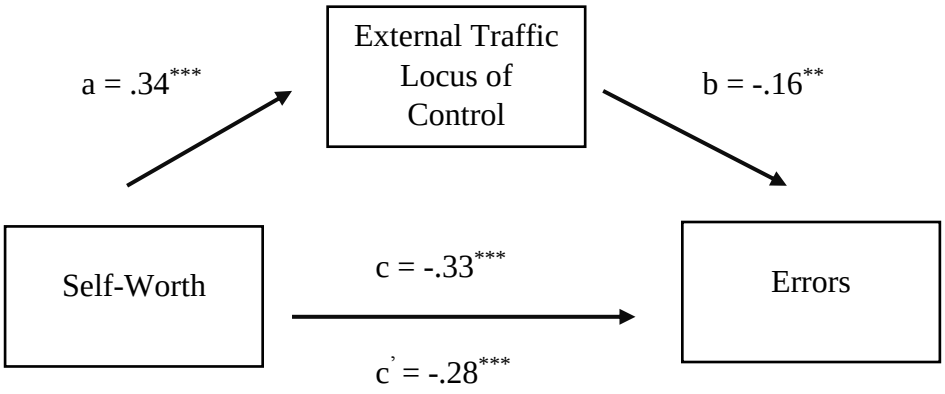

Figure 2: *Relationship between Self-worth and Errors with External Traffic Locus of Control as the Mediator*

Note: * *p* < .05, ** *p* < .01, *** *p* < .001

Table 28: *Mediation effect of Traffic Locus of Control on the Relationship between Self-worth and Errors in Traffic Accident Trauma Group*

	B	***SE***	***t***	***p***
Mediation path a (self-worth on external traffic locus of control)	.34	.08	4.53	.000
Mediation path b (external traffic locus of control on errors)	-.16	.07	-2.2	.029
Indirect effect bootstrapped 95 % Confidence Interval [-.13, .001]	-.05	.03		
Total effect, path c (self-worth on errors)	-.33	.06	-5.6	.000
Direct effect path c' (self-worth on errors with mediation)	-.28	.06	-4.4	.000

Table 28 *(continued)*

	B	***SE***	***t***	***p***
Covariates				
Age	.01	.01	.86	.393
Gender	.18	.12	1.47	.144
Mileage	.00	.00	1.36	.175
Model R^2 = .28, F(5,109) = 8.47, p < .001				

External traffic locus of control also mediated the relationship between self-worth and positive driver behaviors. Self-worth was a significant predictor of external traffic locus of control (*B* = .34, *SE* = .08, *p* < .001). Moreover, external traffic locus of control significantly predicted positive driver behaviors (*B* = .69, *SE* = .13, *p* < .001). After controlling mediation effect of external traffic locus of control, predictive power of self-worth on positive driver behaviors decreased from .29 (*SE* = .11, *p* < .01) to .06 (*SE* = .11, *p* = .602). According to model, indirect effect was also statistically significant (*B* = .23, *SE* = .07, 95 *CI* = .11 - .37). Results were shown in Table 29 and Figure 3.

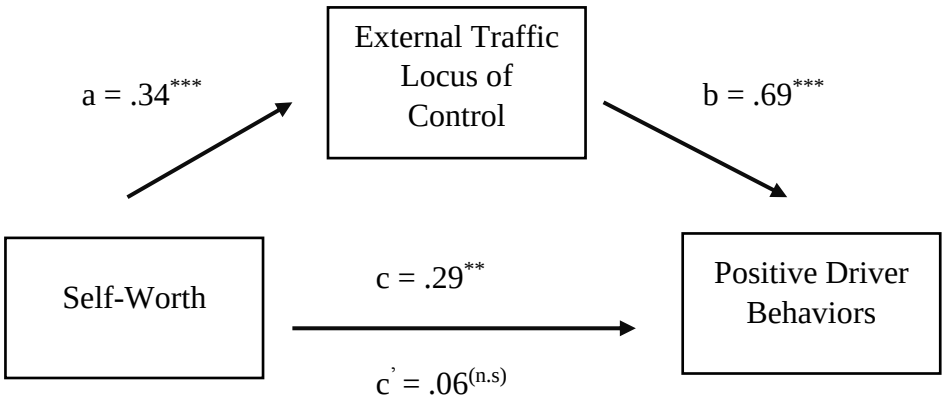

Figure 3: *Relationship between Self-worth and Positive Driver Behaviors with External Traffic Locus of Control as the Mediator in Traffic Accident Trauma Group*

Note: * *p* < .05, ** *p* < .01, *** *p* < .001

Table 29: *Mediation effect of Traffic Locus of Control on the Relationship between Self-worth and Positive Driver Behaviors in Traffic Accident Trauma Group*

	B	***SE***	***t***	***p***
Mediation path a (self-worth on external traffic locus of control)	.34	.08	4.53	.000
Mediation path b (external traffic locus of control on positive driver behaviors)	.69	.13	5.43	.000
Indirect effect bootstrapped 95 % Confidence Interval [.11, .39]	.23	.07		
Total effect, path c (self-worth on positive driver behaviors)	.29	.11	2.6	.011
Direct effect path c' (self-worth on positive driver behaviors with mediation)	.06	.11	.52	.602
Covariates				
Age	.01	.01	1.04	.302
Gender	.5	.21	2.41	.018
Mileage	.00	.00	-1.4	.165
Model R^2 = .33, $F(5,109)$ = 10.65, p < .001				

3.7.2 Mediation Analysis for General Trauma Group

To test mediation effect of locus of control between world assumptions and driver behaviors mediation analysis were conducted. In this group, in addition to age, gender and annual mileage, intensity, post and current stress of the traumatic events as control variables produced different mediation effects. In other words, after adding intensity, post and current stress of the event as control variable, some of the mediations lost their effects.

Self-worth as an independent variable significantly related with errors (B = -.19, SE = .04, p < .001) and fate traffic locus of control (B = -.15, SE = .06, p < .05). In addition, fate traffic locus of control was a significant predictor of errors (B = .15, SE = .05, p < .001). After controlling mediation effect of fate traffic locus of control, predictive power of self-worth on errors declined but still significant (B = -.17, SE = .04, p <

.001). 13% of variance was explained by variables in the analysis. The indirect effect was investigated using bootstrapping analysis with 5000 samples and found statistically significant (*B* = -.02, *SE* = .01, 95% *CI* -.06, -.004). Table 30 and Figure 4 showed the results.

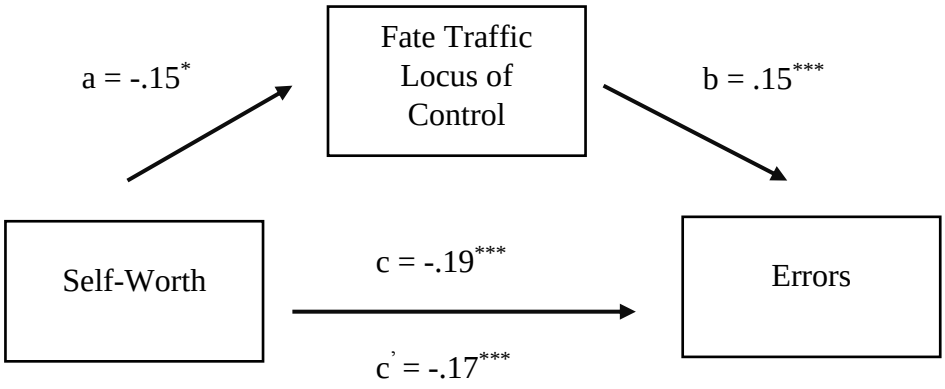

Figure 4: *Relationship between Self-worth and Errors with Fate Traffic Locus of Control as the Mediator in General Trauma Group*

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 30: *Mediation effect of Fate Traffic Locus of Control on the Relationship between Self-worth and Errors in General Trauma Group*

	B	***SE***	***t***	***p***
Mediation path a (self-worth on fate traffic locus of control)	-.15	.06	-2.39	.018
Mediation path b (fate traffic locus of control on errors)	.15	.05	3.23	.001
Indirect effect bootstrapped	-.02	.01		
95 % Confidence Interval [-.06, -.004]				
Total effect, path c (self-worth on errors)	-.19	.04	-4.45	.000
Direct effect path c' (self-worth on errors with mediation)	-.17	.04	-3.97	.000
Covariates				
Age	-.001	.004	-.29	.774

Table 30 *(continued)*

	B	***SE***	***t***	***p***
Gender	.001	.08	.02	.982
Mileage	.00	.00	1.06	.291
Model R^2 = .13, F(5,213) = 6,49, p < .001				

In addition to errors, self-worth and fate traffic locus of control also predicted positive driver behaviors. Self-worth as an independent variable was significantly related with positive driver behaviors (*B* = .18, *SE* = 08, *p* = .033), and fate traffic locus of control (*B* = -.15, *SE* = .06, *p* = .018). Moreover, fate traffic locus of control was a significant predictor of positive driver behaviors (*B* = -.21, *SE* = 09, *p* = .019). On the condition that fate traffic locus of control was mediator variable, self-worth didn't significantly predict dependent variable (*B* = .15, *SE* = .08, *p* = .08). As a result, it was found that there was a full mediation effect between self-worth and positive driver behaviors (R^2 = .05, F(5,213) = 2.25, p <.05). Results were located in Figure 5 and Table 31.

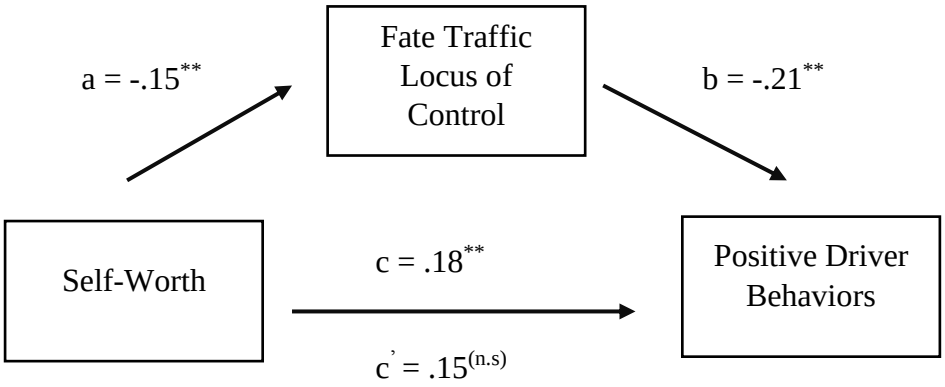

Figure 5: *Relationship between Self-worth and Positive Driver Behaviors with Fate Traffic Locus of Control as the Mediator in General Trauma Group*

Note: * p < .05, ** p < .01, *** p < .001

Table 31: *Mediation effect of Fate Traffic Locus of Control on the Relationship between Self-worth and Positive Driver Behaviors in General Trauma Group*

	B	***SE***	***t***	***p***
Mediation path a (self-worth on fate traffic locus of control)	-.15	.06	-2.39	.018
Mediation path b (fate traffic locus of control on positive driver behaviors)	-.21	.09	-2.37	.019
Indirect effect bootstrapped 95 % Confidence Interval [.002, .09]	.03	.02		
Total effect, path c (self-worth on positive driver behaviors)	.18	.08	2.14	.033
Direct effect path c' (self-worth on positive driver behaviors with mediation)	.15	.08	1.76	.080
Covariates				
Age	.00	.01	-.04	.969
Gender	.07	.16	.44	.657
Mileage	.00	.00	.72	.474
Model R^2 = .05, F(5,213) = 2.25, p < .05				

To figure out the relationship between violations and randomness with the effect of mediator variable, mediation analysis was performed. Firstly, it was found that randomness as an independent variable significantly predict violations as dependent variable (B = .13, SE = .05, p = .006). Secondly, fate traffic locus of control as mediator variable was controlled whether predicted dependent variable. according to results, fate LOC predicted significantly violations (B = .19, SE = .06, p < .01). Moreover, randomness was also significantly related with fate traffic locus of control (B = .2, SE = .05, p < .001). After all the mediation criterions were met, it was conducted that predictive power of randomness was decreased when controlling the mediator effect (B = .1, SE = .05, p = .053). 10 % variance was explained by the variables and indirect effect (B = .04, SE = .02) was statistically significant. (R^2 = .10, F(5,213) = 4.94, p < .001). Results were presented in Table 32 and Figure 6.

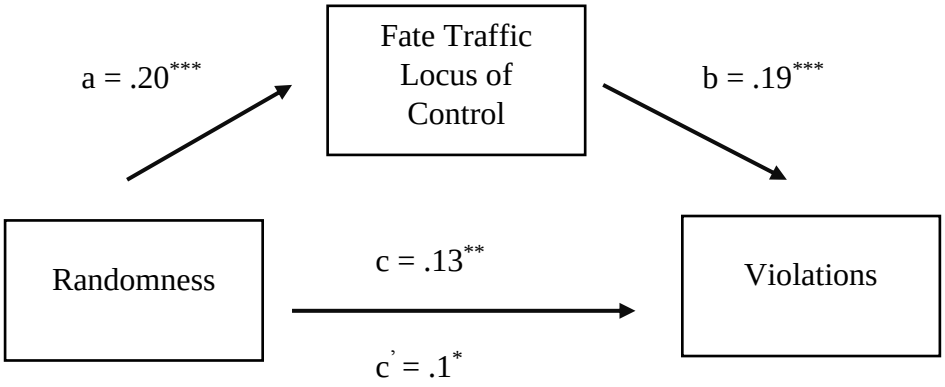

Figure 6: *Relationship between Randomness and Violations with Fate Traffic Locus of Control as the Mediator in General Trauma Group*

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 32: *Mediation effect of Fate Traffic Locus of Control on the Relationship between Randomness and Violations in General Trauma Group*

	B	***SE***	***t***	***p***
Mediation path a (randomness on fate traffic locus of control)	.20	.05	3.79	.000
Mediation path b (fate traffic locus of control on violations)	.19	.06	3.16	.002
Indirect effect bootstrapped	.04	.02		
95 % Confidence Interval [.01, .09]				
Total effect, path c (randomness on violations)	.13	.05	2.77	.006
Direct effect path c' (randomness on violations with mediation)	.10	.05	1.94	.053
Covariates				
Age	-.01	.01	-1.99	.048
Gender	.13	.11	1.23	.219
Mileage	.00	.00	1.56	.121
Model $R^2 = .10$, $F(5,213) = 4.94$, $p < .001$				

Violations were also predicted by self-worth (B = -.12, SE = .06, p < .05) and fate traffic locus of control (B = .21, SE = .06, p < .001). Moreover, self-worth had predictive power on fate traffic locus of control (B = -.15, SE = .06, p = .018). After the all criterions were met for mediation analysis, it was shown that power of self-worth on violations was declined (B = -.09, SE = .06, p = .131). According to results, it can be concluded that, fate traffic locus of control provided full mediation effect. (R^2 = .10, F(5,213) = 4.61, p < .001). Results were presented in Table 33 and Figure 7.

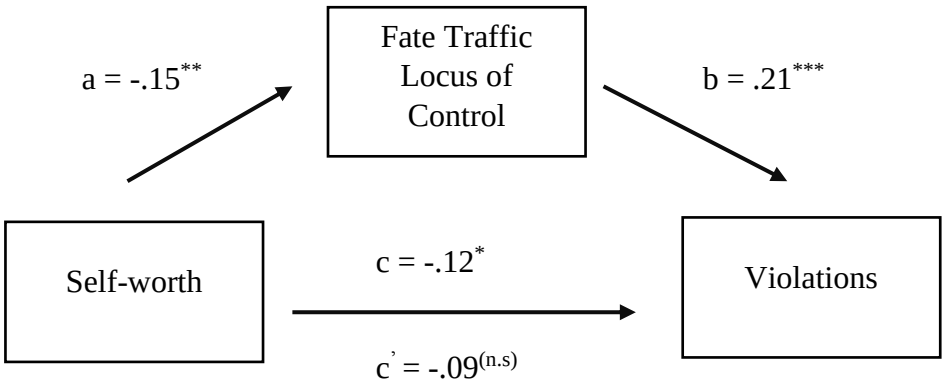

Figure 7: *Relationship between Self-worth and Violations with Fate Traffic Locus of Control as the Mediator in General Trauma Group*

Note: * p < .05, ** p < .01, *** p < .001

Table 33: *Mediation effect of Fate Traffic Locus of Control on the relationship between Self-worth and Violations.*

	B	***SE***	***t***	***p***
Mediation path a (self-worth on fate traffic locus of control)	-.15	.06	-2.39	.018
Mediation path b (fate traffic locus of control on violations)	.21	.06	3.47	.001
Indirect effect bootstrapped 95 % Confidence Interval [-.09, -.004]	-.03	.02		
Total effect, path c (self-worth on violations)	-.12	.06	-2.05	.041

Table 33 *(continued)*

	B	***SE***	***t***	***p***
Direct effect path c' (self-worth on violations with mediation)	-.09	.06	-1.52	.131
Age	-.01	.01	-1.97	.051
Gender	.06	.11	.56	.575
Mileage	.00	.00	1.49	.137
Model R^2 = .10, F(5,213) = 4.61, p < .001				

3.7.2.1 Event-Related Control Variables in the Mediation Analysis for General trauma group

The mediation analyses were run again for both traffic accident trauma and general trauma groups in order to control event-related variables in addition to age, gender and annual mileage of drivers. When traffic accident trauma group did not change when event-related variables were added into the analyses, general trauma groups showed significant differences.

Firstly, violations were significantly predicted by fate locus of control (B = .17, SE = .06, p < .01) and randomness (B = .12, SE = .05, p <.01). Moreover, randomness significantly predicted fate traffic locus of control (B = .20, SE = .05, p <.001). When the controlling mediation effect, predictive power of randomness decreased (B = .09, SE = .05, p= .087). Indirect effect was also significant (B = .03, SE = .02, 95 % CI .01, .08). 7% of the variance was explained by the variables (R^2 = .07, F(8,199) = 2.98, p < .001). Results were presented in Table 34 and Figure 8

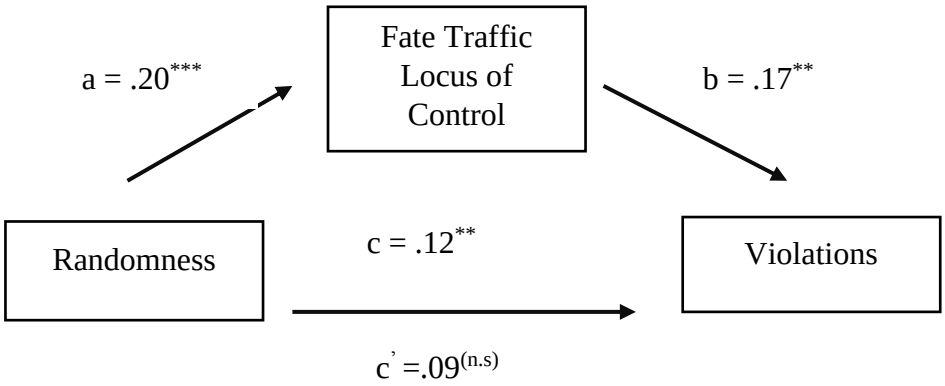

Figure 8: *Relationship between Randomness and Violations with Fate Traffic Locus of Control as the Mediator in General Trauma Group When Event Related Variables Entered*

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 34: *Mediation effect of Fate Traffic Locus of Control on the Relationship between Randomness and Violations in General Trauma Group When Event Related Variables Entered*

	B	***SE***	***t***	***p***
Mediation path a (randomness on fate traffic locus of control)	.20	.05	3.63	.000
Mediation path b (fate traffic locus of control on violations)	.17	.06	2.74	.007
Indirect effect bootstrapped	.03	.02		
95 % Confidence Interval [.01, .08]				
Total effect, path c (randomness on violations)	.12	.05	2.44	.016
Direct effect path c' (randomness on violations with mediation)	.09	.05	1.72	.087
Covariates				
Age	-.01	.01	-1.85	.066
Gender	.23	.11	1.99	.048
Mileage	.000	.000	1.45	.147
Intensity	-.01	.04	-.15	.878

Table 34 *(continued)*

	B	***SE***	***t***	***p***
Post stress	**-.03**	**.03**	**-.86**	**.390**
Current stress	.01	.03	.47	.64
Model R^2 = .07, $F(8, 199) = 2.98$, $p < .001$				

3.7.3 Mediation Analysis for Control Group

To test mediation effect of locus of control between world assumptions and driver behaviors and skills, mediation analysis were conducted.

When external traffic locus of control as a mediator variable, mediation analysis was performed to figure relationship between independent and dependent variables. Firstly, it was found that positive driver behaviors were predicted by Controllability factor (*B* = .23, *SE* = .09, *p* < .01) and external traffic locus of control (*B* = .56, *SE* = .11, *p* < .001). Moreover, to meet mediation analysis criteria it was computed whether independent variable predicted mediator variable. Thus, it was shown that Controllability also predicted external traffic locus of control (*B* = .27, *SE* = .06, *p* < .001). After controlling mediation effect, predictive power of Controllability decreased (*B* = .08, *SE* = .09, *p* = .372). Thus, it can be concluded that there was a full mediation effect and indirect effect was significant (*B* = .15, *SE* = .05, 95% *CI* .06, .27). Results were presented in Table 35 and Figure 9.

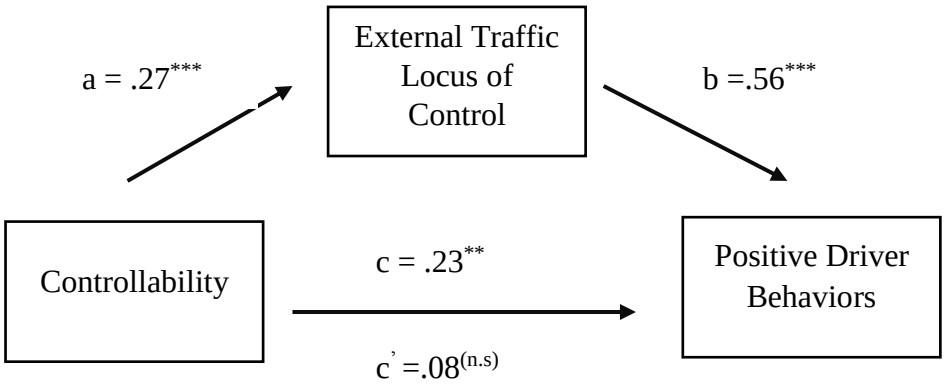

Figure 9: *Relationship between Controllability and Positive Driver Behaviors with External Traffic Locus of Control as the Mediator in Control Group*

Note: * p < .05, ** p < .01, *** p < .001

Table 35: *Mediation effect of External Traffic Locus of Control on the Relationship between Controllability and Positive Driver Behaviors in Control Group*

	B	***SE***	***t***	***p***
Mediation path a (Controllability on external traffic locus of control)	.27	.06	4.71	.000
Mediation path b (external traffic locus of control on positive driver behaviors)	.56	.11	4.94	.000
Indirect effect bootstrapped	.15	.05		
95 % Confidence Interval [.06, .27]				
Total effect, path c (Controllability on positive driver behaviors)	.23	.09	2.6	.010
Direct effect path c' (Controllability on positive driver behaviors with mediation)	.08	.09	.895	.372
Covariates				
Age	-.02	.01	-2.1	.037
Gender	.32	.16	1.97	.050
Mileage	.00	.00	-.89	.372
Model R^2 = .18, $F(5,162)$ = 7.01, p < .001				

There was also significant relationship between self-worth and positive driver behaviors when external traffic locus of control was mediator (*B* = .36, *SE* = .07, *p* < .001). In addition, external traffic locus of control was a predictor of positive driver behavior (*B* = .51, *SE* = .10, *p* < .01) and was predicted by self-worth (*B* = .13, *SE* = .05, *p* < .01). After the controlling mediator effect of external traffic locus of control, predictive power of self-worth decreased but still significant (*B* = .30, *SE* = 07, *p* < .001). Thus, it can be concluded that there was a partial mediation and indirect effect was statistically significant in the analysis (*B* = .07, *SE* = .03, 95% *CI* .02, .15). Results were presented in Table 36 and Figure 10.

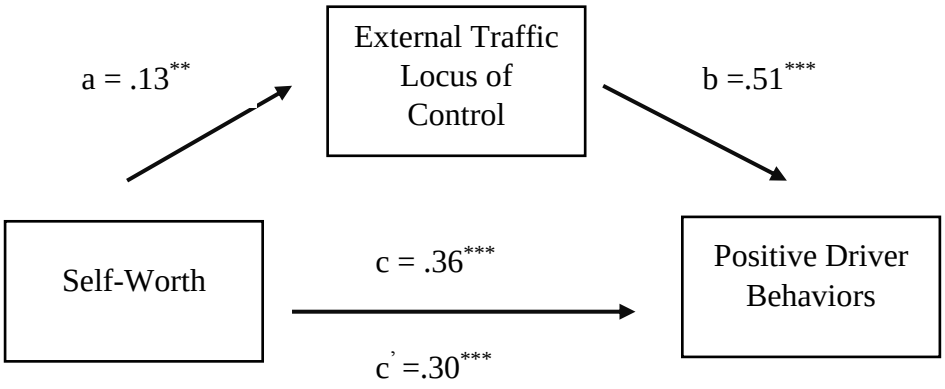

Figure 10: *Relationship between Self-worth and Positive Driver Behaviors with External Traffic Locus of Control as the Mediator in Control Group*

Note: * p < .05, ** p < .01, *** p < .001

Table 36: *Mediation effect of External Traffic Locus of Control on the Relationship between Self-Worth and Positive Driver Behaviors in Control Group*

	B	***SE***	***t***	***p***
Mediation path a (self-worth on external traffic locus of control)	.13	.05	2.59	.011
Mediation path b (external traffic locus of control on positive driver behaviors)	.51	.10	4.92	.000
Indirect effect bootstrapped	.07	.03		
95 % Confidence Interval [.02, .15]				
Total effect, path c (self-worth on positive driver behaviors)	.36	.07	5.04	.000
Direct effect path c' (self-worth on positive driver behaviors with mediation)	.30	.07	4.30	.000
Covariates				
Age	-.01	.01	-2.17	.032
Gender	.33	.15	2.23	.027
Mileage	.00	.00	-1.33	.185
Model R^2 = .26, $F(5,162)$ = 11.29, p < .001				

Mediation analysis was conducted to analyze the effect of fate traffic locus of control between self-worth and errors. To meet mediation analysis criterion, regression analyses were conducted between variables. Firstly, self- worth was a significant predictor of errors (B = -. 16, SE = .04, p < .001). There was also significant relationship between self-worth and fate traffic locus of control (B = -.19, SE = .07, p < .01). Moreover, fate traffic locus of control predicted errors (B = .10, SE = .05, p < .01). After controlling mediation effect, power of self-worth decreased but still significant (B = -.14, SE = .04, p < .001). Thus, there was a partial mediation and 16 % variance was explained by variables. Results were presented in Table 37 and Figure 11.

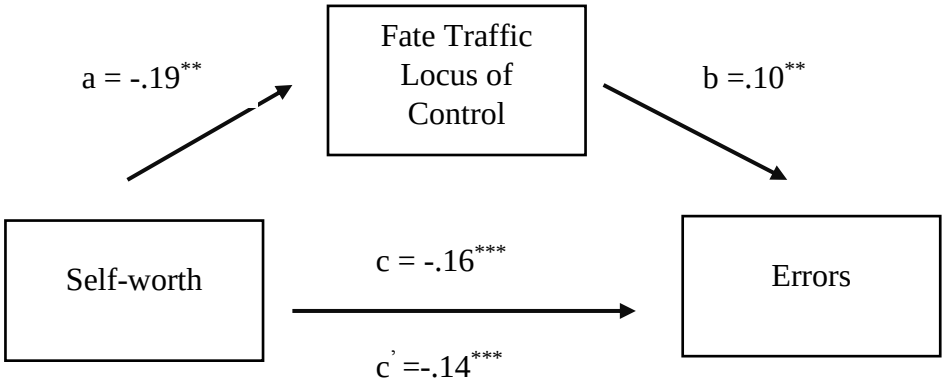

Figure 11: *Relationship between Self-worth and Errors with Fate Traffic Locus of Control as the Mediator in Control Group*

Note: * p < .05, ** p < .01, *** p < .001

Table 37: *Mediation effect of Fate Traffic Locus of Control on the Relationship between Self-worth and Errors in Control Group*

	B	***SE***	***t***	***p***
Mediation path a (self-worth on fate traffic locus of control)	-.19	.07	-2.74	.007
Mediation path b (fate traffic locus of control on errors)	.10	.05	2.21	.028

Table 37 *(continued)*

	B	***SE***	***t***	***p***
Indirect effect bootstrapped	-.02	.01		
95 % Confidence Interval [-.05, -.002]				
Total effect, path c (self-worth on errors)	-.16	.04	-4.06	.000
Direct effect path c' (self-worth on errors with mediation)	-.14	.04	-3.56	.001
Covariates				
Age	-.01	.003	-2.28	.024
Gender	-.04	.09	-.43	.671
Mileage	.00	.00	.86	.392
Model R^2 = .16, $F(5,162) = 6.07$, $p < .001$				

Summary of Results

- Only overtaking tickets, Randomness scale of WAS, and total WAS scores among main study variables significantly differentiate between study groups. Drivers in the traffic accident trauma group reported higher passing offences than driver in general trauma and control group. Randomness score of general trauma group was higher than control group. Traffic accident group had higher total WAS score than general trauma group. Driver in general trauma group reported higher WAS scores than control group.
- It was found in the comparison of traffic accident and general trauma group that the perceived intensity of event, experienced subjective stress at the event happen, and stress after the event scores higher in general trauma than traffic accident trauma group.
- In traffic accident trauma group, drivers who had external locus of control mechanism in traffic reported lower errors, higher positive behaviors in traffic. They also more likely to positively behave in traffic if they perceived their traumatic events as more severe. When attribution the causes of accidents to

fate increases errors, evaluation of themselves as worth decrease errors. Also, external TLOC mediate the relationship between self-worth and errors. Drivers who evaluate themselves as less worthy less likely engage in attribution of causes to external factors so their errors increase, positive driver behaviors decrease in traffic.

- In general trauma group, external TLOC and self TLOC has opposite effect on errors and positive behaviors. Attribution of causes of accidents to fate increases errors and violations but decreases positive behaviors. Drivers who evaluate themselves as less lucky person make less error in traffic, but evaluation themselves as less worthy increase errors. In this group, mediation analyses showed that evaluation oneself as more worth related with less attribution to fate and increase in positive behaviors, decrease in errors and violations. Evaluation that distribution of outcomes in the world is determined randomly affect more attribution to fate so more violation in traffic.
- In the control group, same as other groups, external TLOC negatively predicts errors, positively predicts positive behaviors. Attributing causes to self was also related more errors. Driver who perceived circumstances under fate control more likely to make more errors, and less positive behaviors. When evaluating the world as more benevolent increases errors, evaluating the self as more worthy decreases errors, increases positive behaviors. Thus, people who feeling themselves as more worthy less likely attribute reasons of outcomes to fate factor, which turns less errors. In addition, positive behaviors are predicted by self-worth and controllability with the mediator effect of external TLOC.

CHAPTER IV

DISCUSSION

The present study mainly aims to the effects of traumatic life events on driver behavior by making comparison between traffic accident trauma group, general trauma group, and control group. Also, it was investigated how locus of control mediate between world assumptions and behaviors. Prediction power of Rotter's general locus of control and multidimensional traffic locus of control on traffic context was evaluated.

In the following section, factor structures of instruments, comparison of main variables between study groups, general findings about predictors of driver behaviors, and mediation analysis of study variables were discussed. Additionally, the expected contributions of the study on the field, possible implications, limitations of the study, and future suggestions for further research are addressed.

4.1 Discussion of Findings

4.1.1. Discussion of the Factor Structures of Instruments

In the previous studies, the traffic-related questionnaires were tested with general driver samples. The current study analyzed factor structures of instruments for traffic accident trauma group, general trauma group, and control group separately to investigate how the factors vary in terms of nature of the population.

4.1.1.1 Discussion of the Findings Concerning Factor Structure of Driver Behavior Questionnaire

The Driver Behavior Questionnaire (DBQ) is valid and robust tool to measure various type of aberrant driver behaviors. The tool has been translated and validated in different countries with different drivers' subgroups. Although the distinction between errors and violations has been found cross-culturally (Lajunen, Parker, & Summala, 2004; Özkan, Lajunen, Chliaoutakis, Parker, & Summala, 2006), and within special driver groups such as professional drivers, motor riders, traffic offenders, and older drivers (Freeman et al., 2009; Steg & Van Brussel, 2009; Sullman, Meadows, & Pajo, 2002), DBQ is assumed to measure from two to four latent variables, which factor structures changes from one (Hennessy & Wiesenthal, 2005) to seven (Kontogiannis et al., 2002).

In the current study, factor analysis of the Driver Behavior Questionnaire was conducted for three study groups. Principle Axis Factoring Analysis with Varimax rotation and scree plot yielded three-factor solution which were errors, positive driver behaviors and violations for all the study groups. The all of the study groups draw same factor structure but the grouping of some items changed among study groups. In the all study groups, positive driver behavior factor included exactly same items and none of them have load lower than .30. However, the distinction of errors and violations showed any differences between groups. For example, item 22 (drive on an about-to-close lane on motorway) was perceived as error among drivers in the traffic accident trauma group and general trauma group, drivers in control group perceive it as violation. Additionally, item 31 (passing from intersection even lights show red) was on the errors factor in the general trauma group and control group, but in the traffic accident group, it located in violation factor. Moreover, item 9 (Fail to your rear-view mirror before pulling out, changing lanes etc.) did not load any of the factors which was also problematic item in the thesis study conducted with Turkish drivers (Doğan, 2006).

In the current study, the aberrant driver behaviors were divided as errors and violations. This distinction was found to be most interpretable solution in a longitudinal study (Özkan, Lajunen, & Summala, 2006), and fundamental distinction between unintentional errors and intentional violations in the metaanalysis (De Winter, Dodou, 2010). Thus, in addition to positive driver behaviors, distinction of errors and violation was parallel with the literature findings, and valid for the three study groups.

4.1.1.2 Discussion of the Findings Concerning Factor Structure of Multidimensional Traffic Locus of Control

The factor structure of TLOC was tested in original scale development study with 348 undergraduate students whose mean age was 21,58. In the study, principle axis factor analysis with direct Oblimin rotation yielded four-factor solution; self, others, vehicle/environment, and fate. It was proposed that three of the subscales (others, vehicle/environment, and fate) were related to external causes of accidents, the self scale was related to the internal factors (Özkan & Lajunen, 2005).

The T-LOC was used to examine factor structure of the scale and correlate traffic-related behaviors in other studies. For example, in the dissertation study of Doğan (2006), factor analysis produced three factors for TLOC. Unlike original study, "other drivers-based causes" and "vehicle/environment based causes" were combined as "external factors". The self and fate factor of the scale was same as the factor structure of original study (Özkan & Lajunen, 2005). The scale was also used in the study which performed with 223 Swedish drivers and found five factors which were other drivers, own behavior, fate, vehicle and environment, and own skill (Warner, Özkan, & Lajunen, 2010). In the study, the self factor was divided as own skills and own behaviors.

Factor analysis of the current study produced three-factor solution which included external factors, self, and fate for the all study groups, and the structure was parallel with the study of Doğan (2006). Grouping of the items was similar among study groups except for cross-loading items. In the *traffic accident trauma group,* item 12 (bad weather and lighting conditions) got equally loading on "external factor" and "self

factor" but the item loaded on external factors in the general trauma group and control group. The group differences might be related that drivers who experience a traffic accident because of bad weather or bad lighting conditions begin to attribute external causes of accidents to internal factors. Additionally, in the traffic accident trauma group, item 13 (mechanical failure in the car) loaded on the three factors, which means that drivers attributed mechanical failure-based causes of accidents to consequences of external, self and fate factors. Although mechanical failure is related with vehicle/environment (external) cause, experiencing traffic accident might cause to attribute mechanical failure of car to their own responsibility (self), vehicle failure (external), or destiny (fate).

In the *general trauma group*, item 13 (mechanical failure in the car) had equally loadings on both of the external and self factors whereas it located on external factors in the control group. The finding might be related that highly stressful events cause to attribute outcomes of preventable situations to their own responsibility. Since, the item 13 was only preventable cause of accident among other items in the vehicle/environment factor, drivers might think that fixing mechanical failure of the car was my responsibility.

4.1.1.3 Discussion of the Findings Concerning Factor Structure of the World Assumption Scale (WAS)

The World Assumption Scale was composed of 32 items and seven subscales which are benevolence of the world, justice, control, randomness, self-worth, self-control, luck (Jannof-Bulman, 1992). The Turkish translation and adaptation study was conducted by Yılmaz (2006). The Turkish form of World Assumption Scale consists of 25 items and six factors which are benevolence, justice, luck, randomness, self-worth, and control. Although original and Turkish form of the scale needs to be reviewed in terms of the expression of the items, there were no study which reexamine the factor structure of Turkish World Assumption Scale.

In the current study, the WAS was examined in terms of factor structure for three study groups. Factor analysis produced five factors solution which were randomness, luck,

self-worth, benevolence, and control as distinct from Yılmaz's findings (2006). The difference between the studies was that items in the control and justice factors of the first adaptation scale combined as control within the one factor in the current study. To understand combining control and justice factors together, the explanation of concepts in the theoretical model of World Assumptions should be reviewed. In the theory, meaningfulness of the world which related with distribution of outcomes refers to justice, controllability and randomness of outcome distribution. When justice refers to idea that people deserve what they get, controllability is principle that people can control their world by controlling their own behaviors. The controllability assumption differs from justice in that behaviors rather than moral character can determine outcomes (Jonnaf-Bulman, 1989). However, items in controllability factor such as item 4 (Generally, people deserve what they get in this world.), item 8 (People's misfortunes result from mistakes they have made.), and item 9 (People will experience good fortune if they themselves are good.) cause ambiguity. People may be concluded that misfortune is preventable by their right behaviors so it is controllable. Therefore, wording of the items and fine details between concepts should be controlled.

4.1.1.3 Discussion of the Findings Concerning Factor Structure of the Posttraumatic Growth (PTG)

The scale was originally developed by Tedeschi and Calhoun (1996) with 21 items which grouped into five subscales: new possibilities, relating to others, personal strength, spiritual change and appreciation of life. Dirik and Karancı (2008) adapted the scale into Turkish and founded three factors; changes in relationship with others, changes in philosophy of life, and changes in self-perception.

In the current study, factor analysis of Posttraumatic Growth which was conducted for traffic accident trauma group and general trauma group yielded two-factor as personal growth and relating to others which were also used in the study of Eren-Koçak and Kılıç (2014). Although, factor structure of the current study did not correspond to original structure (Tedeschi & Calhoun, 1996) or Dirik and Karancı's findings (2008), some studies in the literature suggested two factor solution as best fit solution (Kira et

al., 2012; Levine et al., 2008; Ho et al., 2004) which also in line with the view of Janoff-Bulman (2004) that "personal strength" versus "existential reevaluation"

4.1.2 Discussion of the Findings Concerning Comparison of Study Groups

After the factor analysis of scales for all study groups, common and different aspects of items in the factors were investigated. Although generally number of factors and items showed similar pattern, there was some differences in location of numbers on the factors. For example, DBQ, PTGI, and T-LOC yielded some differences between groups. However, the items in the factors and factor structure shown were similar in all study groups. Also, using Rotter's locus of control as continuous variable enabled to compare group scores. Thus, the comparisons between groups were done in terms of passive accidents, offences, and items of the scales by controlling age and last year mileage.

The first comparison was done for last 3 year passive accidents number, number of traffic tickets and the result showed that although the least numbers of tickets belong the control group the differences was not significant except for number of Overtaking ticket. Drivers in traffic accident trauma group got the highest number of Overtaking ticket in last 3 years than general trauma group and control group. The literature proposed that controls and fines decrease road traffic accidents and increase safety (Sümer & Kaygısız, 2015), interpretation of relationship between accidents and tickets is difficult in the current study. Although sequence of tickets and accidents was unknown, referring the least number of tickets to control group can partially support this hypothesis.

As mentioned before, the comparison of study groups was done item by item. When investigating of Driver Behavior Questionnaire, it can be seen that higher scores on items about aberrant behaviors belong to traffic accident trauma group, control group had lower scores on aberrant behaviors and higher scores on positive driver behaviors. For example, drivers in traffic accident trauma group reported higher scores on item 4 *(Drive when you suspect you might be over the legal blood alcohol limit),* item 18 *(Miss "Give Way" signs and narrowly avoid colliding with traffic having right of way)*

than drivers in control group. In addition, traffic accident trauma group had higher scores than general trauma group on the aberrant behaviors, and vice versa on positive driver behaviors. The findings of study can be inferred as that drivers who exposed or witnessed to highly stressful experience are more likely to behave negatively in traffic environment when comparing to others who not experience any traumatic event. The results of the current study were in line with the McMurray's (1970) finding which stressful events were related with traffic violations and accident involvement rather than Mayou and his colleagues (1993). However, in addition to being exposed stressful event, the negative effect is probably increase if the traumatic past experience was related to traffic context such as fatal traffic accidents which same as study findings (Rajalin, Summala, 1997) which proposed that experiencing fatal traffic accident increase traffic offences rather than modifying drivers' behaviors positively.

In the group comparison analysis, there were no significant differences on Rotter's Locus of Control scores between groups so this showed that being exposed to highly stressful events might be insufficient to make difference on locus of control. Since, drivers post stress reactions were not included in the study, it is hard to deduce whether their subjective experience after the event was stressful enough to change their perception of control. Additionally, study groups did not differ from each other on the Multidimensional Traffic Locus of Control Scale. The finding was a support for the Özkan and Lajunen (2005) development of the scale study. They tested the factor structure of scale on accident-involved drivers and accident-free drivers and they got exactly same results.

The study groups were compared on items of World Assumption Scale. Moreover, the scale produced exactly same factor on all groups so this allowed to compare groups also on subscale scores of WAS. Firstly, it was shown that general trauma group revealed higher score on "Randomness" scale than control group. The finding was contrast with Jannof-Bulman's theory (1989) which stated as traumatic experience cause decline on people's world assumption. The most of the studies confirmed the relationship between traumatized people and lower WAS scores. However, thinking that bad things happen just randomly prevent the blaming oneself for being bad person

so people who experience traumatic event need to believe randomness of events. Lower randomness score might be related with PTSD and depression symptoms, but any participants in the current study did not report psychological diagnosis and treatment after the event. Additionally, total WAS score produced significant differences between groups. Surprisingly, the traffic trauma group got the highest WAS score, and the lowest WAS score belonged to control group. Although the most of the research in similar topics stated results in line with the Jannof-Bulman's theory, the dissertation study showed similar discrepancy (Tüfekçi, 2011), she founded higher self-worth scores among traffic accident victims comparing control group. It can be explained that image of "victim" might be reshaped as "survivor" and they might be connected with world and other people. The highest WAS score of traffic accidents survivors can be explained that traffic accident can be perceived as their own control as driver rather than natural disaster, sexual abuse or bereavement, so perceived control can increase the world assumptions.

Positive consequences of traumatic event as posttraumatic growth were compared item by item between traffic accident trauma group and general trauma group. Generally, general trauma group produced higher posttraumatic growth than traffic accident group. For example, item 1 (I changed my priorities about what is important in life), item 2 (I have greater appreciation for the value of my own life), item 7 (I established a new path for my life), item 10 (I know better that I can handle difficulties) are related with "personal strength" aspect of the growth. The greater growth can be related with subjective intensity of the event and experienced stress after the event because reported subjective intensity and stress was higher on general trauma group. The finding is confirmed the previous research which they stated as the higher intensity the greater growth (Tufekci, 2011; Karancı, 2005; Schaefer & Moos, 1998).

4.1.3 Discussion of the Findings Concerning Predictors of Driver Behaviors

Set of analyses were performed to investigate each component of driver behaviors by controlling the possible effects of demographic and event-related variables. Also, to distinguish whether driver behaviors vary among different driver population, they

were analyzed separately for three groups of the current study. Moreover, there was also separate regression analyses for effects of world assumption and posttraumatic growth on driver behavior. In total, findings of fifteen separate hierarchical multiple regression analyses will be discussed in the following sections.

4.1.3.1 Predictors of Driver Behaviors in Traffic Accident Trauma Group

In the present study, world assumptions and posttraumatic growth was selected as independent variables to examine positive and negative effects of traumatic events so they were added to steps of regression analyses separately for errors, violations and positive driver behaviors.

Firstly, to investigate whether people's world assumption have an influence on driver behaviors after controlling effects of demographic, event-related variables and locus of control, four-step multiple regression analyses were conducted. Age, gender, and last year mileage of drivers were added into first step of the model. Intensity of the event, experienced post and current stress after the event were added into second step. In third step, traffic locus of control and Rotter's locus of control was placed, and the last step included world assumptions (benevolence, controllability, luck, self-worth, and randomness). Additionally, the same sequence was applied to other analyses to show effects of posttraumatic growth, except for the last step which was replaced with personal strength and relational growth.

According to findings, when age was predicted positive driver behaviors, gender (being male) was found as predictor of violations. In the second step, only subjective intensity of the traumatic event was found to be related with positive driver behaviors. In other words, the more perceived severity of the past traffic accident the more positive behaviors in traffic environment. The finding can be partial support for study of Mayou and friends (1993) who reported influencing effects of crashes on driver behavior but the more serious the accidents the stronger the effects. However, it was supposed that intensity can negatively predict errors and violations in the parallel of their explanation but there was no such an effect. Although there were not statistical significance results, drivers in the traffic accident group reported even the highest

scores on error and violation. Thus, it can be concluded that victims of traffic accident do not drive "more safely", they begin to pay more attention to taking care and being polite toward other road users without safety concern. This inference can be supported by also belonging higher scores on "relational growth" dimension of posttraumatic growth to traffic accident trauma group.

Although external TLOC negatively predicted errors, it was positively associated with positive driver behaviors. It was partial support for the findings of Özkan and Lajunen (2005) study which found that attribution of accident causes to other drivers decreased errors but they also stated attribution of causes of accidents to vehicle/environment enhanced errors. Since, vehicle/environment and other drivers combined together under the single factor in the present study, comparison between findings might be inconsistent. Still, it should be important that factor structure of T-LOC was tested on not only with drivers experienced traumatic event but also control group and revealed same factor structure. Also, fate TLOC positively predicted errors which was not reached in the Özkan and Lajunen's study (2005). In the step, it was found any significant effect of Rotter's LOC on driver behaviors so the idea about accuracy of context-specific locus of control scale was observed.

Among WAS factors, only self-worth was negatively associated with errors. None of the other factors had an effect on driver behaviors. Thus, it can be interpreted that perception of self as worth, moral, and good people can decrease aberrant behaviors to protect yourself possible harms and accidents. In the literature, no study examined world assumptions and their effects on behavior.

In addition, the same results were obtained when the posttraumatic growth is located on last step of the model. Personal strength and relational growth failed to effect driver behavior after controlling other variables. This might be caused by controlled variables before the posttraumatic growth, in addition to demographics, traffic locus of control had a strong effect on driver behaviors.

4.1.3.2 Predictors of Driver Behaviors in General Trauma Group

For general trauma group, six separate set of hierarchical regression analyses were conducted. Study variables were added into model as mentioned sequence before.

Contrary to traffic accident trauma group, variables in the step 1 and step 2 failed to predict driver behaviors. In other words, demographic variables, amount of mileage and event-related variables had no influence on errors, violations and positive driver behaviors for people who experience traumatic event except for traffic accident.

External TLOC predicted negatively errors and positively positive behaviors. When people attribute reasons of accidents to external factors, their errors decrease and positive behaviors increase like people in traffic accident group. However, self TLOC was found as significant factor in this group. In contrast with external TLOC, self TLOC predicted positively errors, negatively positive driver behaviors. This finding was in line with the previous studies (Arthur & Doverspike, 1992; Özkan & Lajunen, 2005) which proposed that overconfidence and overestimation of own skills were related with internal attribution. In addition, fate TLOC played crucial role to determine driver behaviors among drivers whose had traumatic experience. It was positively associated with errors, and violations but negatively related to positive driver behaviors. Although there were no these relationships in original study (Özkan & Lajunen, 2005), fate TLOC was found to be risk factor on violations and offences (Doğan, 2006). It can be inferred that attribution to fate make people feel as powerless and incapable toward dangers in traffic so such passive tendency can cause the lack of "extra" effort to comply with the rules, pay attention to roads, or be polite to other road users.

Among world assumptions, self- worth was found to be negative predictor of errors which was parallel in traffic accident trauma group. People might begin to feel themselves less worthy because of highly stressful events so they do not need a reason to take a precaution. Surprisingly, luck assumption was positively related with errors. As an explanation of findings, it might be said that considering oneself lucky can trigger the idea of "nothing happens to us" or if the perception of self as being lucky

shatter after traumatic events, people need to be more cautious about dangers to protect themselves.

When hierarchical regression was repeated with posttraumatic growth, it was produced exactly same results with the world assumption analyses. None of the posttraumatic growth factors found to be related with driver behaviors.

After interpreting the findings, it might be questioned why world assumptions play a crucial role to determine errors rather than violations which have seen as the most related factor on accident involvement. The interpretation can be explained in the lights of world assumption theory and logic of underlying mechanisms of errors. The both of them related with cognitive process of people, so change in cognitive schemas which, was explained as assumptions toward the world, other people, and yourself by Jannof-Bulman, can cause the change in behaviors that affected cognitive functions. As stated before, violations more likely to rely on social environment and motivational component (Alberg & Rimmo, 1998).

4.1.3.3 Predictors of Driver Behaviors in Control Group

Since participants were not given the Posttraumatic Growth Inventory which measures perceived positive changes after traumatic experience three multiple regression analyses were performed in regard to world assumptions. Also, the second step of the previous models composed of event-related variables were not included for the control group.

According to results, violations increase with the being male and at younger ages. The previous researches found similar relationship between demographic characteristics and committing violation (Reason et al., 1990, Parker et al., 1995). Also, age did not predicted errors as stated in dissertation study of Özkan (2006), reported that male drivers reported more violation than female drivers, but the link was not found in accidents, and offences.

Among locus of control variables, it was founded that external TLOC predicted negatively errors, positively positive driver behaviors. Also, self TLOC was found to be significant predictors of errors. In addition, fate TLOC increase errors while decrease positive driver behaviors. The regression analyses yielded similar results with traffic accident and general trauma group and the consistency between findings of current study and previous studies was mentioned before.

Distinctively, benevolence factor was found to be positive predictor of errors. Although there was no study to evaluate link between assumptions and behaviors, this finding can be explained that higher scores on benevolence scale imply strong beliefs about the goodness of the world, so these strong assumptions can make actions of drivers in a relaxed manner. Thus, they might fail to think possibility of being hurt from other people, world or their own mistakes. On the contrary, drivers' positive thoughts about ourselves decrease errors and increase positive driver behaviors. This conspicuous result might be match up with relationship between "external attribution of causes of accident" and "internal attribution of causes of accident", in other words, external locus of control and internal locus of control. Thus, assuming external world and people live in there as good and caring and attributing causes of bad events to external world yield opposite behaviors.

4.1.3 Discussion on the Findings of Mediation Analyses

Among the variables of present study, locus of control was determined as mediator variables between assumptions about world and behaviors in traffic context so mediation analyses were done separately for three study groups.

4.1.3.1 Discussion on the Findings of Mediation Analyses in Traffic Accident Trauma Group

Mediation analyses for traffic accident trauma group were conducted by adding age, gender and last year mileage as control variable. Then, the analyses were repeated by adding event-related variables as control variable to control subjective differences on

intensity and experienced stress of traumatic events. In the traffic accident trauma group, no differences were observed before and after adding event-related variables.

After controlling significantly related main variables with errors, violations, and positive driver behaviors, they were tested on mediation analyses by controlling age, gender and last year mileage of drivers.

Before testing mediation effect of locus of control, predictors of errors, violations, and positive driver behaviors were found. Among main study variables, it was found that errors were predicted by self-worth, relational growth external TLOC, and fate TLOC, violations were not predicted by none of the variables, and positive driver behaviors were predicted by self-worth, external TLOC, and self TLOC, separately, then further analyses were conducted to draw how the locus of control mediate these relationships.

Analyses showed for traffic accident trauma group that there was partial mediation of external traffic locus of control between errors and self-worth. In other words, errors were predicted by self-worth with the indirect effect of external locus of control. Although analyses sound meaningful, partial mediation effect needed to reexamination of possible underlying factors except for age, gender, last year mileage, and subjective evaluations of the traumatic event. In addition, the direction of relationship was consistent with the expected way in that drivers who have higher self-worth attribute reasons of accident to external factors, which turn less errors in traffic.

The other finding was related with the predictors of positive driver behaviors. The mediation analyses yielded that there was full mediation of external locus of control on relationship between self-worth and positive driver behaviors which implied that higher self-worth of drivers cause to attribute reasons of events to external factors so their positive driver behavior increase.

4.1.3.2 Discussion on the Findings of Mediation Analyses in General Trauma Group

To analyze predictors of dependent variables which were errors, violations, and positive driver behaviors all study variables were examined whether predict dependent variables. Thus, it was founded that self-worth, external TLOC, fate TLOC were significant predictors of errors. Also, violations were predicted by self-worth, randomness, benevolence, personal strength, fate TLOC, and Rotter's LOC while positive driver behaviors were associated with self-worth, relational growth, external TLOC, self TLOC, and fate TLOC. After predictive variables were determined, further analyses were conducted to test mediation effect of locus of control between independent and dependent variables. In the analyses, firstly age, gender, and last year mileage was controlled, then they were run again by adding event-related variables.

According to further analyses results, fate TLOC was mediate the relationship between self-worth and errors. In the direction of relationship, it can be said that decrease in evaluation of self-worth affect the attribution of outcomes to fate/bad luck, which produces more errors in traffic.

It was also found in present study that positive driver behaviors were predicted by self-worth with the indirect effect of fate TLOC. Surprisingly, there was a full mediation between variables means that attribution of causes of accident to fate or bad luck counteracts the effect of self-worth on positive driver behavior. In addition, direction of the mediation effect showed that drivers who evaluate themselves as less worthy attribute the reasons of accidents to fate so they engage in less positive behaviors in traffic.

When investigate the predictors of violations, mediation analyses found that there was a partial mediation effect of fate TLOC on between randomness and violations. The direction of the effect sound reasonable according to relationship between variables. In the analyses, if the drivers assume distribution of outcomes in the world as randomly they begin to attribute causes of accidents to more fate-related factors, which gave more violation in traffic.

In the mediation analyses, it was also founded that the relationship between self-worth and violations was mediated by fate TLOC. As with errors, lower level of self-worth makes the people more fate-attributed, in which increase the violations.

4.1.3.3 Discussion on the Findings of Mediation Analyses in Control Group

Since drivers who report any traumatic experience were assigned to control group, they were not to expected answer trauma-related growth. Thus, as mentioned before, analyses were conducted with world assumption as independent variable to examine mediator effect of locus of control.

Before the mediation analyses, predictors of dependent variables were remembered. Errors were predicted by fate TLOC, Rotter's LOC, self-worth, and randomness. However, none of the variables significantly predicted violations. Also, external TLOC, self TLOC, fate TLOC, controllability, and self-worth were found to be related with positive driver behaviors.

According to results, it was stated that fate TLOC partially mediate the relationship between self-worth and errors. The direction of the effect was consistent with the expected and finding from general trauma group. Drivers who evaluate themselves as more worthy adapt less fate-related attribution so they make less errors in traffic. The partial mediation needs to evaluate other factors which can be influential between independent and dependent variable except from age, gender, and last year mileage.

Additionally, as predicted before, external TLOC mediate the relationship between self-worth and positive driver behaviors. In other words, positive driver behaviors were predicted by self-worth by taking into account the effect of external TLOC. The more evaluated self-worth the more external TLOC sand positive behaviors in traffic.

Positive driver behaviors were predicted by also control with under the effect of external TLOC. The direction of the effects was same as expected before. If drivers assume the events as controllable by taking precaution they more likely attribute the causes of accidents to external factors, which turn more positive driver behaviors.

4.2 Contributions and Practical Implications of the Findings

The study was mainly designed to investigate how the driver behaviors and cognitions are affected and interacted with each other after highly stressful events. When examining the past experiences of drivers three alternative condition came to minds. The drivers can experience context-related event such as fatal traffic accidents, out of context likes abuse, bereavement, torture, and they might experience anything which can affected them psychologically, physically or emotionally. As mentioned before, these assumptions were worked in the current study as study groups.

The study included combination of the different psychology area works. Traffic behaviors were examined in the light of clinical and social psychology findings. In the literature, there are several studies which measured the psychological symptoms of victims, stress levels and how these factors change over the time but their effects on behaviors had not examined. The one of the contribution of the study can be evaluating effects World Assumptions and Posttraumatic Growth on daily life activities.

Moreover, the study tried to answer contradictive question whether driver behaviors change after traffic accidents positive or negative. Findings showed that victims of traffic accident display more aberrant and less positive behaviors and they also have the most positive world assumptions among the study groups. The surprising results can be used to develop intervention programs for traffic accident victims.

The current study also showed that evaluating world, self, and other people as benevolent, worthy, lucky, random, and controllable yielded different behavior patterns which has not examined in previous studies. Thus, the world assumption of people can be used as predictor of behavior, should not be limited with emotional response.

4.3 Limitations of the Study and Suggestions for Future Research

The present study has also some limitations. Firstly, the all measures rely on self-report of participants. When reporting errors and violations social desirability can affect the

results. Also, referring traumatic experience can boost individuals past emotions, so the rest of the answer might be filled under the influence of these emotions.

Also, in the study only intensity and event-related stress were asked to participants with one item for each question to determine effect of traumatic experience. However, a single item might be insufficient to measure these sensitive experiences. For future research, traumatic stress reactions can be measured to determine stress and trauma level of participants and it can give more accurate level for control and trauma group. Moreover, to evaluate that behaviors were affected by accidents or accidents were causes of aberrant behaviors a longitudinal study can produce more realistic results.

In addition, some of the participants in trauma groups did not answer the posttraumatic growth inventory. In the analyses, there was no significant findings related to PTGI but this finding can be caused by differences between number of WAS and PTGI. For future evaluations, the two concept can be compared more accurately with equal responses.

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Appendix A: Ethical Permissions

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26 KASIM 2015

Gönderilen: Doç. Dr. Türker ÖZKAN
Psikoloji Bölümü

Gönderen: Prof. Dr. Canan SÜMER
İnsan Araştırmaları Komisyonu Başkanı

İlgi: Etik Onayı

Danışmanlığını yapmış olduğunuz Yüksek Lisans öğrencisi Cansu ÖZ'ün "Kontrol Odağının Dünyaya İlişkin Varsayımlar ve Türk Sürücü Davranış ve Becerileri arasındaki İlişki Üzerindeki Aracı Ekisi /The Mediation Effect of Locus of Control on the Relationship between World Assumptions and Turkish Drivers' Behaviors and Skills" isimli araştırması İnsan Araştırmaları Komisyonu tarafından uygun görülerek gerekli onay 01.12.2015 -01.04.2016 tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Canan SÜMER
Uygulamalı Etik Araştırma Merkezi
İnsan Araştırmaları Komisyonu Başkanı

Appendix B: Informed Consent Form

GÖNÜLLÜ KATILIM FORMU

Bu araştırma, Doç. Dr. Türker Özkan danışmanlığı ve Yard. Doç. Dr. Bahar Öz eş danışmanlığında ODTÜ Trafik ve Ulaşım Psikolojisi Bölümü yüksek lisans öğrencisi Cansu Öz tarafından tez çalışması olarak yürütülmektedir. Bu çalışma, sürücülerin maruz kaldığı travmatik olayların, trafikteki araç kullanma davranışları ve becerilerine etkisini araştırmaktadır. Çalışmada kimlik belirleyici özel bilgiler istenmemektedir. Verilecek cevaplar gizli tutulacak, elde edilecek bulgular yalnızca bilimsel kaynaklarda kullanılacaktır.

Anketler hazırlanırken genel olarak rahatsızlık verecek sorulara yer verilmemiştir. Fakat soruları cevaplarken fiziksel veya psikolojik bir rahatsızlık hissederseniz, bir sebep belirtmeden çalışmadan ayrılabilirsiniz. Çalışmanın sonunda, çalışmayla ilgili sorularınız cevaplanacaktır. Daha fazla bilgi almak isterseniz, aşağıda adı ve iletişim bilgileri yazılı olan araştırmacılarla iletişime geçebilirsiniz. Bu araştırmaya katılımınız ve verdiğiniz destek bizim için çok önemlidir.

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Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum. (Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

Ad Soyad	Tarih	İmza
	----/----/-----	

Appendix C: Demographic Information Form

Yaşınız:

Cinsiyetiniz: **Kadın ( ) Erkek ( )**

En son mezun olduğunuz okul

İlkokul ( )	Ortaokul ( )	Lise ( )
Üniversite ( )	Yüksek lisans ( )	Doktora ( )

Nerede yaşıyorsunuz?

Metropol ( )
Büyükşehir ( )
Şehir ( )
Kasaba ( )
Köy ( )

Ehliyetiniz var mı? **Evet ( ) Hayır ( )**

(Eğer "Hayır" cevabını verdiyseniz, anketin geri kalanını çözmeyiniz.)

Kaç yıldır ehliyet sahibisiniz? _____ yıldır

En sık kullandığınız araç türü:

Motosiklet ( )
Kamyon ( )
Binek araç (otomobil) ( )
Ticari taksi ( )
Otobüs ( )
Ağır vasıta ( )
Diğer ( ) Belirtiniz: _____

Geçtiğimiz seneden bu yana yaklaşık kaç kilometer araç kullandınız? _____ km

Son üç yılda kaç kez aktif olarak (sizin bir araca, bir yayaya veya herhangi bir nesneye çarptığınız durumlar) kaza yaptınız? (hafif kazalar dahil) Lütfen, sayı olarak belirtiniz. _____

Son üç yılda kaç kez pasif olarak (bir aracın veya bir yayanın size çarptığı durumlar) kaza geçirdiniz? (hafif kazalar dahil) Lütfen, sayı olarak belirtiniz. _____

Son üç yılda, aşağıdaki trafik cezalarını kaç kere aldığınızı yanlarına sayı olarak yazınız.

Yanış park etme …….
Hatalı sollama …….
Hız ihlali ……...
Diğer ……

Appendix D:Driver Behavior Questionnaire

Sürücü Davranışları Anketi

Aşağıda verilen durumları ne sıklıkta yaparsınız?

Lütfen her bir madde için verilen durumun ne sıklıkta başınızdan geçtiğini belirtiniz. Soruları, nasıl araç kullandığınızı düşünerek cevaplandırınız ve her bir soru için sizi tam olarak yansıtan cevabı, yanındaki kutudaki uygun rakamı daire içine alarak belirtiniz.

0= HiÇ BiR ZAMAN 1= NADiREN 2= BAZEN 3= OLDUKÇA SIK
4= SIK SIK 5= HER ZAMAN

1. Geri geri giderken önceden fark etmediğiniz bir şeye çarpmak	0	1	2	3	4	5
2. Karşıdan gelen araç sürücüsünün görüş mesafesini koruyabilmesi için uzunları mümkün olduğunca az kullanmak	0	1	2	3	4	5
3. A yönüne gitmek amacıyla yola çıkmışken kendinizi daha alışkın olduğunuz B yönüne doğru araç kullanırken bulmak	0	1	2	3	4	5
4. Yasal alkol sınırlarının üzerinde alkollü olduğunuzdan şüphelenseniz de araç kullanmak	0	1	2	3	4	5
5. Dönel kavşakta dönüş istikametinize uygun olmayan şeridi kullanmak	0	1	2	3	4	5
6. Anayoldan sola dönmek için kuyrukta beklerken, anayol trafiğine dikkat etmekten neredeyse öndeki araca çarpacak duruma gelmek	0	1	2	3	4	5
7. Anayoldan bir sokağa dönerken karşıdan karşıya geçen yayaları fark edememek	0	1	2	3	4	5
8. Başka bir sürücüye kızgınlığınızı belirtmek için korna çalmak	0	1	2	3	4	5
9. Bir aracı sollarken ya da şerit değiştirirken dikiz aynasından yolu kontrol etmemek	0	1	2	3	4	5
10. Kaygan bir yolda ani fren veya patinaj yapmak	0	1	2	3	4	5

12. Otobanda trafik akışını engellememek için en sol şeridi gereksiz yere kullanmaktan kaçınmak 13. Kavşağa çok hızlı girip geçiş hakkı olan aracı durmak zorunda bırakmak	0	1	2	3	4	5
14. Şehir içi yollarda hız sınırını aşmak	0	1	2	3	4	5
15. Sinyali kullanmayı niyet ederken silecekleri çalıştırmak	0	1	2	3	4	5
16. Sağa dönerken yanınızdan geçen bir bisiklet ya da araca neredeyse çarpmak	0	1	2	3	4	5
17. Önünüzdeki aracın sürücüsünü, onu rahatsız etmeyecek bir mesafede takip etmek	0	1	2	3	4	5
18. "Yol ver" işaretini kaçırıp, geçiş hakkı olan araçlarla çarpışacak duruma gelmek	0	1	2	3	4	5
19. Trafik ışıklarında üçüncü vitesle kalkış yapmaya çalışmak	0	1	2	3	4	5
20. Sola dönüş sinyali veren bir aracın sinyalini fark etmeyip onu sollamaya çalışmak	0	1	2	3	4	5
21. Trafikte sinirlendiğiniz bir sürücüyü takip edip ona haddini bildirmeye çalışmak	0	1	2	3	4	5
22. Otoyolda ileride kapanacak bir şeritte son ana kadar ilerlemek	0	1	2	3	4	5
23. Aracınızı park alanında nereye bıraktığınızı unutmak	0	1	2	3	4	5
24. Sollama yapan sürücüye kolaylık olması için hızınızı onun geçiş hızına göre ayarlamak	0	1	2	3	4	5
25. Solda yavaş giden bir aracın sağından geçmek	0	1	2	3	4	5
26. Arkadan hızla gelen aracın yolunu kesmemek için sollamadan vazgeçip eski yerinize dönmek	0	1	2	3	4	5
27. Trafik ışığında en hızlı hareket eden araç olmak için yandaki araçlarla yarışmak	0	1	2	3	4	5
28. Trafik işaretlerini yanlış anlamak ve kavşakta yanlış yöne dönmek	0	1	2	3	4	5

29. Acil bir durumda duramayacak kadar, öndeki aracı yakın takip etmek	0	1	2	3	4	5
30. Aracınızı park ederken diğer yol kullanıcılarının (yaya, sürücüler, vb) hareketlerini sınırlamamaya özen göstermek 31. Trafik ışıkları sizin yönünüze kırmızıya döndüğü halde kavşaktan geçmek	0	1	2	3	4	5
32. Bazı tip sürücülere kızgın olmak (illet olmak) ve bu kızgınlığı bir şekilde onlara göstermek	0	1	2	3	4	5
33. Aracınızı kullanırken yol kenarında birikmiş suyu ve benzeri maddeleri yayaların üzerine sıçratmamaya dikkat etmek	0	1	2	3	4	5
34. Yayaların karşıdan karşıya geçebilmeleri için geçiş hakkı bende dahi olsa durarak yol veririm	0	1	2	3	4	5
35. Seyahat etmekte olduğunuz yolu tam olarak hatırlamadığınızı fark etmek	0	1	2	3	4	5
36. Sollama yaparken karşıdan gelen aracın hızını olduğundan daha yavaş tahmin etmek	0	1	2	3	4	5
37. Otobanda hız limitlerini dikkate almamak	0	1	2	3	4	5

Appendix E: Multidimensional Traffic Locus of Control

Bu bölümde, kaza yapmış araç sürücülerinin, yapmış oldukları kazalara neden olarak gösterdikleri faktörler liste halinde verilmiştir. Kendi sürüş tarzınızı düşündüğünüzde bu faktörlerin yapmış olduğunuz veya olabileceğiniz kazalardaki olası etkisini ilgili yeri karalayarak belirtiniz. 1: Hiç olası değil 5: Büyük olasılıkla

Trafik kazası yapıp yapmayacağım çoğunlukla araç kullanma becerilerimin yetersizliğine bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla araç kullanırken yaptığım riskli davranışlara bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla diğer sürücülerin araç kullanma becerilerinin yetersizliğine bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla diğer sürücülerin araç kullanırken yaptığı riskli davranışlara bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla kötü şansa (veya şansızlığa) bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla bozuk ve tehlikeli yollara bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla aşırı sürat yapmama bağlıdır.	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla diğer sürücülerin aşırı sürat yapmasına bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla öndeki araçları çok yakından takip edip etmeme bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla diğer araç sürücülerinin kullandığım aracı yakın takip etmelerine bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla kadere bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla kötü hava ve aydınlatma koşullarına bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla araçtaki mekanik bir arızaya bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla diğer sürücülerin alkollü araç kullanmasına bağlıdır	(1)	(2)	(3)	(4)	(5)

Trafik kazası yapıp yapmayacağım çoğunlukla diğer sürücülerin tehlikeli bir şekilde hatalı sollama yapmasına bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla tehlikeli bir şekilde hatalı sollama yapmama bağlıdır	(1)	(2)	(3)	(4)	(5)
Trafik kazası yapıp yapmayacağım çoğunlukla tesadüflere bağlıdır	(1)	(2)	(3)	(4)	(5)

Appendix F: Rotter Locus of Control Scale

Aşağıdaki her soru için, iki seçenekten hangisi size daha doğru geliyorsa onu işaretleyiniz.

1. a) Ana babaları çok fazla cezalandırdıkları için çocuklar çok problemli oluyor.

b) Günümüz çocuklarının çoğunun problemi, ana-babaları tarafından aşan serbest bırakılmalarıdır.

2.a) İnsanların yaşamındaki mutsuzlukların çoğu biraz da şanssızlıklarına bağlıdır.

b) İnsanların talihsizlikleri yaptıkları hataların sonucudur.

3.a) Savaşların başlıca nedenlerinden biri, halkın siyasetle yeterince ilgilenmemesidir.

b) İnsanlar savaşı önlemek için ne kadar çaba harcarsa harcasın, her zaman savaş olacaktır.

4.a) İnsanlar bu dünyada hak ettikleri saygıyı er geç görürler.

b) İnsan ne kadar çabalarsa çabalasın ne yazık ki değeri genellikle anlaşılmaz.

5.a) Öğretmenlerin öğrencilere haksızlık yaptığı fikri saçmadır.

b) Öğrencilerin çoğu, notların tesadüfi olaylardan etkilendiğini fark etmez.

6.a) Koşullar uygun değilse insan başarılı bir lider olamaz.

b) Lider olamayan yetenekli insanlar, fırsatları değerlendirememiş kişilerdir.

7.a) Ne kadar uğraşsanız da bazı insanlar sizden hoşlanmazlar.

b) Kendilerini başkalarına sevdiremeyen kişiler, başkalarıyla nasıl geçinileceğini bilmeyenlerdir.

8.a) İnsanın kişiliğinin belirlenmesinden en önemli rolü kalıtım oynar.

b) İnsanların nasıl biri olacaklarını kendi hayat tecrübeleri belirler.

9.a) Bir şey olacaksa eninde sonunda olduğuna sık sık tanık olmuşumdur.

b) Ne yapacağıma kesin karar vermek kadere güvenmemekten daima daha iyidir.

10. a) İyi hazırlanmış bir öğrenci için, adil olmayan bir sınav hemen hemen söz konusu olamaz

b) Sınav sorulan derste işlenenle çoğu kez o kadar ilişkisiz oluyor ki çalışmanın anlamı kalmıyor.

11. a) Başarılı olmak çok çalışmaya bağlıdır; şansın bunda ya hiç ya da çok küçük payı vardır.

b) İyi bir iş bulmak, temelde, doğru zamanda doğru yerde bulunmaya bağlıdır.

12. a) Hükümetin kararlarında sade vatandaş da etkili olabilir.

b) Bu dünya güç sahibi birkaç kişi tarafından yönetilmektedir. Ve sade vatandaşın bu konuda yapabileceği fazla bir şey yoktur.

13. a) Yaptığım planları yürütebileceğimden hemen hemen eminimdir.

b) Çok uzun vadeli planlar yapmak her zaman akıllıca olmayabilir, çünkü birçok şey zaten iyi ya da kötü şansa bağlıdır.

14.a) Hiçbir yönü iyi olmayan insanlar vardır.

b) Herkesin iyi bir tarafı vardır.

15.a) Benim açımdan istediğimi elde etmenin talihle bir ilgisi yoktur.

b) Çoğu durumda, yazı tura atarak da isabetli kararlar verebiliriz.

16.a) Kimin patron olacağı genellikle, doğru yerde ilk önce bulunma şansına kimin sahip olduğuna bağlıdır.

b) İnsanlara doğru şeyi yaptırmak bir yetenek işidir; şansın bunda payı ya hiç yoktur yada çok azdır.

17.a) Dünya meseleleri söz konusu olduğunda çoğumuz, anlayamadığımız ve kontrol edemediğimiz güçlerin kurbanıyız.

b) İnsanlar, siyasal ve sosyal konularda aktif rol alarak dünya olaylarını kontrol edebilirler.

18.a) Birçok insan, rastlantıların yaşamlarını ne derece etkilediğinin farkında değildir.

b) Aslında "şans" diye bir şey yoktur.

19.a) İnsan, hatalarını kabul edebilmelidir.

b) Genelde en iyisi insanının hatalarını örtbas etmesidir.

20.a) Bir insanın sizden gerçekten hoşlanıp hoşlanmadığını bilmek zordur

b) Kaç arkadaşınızın olduğu, ne kadar iyi olduğuna bağlıdır.

21.a) Uzun vadede yaşamımızdaki kötü şeyler, işi şeylerle dengelenir.

b) Çoğu talihsizlikler yetenek eksikliğinin, ihmalin, tembelliğin ya da her üçünün birden sonucudur.

22.a) Yeterli çabayla siyasal yolsuzlukları ortadan kaldırabiliriz.

b) Siyasetçilerin kapalı kapılar ardında yaptıkları üzerinde halkın fazla bir kontrolü yoktur

23.a) Öğretmenlerin verdikleri notları nasıl belirlediklerini bazen anlamıyorum.

b) Aldığım notlarla çalışma derecem arasında doğrudan bir bağlandı vardır.

24.a) İyi bir lider, ne yapacaklarına halkın bizzat karar vermesini bekler.

b) İyi bir lider herkesin görevinin ne olduğunu bizzat belirler.

25.a) Çoğu kez başıma gelenler üzerinde çok az etkiye sahip olduğumu hissederim

b) Şans ya da talihin yaşamında önemli bir rol oynadığına inanmam.

26.a) İnsanlar arkadaşça olmaya çalışmadıkları için yalnızdırlar.

b) İnsanları memnun etmek için çok fazla çabalamanın yararı yoktur, sizden hoşlanırsa hoşlanırlar.

27.a) Okullarda atletizme gereğinden fazla önem veriliyor.

b) Takım sporları kişiliğin oluşumu için mükemmel bir yoldur.

28 a) Başıma ne gelmişse kendi yaptıklarımdandır.

b) Yaşamımın alacağı yön üzerinde bazen yeterince kontrolümün olmadığını hissediyorum.

29a) Siyasetçilerin neden öyle davrandıklarını çoğu kez anlamıyorum.

b) Yerel ve ulusal düzeydeki kötü idareden uzun vadede halk sorumludur.

Appendix G: World Assumption Scale

Aşağıdaki ifadelere ne kadar katıldığınızı işaretleyiniz.

1: kesinlikle katılmıyorum 6: tamamen katılıyorum

Kötü olaylar insanlara tesadüfî olarak denk gelir.	(1)	(2)	(3)	(4)	(5)	(6)
Bu dünyada kötü olaylardan çok daha fazla iyi şey yaşanır.	(1)	(2)	(3)	(4)	(5)	(6)
Hayatımızın gidişatı büyük ölçüde tesadüflere bağlıdır.	(1)	(2)	(3)	(4)	(5)	(6)
İnsanlar genellikle yaşadıklarını hak ederler.	(1)	(2)	(3)	(4)	(5)	(6)
Sık sık, aslında iyi bir insan olmadığımı düşünürüm.	(1)	(2)	(3)	(4)	(5)	(6)
Dünyada kötülükten çok iyilik vardır.	(1)	(2)	(3)	(4)	(5)	(6)
Temelde şanslı bir insanımdır.	(1)	(2)	(3)	(4)	(5)	(6)
İnsanların kötü kaderleri yaptıkları hatalardan kaynaklanır.	(1)	(2)	(3)	(4)	(5)	(6)
İnsanlar eğer kendileri de iyiyse iyi bir talihe sahip olurlar.	(1)	(2)	(3)	(4)	(5)	(6)
Yaşam tesadüflere bağlı belirsizliklerle doludur.	(1)	(2)	(3)	(4)	(5)	(6)
Çok şanslı bir insan olduğumu düşünürüm.	(1)	(2)	(3)	(4)	(5)	(6)
Hemen her zaman başıma kötü şeylerin gelmesini engellemek için çaba harcarım.	(1)	(2)	(3)	(4)	(5)	(6)
Kendime ilişkin olumsuz düşüncelere sahibim.	(1)	(2)	(3)	(4)	(5)	(6)
Kendi davranışlarımızla başımıza kötü şeylerin gelmesini engelleyebiliriz.	(1)	(2)	(3)	(4)	(5)	(6)
Hayatıma baktığımda şansın yüzüme güldüğünü fark ediyorum.	(1)	(2)	(3)	(4)	(5)	(6)
Eğer insanlar tedbirli davranırlarsa pek çok talihsizliğin önüne geçilebilir.	(1)	(2)	(3)	(4)	(5)	(6)
Kendimi talihsizliklerden korumak için gerekli olan önlemleri alırım.	(1)	(2)	(3)	(4)	(5)	(6)
Genel olarak yaşam bir kumardır	(1)	(2)	(3)	(4)	(5)	(6)
Dünya iyi bir yerdir.	(1)	(2)	(3)	(4)	(5)	(6)
İnsanlar temelde nazik ve yardımseverdir.	(1)	(2)	(3)	(4)	(5)	(6)

Kendim olmaktan son derece memnunum.	(1)	(2)	(3)	(4)	(5)	(6)
Kötü şeyler olduğunda bunun nedeni tipik olarak insanların kendilerini korumak için gerekenleri yapmamasıdır.	(1)	(2)	(3)	(4)	(5)	(6)
Eğer yeterince yakından bakarsan dünyanın iyiliklerle dolu olduğunu görürsün.	(1)	(2)	(3)	(4)	(5)	(6)
Kişisel özelliklerimden utanmak için nedenim var.	(1)	(2)	(3)	(4)	(5)	(6)
Pek çok insandan daha şanslıyım.	(1)	(2)	(3)	(4)	(5)	(6)

Appendix H: Traumatic Life Experience Checklist

Doğrudan maruz kaldığınız ve/veya tanık olduğunuz, sizi ve hayatınızı etkileyen bir olay yaşadınız mı? Lütfen aşağıda verilen olaylardan, yaşadığınız veya tanık olduğunuz VARSA yanlarındaki kutucukları işaretleyiniz.

Yaralanmalı ve ölümlü bir trafik kazasına karışmak ve/veya tanık olmak ( )

Trafik kazası dışında ciddi bir kazayı yaşamak ve/veya tanık olmak (yangın ya da patlamalar gibi..) ( )

Doğal afet ( )

Fiziksel bir saldırıya maruz kalmak ( )

Askeri bir çarpışmada ya da savaş alanında bulunmak ( )

İşkenceye maruz kalmak ( )

Yaşamı tehdit eden bir hastalık geçirmek ( )

Sevilen ya da yakın birinin ani ve beklenmedik ölümü ( )

Hapsedilmek (örneğin ceza evine düşmek, savaş esiri olmak, rehin alınmak gibi..) ( )

Cinsel bir saldırıya maruz kalmak ( )

Bunların dışında ciddi ve ölümle burun buruna geldiğiniz bir olay (kısaca anlatınız)

Appendix I: Posttraumatic Growth Inventory

Travma Sonrası Büyüme Envanteri

Bu bölümde, sizden öğrenmek istediğimiz, yaşamınızda önemli yer tutan travmatik yaşam olaylarının, hayatınızda ne ölçüde olumlu değişikliklere sebep olduğudur. Geçmişte yaşadığınız krizden/krizlerden sonra yaşamınızda ve düşüncelerinizde meydana gelen değişimleri lütfen aşağıda verilen puanlama ölçütlerine göre 0 ve 5 arasında değerlendiriniz.

0= Yaşamadım 1= Çok az yaşadım 2= Biraz yaşadım 3= Orta düzeyde yaşadım 4=Oldukça fazla yaşadım 5= Çok fazla yaşadım

1. Yaşamda önem verdiğim şeylerin öncelik sırası değişti.	(0) (1) (2) (3) (4) (5)
2. Kendi hayatıma verdiğim değerde büyük bir artış oldu.	(0) (1) (2) (3) (4) (5)
3. Yeni ilgi alanları keşfettim.	(0) (1) (2) (3) (4) (5)
4. Kendime güven hissinde artış oldu.	(0) (1) (2) (3) (4) (5)
5. Manevi konuları daha iyi anlamaya başladım.	(0) (1) (2) (3) (4) (5)
6. Başım sıkıştığında insanlara güvenebileceğimi daha iyi anladım.	(0) (1) (2) (3) (4) (5)
7. Yaşamım için yeni bir yön belirledim.	(0) (1) (2) (3) (4) (5)
8. Kendimi diğer insanlarla çok daha yakın hissetmeye başladım.	(0) (1) (2) (3) (4) (5)
9. Duygularımı ifade etmeye daha çok istekliyim.	(0) (1) (2) (3) (4) (5)
10. Zorlukları göğüsleyebileceğimi daha iyi anladım.	(0) (1) (2) (3) (4) (5)
11. Yaşamımda daha iyi şeyler yapabiliyorum.	(0) (1) (2) (3) (4) (5)
12. Her şeyi olduğu gibi, daha çok kabullenebiliyorum.	(0) (1) (2) (3) (4) (5)
13. Her günümü daha iyi değerlendirebiliyorum.	(0) (1) (2) (3) (4) (5)
14. Daha önce var olmayan yeni olanaklara kavuştum.	(0) (1) (2) (3) (4) (5)
15. Diğer insanlara karşı daha şefkatliyim.	(0) (1) (2) (3) (4) (5)
16. İlişkilerime daha çok emek sarf etmeye başladım.	(0) (1) (2) (3) (4) (5)
17. Değişmesi gereken şeyleri değiştirebilmek için daha çok çaba harcıyorum.	(0) (1) (2) (3) (4) (5)
18. Daha güçlü bir inanca sahibim.	(0) (1) (2) (3) (4) (5)
19. Düşündüğümden çok daha güçlü olduğumu keşfettim.	(0) (1) (2) (3) (4) (5)
20. İnsanların ne kadar mükemmel olabildiklerine dair çok şey öğrendim.	(0) (1) (2) (3) (4) (5)
21. Başkalarına ihtiyaç duyuyor olmayı daha çok kabullendim.	(0) (1) (2) (3) (4) (5)

Appendix J: TURKISH SUMMARY

TÜRKÇE ÖZET

Trafik kazaları, dünyanın her yerinde olduğu gibi Türkiye'de de ölümcül sayılarda ölüm ve yaralanmaya yol açmaktadır. Can kayıplarına ek olarak trafik kazaları ekonomik, sosyal ve psikolojik hasarlar da ortaya koymaktadır. Örneğin, çarpışmalar kamu malına ve çevreye zarar verebilir ya da kazalardan kurtulanlar rehabilitasyon ve düzenli tedavi gerektiren kalıcı bir sakatlık yaşayabilir (Blanchard ve Hickling, 1998). Ayrıca kurulanların ve onların çevrelerinin sosyal veya psikolojik hasarları trafik kazalarına yeni bir sorun eklemektedir. Özellikle, ölümcül kazalardan kurtulanlar yıllarca posttravmatik stres bozukluğu, depresyon ya da diğer psikolojik bozukluklar gibi sorunlar yaşamaktadırlar (Koren, Arnon ve Klein, 2001). Sonuçlar, trafik kazalarının bilim kapsamında değerlendirilmesi gereken evrensel bir problem olduğunu kanıtlar niteliktedir.

Çok sayıda araştırma ve farklı metotlar trafik kazalarının altında yatan mekanizmaları araştırmıştır. Trafiğin etkileşimli doğasından dolayı, bu mekanizmaları tek çatı altında toplamak zordur. Bu yüzden, araştırmalara göre trafik kazalarına neden olan faktörler insan faktörü, çevresel faktörler, araç faktörü ve bunların birbirleriyle etkileşimi olarak sınıflandırılmıştır (Evans, 2004). Fakat bu faktörlerin arasında insan faktörü trafik kazalarının sorumluluğunun %90 'ını tek başına üzerine almıştır (Lewin, 1982). Trafikte insan faktörü kavramı, sürücü davranışları ve sürücü becerileri olmak üzere iki ana sürücü eylemini ima etmektedir. Sürücü davranışları ve sürücü becerileri literatürde trafik kazaları ile ilişkili bulunmuştur. Yine de, sürücü davranışlarının, araç kullanmayı öğrenme aşamasını geçtikten sonra kaza riskini daha fazla etkilediği görülmüştür (Lajunen, 1997; Evans, 1996). Böylece, sürücü davranışları kazaların ana nedeni olarak değerlendirildikten sonra trafik çalışmalarında önemli bir kavram haline gelmiştir (Lajunen, 1997). Farklı kaza faktörlerini anlamak ve önlemek için bireylerin davranışlarını detaylı bir şekilde sınıflandırmak çok önemlidir.

Sürücü davranışları; sürücülerin genellikle ne yaptığını, sürme alışkanlıklarını ve seçimlerini kasteder (Evans, 2004). 1990'da, Reason sürücü davranışlarını 3 faktörü göz önüne alarak sınıflandırmıştır: niyet, davranışların sırası ve davranışın başarıya ulaşıp ulaşmaması. Bu sürücü davranışlarındaki ayrıştırma ve sınıflandırma, Manchester Sürücü Davranışları Anketi'nin temelini oluşturmuştur. Bu anket, beyana dayalı sapkın sürücü davranışlarını ölçer. Reason ve arkadaşlarına göre (1990), hatalar "planlanan davranışın istenilen sonuca ulaşmaması" olarak tanımlanırken ihlaller tehlike içeren ortamlarda güvenlik için gerekli olan davranışları kasten göstermemek olarak belirtilir. Ek olarak, hatalar daha çok bilişsel süreçler ve performans sınırları ile ilgiliyken, ihlaller sosyal çevre ve alışkanlıkları ve sürme tarzını ifade eden güdüsel bileşenleri ile ilgilidir (Alberg ve Rimmo, 1998). Ayrıca, trafik ortamı sadece sapkın davranışlar olarak ifade edilen davranışlar ile sınırlı değildir. Bu kategoriye girmeyen, diğer yol kullanıcılarını önemsemek, trafik ortamına karşı kibar ve yardımcı olmak gibi hareketleri içeren davranışlara olumlu sürücü davranışları denmiş ve Sürücü Davranışları Anketine yeni bir kategori olarak eklenmiştir (Özkan ve Lajunen, 2005). Bu konuda yapılan çalışmalar sürücü ihlallerinin trafik kazalarını (Parker ve arkadaşları, 1995), park ve hız cezalarını (Mesken ve arkadaşları, 2002) anlamlı bir şekilde yordadığını bulmuştur. Olumlu sürücü davranışları ise ihlaller ve saldırgan ihllalari ters yönde yordamıştır (Özkan ve Lajunen, 2005). Literatürde ayrıca sürücü davranışlarını etkileyen çeşitli faktörler araştırılmış ve bağlamsal faktörlerden tutumlar, düşünceler, genel güdüler ve ihtiyaçlar sürücü davranışları ile ilgili bulunmuştur (Elander, West ve French, 1993).

Bu faktörlerden biri de, olayların sebepleri ile ilgili devamlı düşünceleri yansıtan alışılmış bilişsel işleme olarak tabir edilen kontrol odağıdır. Rotter (1966) tarafından geliştirilen bu kavram olay ve sonuçlarını açıklamakta bireysel farklılıkları ifade eder. Kişiler genellikle olayları ya kendi kontrolü altında (içsel kontrol odağı) ya da dış faktörlerin etkisi altında (dışsal kontrol odağı) algılar. Dışsal kontrol odağı olayların sorumluluğunu diğer insanlara, şansa veya durumsal faktörlere atfetmekle tabir edilirken içsel kontrol odağı daha çok olayların sonucunu sabit ve içsel faktörlere atfetmek ile tanımlanır (Rotter, 1966). Çalışmalar, iç ve dış kontrol odağının farklı

davranış biçimleri ortaya koyacağını iddia eder. Mesela, dış kontrol odağına sahip sürücüler kişisel önlem almak konusunda pasif davrandıkları için trafiği daha çok tehlikeye atarlar, fakat içsel kontrol odağı insanların davranışlarının sorumluluğunu alması ve olumsuz davranışlarını değiştirmesi ile ilgilidir (Montag ve Comrey, 1987). Bazı çalışmalar ise tam tersi yönde iç kontrol odağının kendine aşırı güveni ve becerilerin abartılmasını tetiklediği için trafikte daha tehlikeli olabileceğini öne sürer (Arthur ve Doverspike, 1992). Bu çelişkili sonuçlar ise Rotter tarafından geliştirilen ve genel hayat ile ilgili olan ölçeğin belirli trafik durumlarını yordamada başarısız olduğu yönündedir (Özkan ve Lajunen, 2005). O yüzden, trafik durumlarında kullanılmak üzere çeşitli ölçekler geliştirilmiştir fakat bu ölçeklerle yapılan araştırmalarda yine net bir sonuca ulaşılamamıştır çünkü iki uçlu kontrol odağı kavramı trafiğin karmaşık yapısına uyarlanmakta yetersiz kalmıştır. Bu varsayımlardan sonra, Özkan ve Lajunen 348 Türk sürücü ile Çok Boyutlu Trafik Kontrol Odağı Ölçeğini geliştirmiştir (2005). Bu ölçek, araç kullanırken kontrolün kaynağını bulmaya yöneliktir ve dört farklı alt boyuttan oluşur. Kendilik kontrol odağı, kazaların sebeplerini kendi davranışlarına atfetmeyi öngörürken, Diğer Sürücüler alt boyutu kazaların sebeplerinin diğer sürücülerden kaynaklandığını söyler. Araç ve Çevre alt boyutu kazaların sebeplerini dışsal faktörlere atfeder ve son olarak Kader alt boyutu bu sebepleri kadere veya kötü şansa atfeder. Ölçek geliştirme çalışmasında, kendilik kontrol odağının kazaları, suçları ve hataları yordadığı görülürken; diğer sürücüler boyutunun ise hatalarla ters yönde ilişkili olduğu bulunmuştur. Aynı ölçeğin kullanıldığı çalışmalarda da ölçeğin 3 boyuttan oluştuğu ve bunların kendilik, araç/çevre ve dışsal faktörler olduğu bulunmuştur (Doğan, 2006). Bu araştırmada da kader boyutunun cezaları ve ihlalleri olumlu yönde yordadığı bulunmuştur.

Literatürde kontrol odağı ile yapılan çalışmalar farklı sonuçlar ortaya koymuş ve bunların nedenleri araştırılmıştır. Önceden de belirtildiği gibi, Rotter'ın oluşturduğu ölçek trafik ortamında yetersiz kalmıştır. Yagil (2001) ise kontrol odağının davranışlar üzerinde dolaylı bir etkisi olduğunu iddia etmiştir. Özkan ve Lajunen (2005); kontrol odağını belirlemek için yapılan bir çalışmada ölümcül trafik kazası geçiren kişilerin katılımcı olarak seçildiğini ve bunun sonuçlardaki yanılma payına etkisi olabileceğini

savunmuştur çünkü böyle ölümcül bir olay deneyimlemek savunma mekanizmasını çalıştırarak olayların sorumluluğunu kendinden ziyade dış faktörlere atılabileceğini iddia etmişlerdir. Bu varsayımı doğrulayan çalışma Legerski ve arkadaşlarından gelmiştir (2006). Çelik işçileri ile yapılan çalışmada hayatı etkileyen olaylar ve önemli geçiş aşamalarının insanların kontrol odağını etkilediği gözlenmiştir. Bulguların ışığında, önemli hayat olaylarının kontrol odağını etkileyebileceği ve dolaylı yönden de davranışlar üzerinde bir etki oluşturabileceğini iddia etmek yanlış olmamaktadır.

Sürücüler araç kullanırken trafik ile ilgili uyaranlardan olumlu veya olumsuz şekilde etkilenebileceği gibi günlük hayatından getirdiği stres veya duygulardan da etkilenebilir. Örneğin, finansal sorunların (Norris ve arkadaşları), sevilen birini kaybetmek ve boşanmanın (Selzer ve Vinokur, 1974) yüksek kaza riski ve ihlaller ile ilgili olduğu bulunmuştur. Fakat bazı araştırmacılar ise yüksek riskli veya travmatik olayların davranışları olumlu bir şekilde değiştireceğini savunmuştur. Mayou ve arkadaşları (1993) trafik kazası yaşayan kişilerin kazadan sonra daha yavaş araç kullandığını, daha güvenli ve dikkatli davrandıklarını gözlemlemiştir. Fakat Rajalin ve Summala (1997), bu amaçla yaptıkları çalışmada kişilerin ölümcül kazalardan sonra davranışlarının değişmediğini, sadece araç kullanma miktarlarının azaldığını göstermişlerdir. Aksine, kazaya karışan sürücülerin kazadan sonra aldıkları ceza miktarlarında artış olduğu bile bulunmuştur. Yapılan araştırmalardaki farklı etkiler, yaşanan travmatik olayların doğrudan değil de dolaylı yoldan davranışı etkileyebileceğini ortaya çıkarmıştır. Belki yalnızca olumsuz bir olay yaşamaktan ziyade bu olayı nasıl algıladığımız ve sorumluluğunu nasıl aldığımız davranışı yordamada daha etkin bir rol oynamaktadır.

Travmatik olayların kişileri nasıl ve hangi etkenler ile birlikte etkileyeceğini açıklamaya çalışan çok sayıda teori vardır. 1990ların başında Janoff-Bulman da travma mağdurlarının psikolojik deneyimlerini açıklayan bir teori ortaya atmıştır. Jannof-Bulman'a göre, insanlar sosyal olarak organize gruplar içinde yaşar ve bu herkesin şefkatli bir dünyada insanların iyiliğine yönelik olumlu düşüncelere eğilimli olarak doğmasına sebep olur. Bu olumlu düşünceler dünyanın yapısına karşı koruma görevi olarak işlev görür ve insanların bu dünyadaki deneyimlerine dayanır. İnsanların

nasıl plan yapacağını, diğer insanları ve durumları nasıl algılayacağını, geleceğe katılımını ve yeni bilgileri nasıl yorumladığını yine bu varsayımlar oluşturur. Teoriye göre, üç öz düşünce vardır, bunlar dünyanın iyiliği, dünyanın anlamlılığı ve kendiliğin değeridir. Dünyanın iyiliği; kişilerin dünyayı ve içinde yaşayan insanları iyi ve şefkatli görme eğilimidir ve böyle bir dünya içerisinde insanlar kişisel zarar görmezliklerine inanırlar. Fakat travmatik olaylar onların iyi imajlarını bozar ve dünyayı ve insanları kötü olarak algılamaya başlarlar. Dünyanın anlamlılığı inancı ise dünyayı anlamlı, kapsamlı ve düzenli görme eğilimidir. İnsanlar, bu dünyada sonuçların dağılımının adil, kontrol edilebilir veya rastlantısal olduğuna inanırlar. Travmatik olaylar bu düşünceleri yıkarak, dünyanın adaletsiz ve kontrol edilemez olduğu düşüncesini akıllara yerleştirir. Kendilik değeri ise kişilerin kendilerini iyi, ahlaklı ve dürüst bireyler olarak algılaması eğilimidir. Fakat travmatik olaylar ile karşılaşan insan kendinin yeterince iyi ve ahlaklı olmadığını olayların bu yüzden onun başına geldiğine inanmaya başlar.

Dünyaya ilişkin varsayımlar teorisine göre, insanlar elinde tuttuğu bu öz düşüncelerden genellikle haberdar değildir ve bu yüzden bu düşünceler genelde sorgulanmaz. Dünya ve diğer insanlarla etkileşim küçük değişiklikler yaratsa da, yıkıcı deneyimler insanların iç dünyasını paramparça ederek varsayımların hazırlıksız sorgulanmasına neden olur. Travma çalışmalarında da görülebileceği gibi negatif olaylar yaşayan kişilerin dünyaya ilişkin varsayımlardan aldıkları puanlar yaşamayan kişilere göre hep daha düşük bulunmuştur (Prince-Embury ve Rooney, 1995). Travma yaşamış kişiler dünyayı daha az anlamlı ve daha kötü algılamaya başlamışlardır.

Travma çalışmalarının çoğu temel olarak travmatik olaylarının negatif sonuçlarına odaklansa da, travma sonrası olumlu değişimler de araştırılmıştır. Bu olumlu değişim, Tedeschi ve Calhoun (1996) tarafından travma sonrası büyüme kavramıyla ifade edilmiş ve hem travmanın sonucu hem de baş etme stratejisi olarak görülmüştür (Affleck ve Tennen, 1996). Bahsedilen bu büyüme hayatın geniş bir alanında görülebileceği nedeniyle genel olarak beş genel kategoride toplanmıştır. Bunlar, başkalarıyla ilişkiler, yeni olanaklar, kişisel dayanıklılık, manevi değişim ve hayata değer verme şeklinde özetlenebilir. Literatürde, travma sonrası büyümeyi etkileyen ve

ortaya çıkaran etmenler araştırılmıştır (Kesimci, Göral ve Gençöz; Tedeschi ve Calhoun, 2004).

Bu çalışma, temel olarak travmatik olayların sürücü davranışları üzerindeki etkisini ölçmeyi amaçlamıştır. Literatürde yapılan çalışmaların bulguları eşliğinde, travmatik olayların kişilerin duyguları ve düşüncelerini nasıl şekillendirdiği incelenmiş fakat bunların davranışa nasıl yansıdığı bilgisine ulaşılamamıştır. Eğer travmatik olaylar ileriki davranışları etkiliyorsa, bu davranışlar hangi yönde değişiyor sorusu çalışmanın araştırma konusudur. Çalışmadan bulunması amaçlanan başka bir konu ise trafik davranışlarının etkilenmesi sadece trafik kazaları gibi ortam ile ilgili bir olaydan mı yoksa trafikle alakasız başka travmatik olaylardan da kaynaklanabileceği sorusudur. Ayrıca kontrol odağının bu olaylar ve davranışlar arasında nasıl bir yön izleyeceği gözlenmiştir.

Çalışmaya toplamda 533 Türk Sürücü katılmış ve katılımcılar Travmatik Olaylar Kontrol Listesi'nde işaretledikleri deneyimlere göre gruplara atanmışlardır. Çizelgeden sadece trafik kazasını deneyimlediğini belirten 120 kişi trafik kazası travma grubuna, trafik kazası dışında herhangi bir olay ve olaylar işaretleyen 231 kişi genel travma grubuna atanmıştır. Çizelgeden herhangi bir olayı daha önce yaşamadığını belirten 182 kişi ise kontrol grubunu oluşturmuştur. Kontrol Listesine ek olarak, demografik sorular, Dünyaya İlişkin Varsayımlar Ölçeği, Kontrol Odağı Ölçeği, Çok Boyutlu Trafik Kontrol Odağı Ölçeği ve Sürücü Davranışları Anketi bütün katılımcılara gönderilmiştir. Fakat listeden travmatik olay işaretleyen kişilere, olaylardan sonra yaşadıkları değişimi ölçmek üzere Travma Sonrası Büyüme Envanteri de eklenmiştir.

Araştırma temel olarak gruplar arasındaki farkı analiz etmeye yönelik olduğu için, kullanılan ölçekler ilk olarak bu üç grup içerisinde ayrı ayrı test edilmiştir. Her ölçek ve her grup için ayrı ayrı yapılan faktör analizleri ölçeklerin orijinal faktör yapısından farklı bulunsa da gruplar arasında genel anlamda bir paralellik göstermiştir. Başlangıç olarak, Dünyaya İlişkin Varsayımlar Ölçeği üç grupta da beş faktör altında toplanmış ve isimleri şu şekilde verilmiştir: İyilik, Şans, Kontrol Edilebilirlik, Rastlantısallık ve

Kendilik Değeri. Travma Sonrası Büyüme Envanteri sadece travma grupları ile test edilmiş ve "Kişisel Güçlenme" ve "Kişilerarası Büyüme" olarak 2 faktörde toplanmıştır. Sürücü Davranışları Anketi ise üç grup içerisinde yine benzer yapıyı vermiş hata, ihlal ve olumsu sürücü davranışları olmak üzere üç boyut ortaya çıkmıştır. Çok Boyutlu Trafik Kontrol Odağı Ölçeği de orijinalinden farklı olarak 3 boyut altında toplanmıştır. Üç grupta da ortaya çıkan faktörler Dışsal Faktörler, İçsel Faktörler ve Kader Faktörü ismiyle kullanılmıştır. Faktör analizlerinde ölçekler aynı faktör sayısını verse de madde içerikleri küçük değişiklikler göstermiştir. Bu yüzden grup karşılaştırmaları alt boyutlar üzerinden yapılamamıştır.

Hiyerarşik regresyon analizleri hataların, ihlallerin ve olumlu sürücü davranışlarının yordayıcı değişkenlerini bulmak üzere her çalışma grubunda yapılmıştır. Regresyon analizlerinde, 1. basamak yaş, cinsiyet ve son bir yılda kullanılan araç kilometresinden oluşmuştur. 2. basamakta ise travmatik olayla ilgili, olayın hissedilen yoğunluğu, olaydan hemen sonra hissedilen stres ve olayla ilgili şuan hissedilen stres değişkenlerinden oluşmuştur. 3. basamağa kontrol odağı boyutları yerleştirilirken son basamakta dünyaya ilişkin varsayımlar veya travma sonrası büyüme boyutları yer almıştır.

Trafik kazası travma grubunda yapılan regresyon analizi sonuçlarına göre dışsal kontrol odağı hataları ve olumlu davranışları yordayabilirken, kader kontol odağı sadece hataları yordamıştır. Kendilik değeri ise yine aynı şekilde hataları yordama ile ilişkilidir. Genel travma grubundaki sonuçlar ise dışsal, içsel ve kader kontrol odağı davranışları yordama gücüne sahip bulunmuştur. Bu gruptaki son basamaktan şans ve kendilik değişkenleri davranışlarla ilişkili çıkmıştır. Kontrol grubunda yapılan analizlerde de dışsal, içsel fe kader kontrol odakları ile iyilik ve kendilik değeri davranışlar üzerinde etkileyici bulunmuştur.

Çalışmada ayrıca, kontrol odağının travmatik olaylar ve davranışlar arasındaki etkisini incelemek için aracı değişken analizlerine de yer verilmiştir. Trafik kazası travmalarında yapılan analizler dışsal kontrol odağının kendilik değeri ile hatalar ve olumsu sürücü davranışları arasında aracı değişken olarak rol oynadığını göstermiştir.

Genel travma grubunda ise kader kontrol odağının kendilik değeri ile hatalar, olumlu davranışlar ve ihlaller arasında rol oynadı gözlenmiştir. Kader kontrol odağı ayrıca rastlantısallık ile ihlaller arasında aracı değişken rolündedir. Kontrol grubunda yapılan analizler dışsal kontrol odağının kontrol edilebilirlik ve kendilik değeri ile olumlu davranışlar arasında aracı değişken rolünde olduğunu göstermiştir. Ayrıca kader kontrol odağı kendilik değeri ve hatalar arasında aynı şekilde yer almaktadır.

Sürücü davranışlarının geçmişte yaşanan travmatik olaylar ile şekillenebileceğini gösteren bu çalışmanın literatüre bu bağlamda katkı yaptığı düşünülmektedir. Travmatik olayların yalnızca sonrasında yaşanacak stresi değil aynı zamanda gündelik hayatında yapacağı bir davranışı da etkileyebileceği ortaya konmuştur. Üç grup arasında yapılan karşılaştırma sonuçları ile trafikte hata ve ihlallerin en fazla yine daha önce trafik kazası geçirmiş kişilere ait olduğu, daha önce travmatik herhangi bir olay yaşamayan sürücülerin ise en çok olumlu davranışı gösterdikleri görülmüştür. Bu çalışmada ayrıca, aracı değişken olarak hem Rotter'ın iç-dış kontrol odağı ölçeği hem de çok boyutlu trafik kontrol odağı ölçeği kullanılmış, trafik davranışlarını belirlemede trafik kontrol odağının daha güçlü olduğu görülmüştür. Ayrıca, dünyaya ilişkin varsayımlar ile trafik davranışları arasındaki ilişki şaşırtıcı bir şekilde ilgilidir. Kişinin kendine olan değerindeki artış hataları azaltırken, şansa ve dünyanın iyiliğine olan düşüncedeki artış tam ters bir şekilde hata ve ihlalleri artırmaktadır. Travma çalışmalarında bahsedilen yüksek dünyaya ilişkin varsayımları olumlu bir sonuç olarak değerlendirilirken, yüksek puandaki varsayımların trafik davranışlarına yansıması farklı şekilde olmaktadır.

Çalışmada ayrıca bazı sınırlılıklar vardır. Örneğin kullanılan ölçme araçlarının hepsi beyana dayalı ölçeklerdir ve özellikle hataları ya da ihlalleri belirtmekte sosyal istenirliği yüksek cevaplar verilmiş olabilir. Literatürde, travma sonrası stres reaksiyonlarının büyümeye etkisinden bahsedilse de bu reaksiyonların ölçümü çalışmaya dahil edilmemiştir. İleriki çalışmalarda bu reaksiyonların ölçümü travmatik seviyenin de belirlenmesine yardımcı olabileceği gibi kontrol ve travma gruplarının ayrımında daha tutarlı sonuçlar ortaya koyabilir.

APPENDIX K: TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü ■

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

YAZARIN

Soyadı : Öz

Adı : Cansu

Bölümü : Trafik ve Ulaşım Psikolojisi

TEZİN ADI (İngilizce) : THE RELATIONSHIP BETWEEN TRAUMATIC LIFE EXPERIENCES, LOCUS OF CONTROL AND DRIVER BEHAVIORS

TEZİN TÜRÜ : Yüksek Lisans ■ Doktora ☐

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. ■
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz. ☐

TEZİN KÜTÜPHANEYE TESLİM TARİHİ: