# THE DETERMINANTS OF POSTTRAUMATIC GROWTH AND POSTTRAUMATIC STRESS AMONG MOTOR VEHICLE ACCIDENT SURVIVORS: PERSONALITY, COPING MECHANISMS, AND RUMINATIONS

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Approval of the Graduate School of Social Sciences

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## ABSTRACT

THE DETERMINANTS OF POSTTRAUMATIC GROWTH AND POSTTRAUMATIC STRESS AMONG MOTOR VEHICLE ACCIDENT SURVIVORS: PERSONALITY, COPING MECHANISMS, AND RUMINATIONS

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The experience of traffic accidents is a quite frequent adversity, especially in Turkey. Although traumatic events result in negative psychological consequences, their positive outcomes have also been examined in psychology literature. The current study aimed to examine negative and positive consequences, namely posttraumatic stress (PTS) and growth (PTG) of traffic accident survivors in Turkey. Factors related to PTS and PTG were examined based on the Multivariate Risk Factor Model and Model of Life Crises and Personal Growth, respectively. These factors were personality characteristics, event related variables (timing and severity of the accident), and post trauma variables (coping and ruminations). Furthermore, the relationship between PTG and the change in the positive driver behaviors among driver survivors was examined based on the combination of the Conservation of Resources Theory and Model of Life Crises

and Personal Growth.

The sample consisted of 225 adult traffic accident survivors (105 males, 120 females). The findings showed that in the last step of the regression analysis, perceived severity of the accident, helplessness and fatalistic coping, and intrusive rumination were associated with PTS. Furthermore, perceived severity of the accident, problem solving coping, and deliberate rumination were related to PTG. The subscales of PTS and PTG were related to different variables. Mediation analyses were conducted to examine the relationship between predictive variables, and PTS and PTG. The results were discussed in relation to the hypotheses of the current study and literature findings, strengths and clinical implications, and limitations and directions for future studies were presented.

Keywords: traffic accidents, posttraumatic stress, posttraumatic growth, rumination, coping.

# ÖZ

TRAFİK KAZASI MAĞDURLARINDA TRAVMA SONRASI GELİŞİM VE TRAVMA SONRASI STRES'İ YORDAYAN FAKTÖRLER: KİŞİLİK, BAŞ ETME MEKANİZMALARI VE RUMİNASYONLAR

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Trafik kazası deneyimi özellikle Türkiye'de sıklıkla yaşanan bir olaydır. Travmatik olaylar olumsuz psikolojik sonuçlara yol açsa da bu olayların olumlu sonuçları da psikoloji literatüründe incelenmektedir. Bu çalışma Türkiye'deki trafik kazası mağdurlarında, trafik kazalarının travma sonrası stres (TSS) ve travma sonrası gelişim (TSG) gibi olumsuz ve olumlu sonuçlarını incelemeyi amaçlamaktadır. TSS ve TSG'yi yordayan faktörler sırasıyla Multivariate Risk Factor ve Life Crises and Personal Growth Modelleri temel alınarak incelenmiştir. Bu faktörler kişilik özellikleri, olaya ilişkin faktörler (olayın zamanı ve algılanan şiddeti) ve baş etme ve ruminasyonlar gibi kaza sonrası değişkenlerdir. Ayrıca, TSG ve sürücü olan trafik kazası mağdurlarında olumlu sürücü davranışlarındaki değişim arasındaki ilişki Life Crises and Personal Growth Modeli ve Conservation of Resources Teorisi'nin birleşimi temel alınarak incelenmiştir.

Çalışmanın örneklemi 225 yetişkin trafik kazası mağdurundan oluşmaktadır. Bunların 105'i erkek, 120'si kadın katılımcılardır. Yapılan regresyon analizlerinin sonuçları kazanın algılanan şiddeti, çaresiz ve kaderci baş etme ve intrusive ruminasyonun TSS'yi yordadığını ortaya çıkarmıştır. Diğer bir yandan, kazanın algılanan şiddeti, problem çözme odaklı başa çıkma ve istemli ruminasyon ise TSG'yi yordamaktadır. TSS ve TSG'nin alt testleri ise farklı değişkenler tarafından yordanmaktadır. Bu çalışmada, ayrıca TSS ve TSG, ve bu değişkenleri yordayan faktörlerin ilişkilerinin incelenmesi amacıyla aracı değişken analizleri yapılmıştır.

Çalışmanın sonuçları ilgili literatür bulguları ve çalışmanın hipotezleri çerçevesinde tartışılmış, çalışmanın klinik göstergeleri ve kısıtlılıkları ele alınmış ve gelecek çalışmalar için önerilerde bulunulmuştur.

Anahtar kelimeler: trafik kazaları, travma sonrası stres, travma sonrası gelişim, ruminasyon, baş etme.

To

My Parents,

My dear husband,

&

Our Unborn Daughter “Ada”

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# CHAPTER I

## INTRODUCTION

Traumatic events and their various psychological effects on individuals facing with them is a commonly researched area. The occurrence of traumatic events activates a process that includes pre and post trauma elements; therefore, this process generally ends up with the occurrence of posttraumatic stress and/or posttraumatic growth in the individuals. Traffic accidents are among these important potential traumatic events in the world and also in Turkey. Examining the psychological effects of experiencing traffic accidents and the factors related to them is an important issue in Turkey due to the high prevalence rates of traffic accidents.

The aim of the current thesis is to examine negative and positive consequences, namely posttraumatic stress (PTS) and growth (PTG) of traffic accident survivors in Turkey. Factors related to PTS and PTG were examined based on the Multivariate Risk Factor Model (Freedy, Kilpatrick, & Resnick, 1993) and Model of Life Crises and Personal Growth (Schaefer & Moos, 1992), respectively. These factors were personality characteristics (extraversion, conscientiousness, agreeableness, openness to experience, negative valence, and neuroticism), event related variables (timing and severity of the accident), and post trauma variables (coping and ruminations). Furthermore, the relationship between PTG and the change in positive driver behaviors among driver survivors was examined based on the combination of the Conservation of Resources Theory and Model of Life Crises and Personal Growth. Based on the purposes of the study, a comprehensive literature review on the positive and negative psychological consequences of trauma, traffic accidents, and their psychological effects, and the factors having an influence on the development of posttraumatic growth and posttraumatic stress will be presented. Furthermore, the purpose and

the hypotheses of the current thesis will be highlighted. The method section will cover sample characteristics, instruments, procedure, and the statistical analyses, data screening and cleaning. The results of the statistical analyses will be presented in the results section. In the discussion section the findings will be discussed and the limitations, clinical implications and suggestions for future studies will be presented. Finally, the references and appendices will be shown.

## 1.1 Trauma and Traumatic Life Events

The word trauma dates back to 1690's and it is derived from an Ancient Greek word *'traûma'* which means physical wound and damage. In 1864, the meaning of *"psychic wound, unpleasant experience which causes abnormal stress"* was developed with a more psychological focus (Online Etymology Dictionary).

The emphasis on the psychological aspects of trauma has emerged after World War I and II, and it has gained importance with several studies about Holocaust Survivors of the World War II (Herman, 1992).

### 1.1.1 Traumatic Events and Their Prevalence Rates

According to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR, 2000), traumatic event was defined as a personal direct or indirect experience or witnessing of an actual or threatened death, a serious injury or a threat to physical injury to self or others. As a reaction to the event, the individual need to show intense fear, helplessness or horror. However, in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, (DSM-5, 2013) the part including the subjective reactions to the traumatic event has been removed and sexual violation was specifically included in the definition of the traumatic event. Additionally, in DSM-5 (2013) being repeatedly or extremely exposed to aversive details of the traumatic event through work related exposures such as police officers being repeatedly exposed to the details of the event was included.

The lifetime prevalence rates of traumatic events differ from country to county. However, individuals from all around the world, experience or witness various types of potential traumatic events including war, sexual and physical assault or rape, robbery, being kidnapped, terrorist attacks, torture, disasters, motor vehicle accidents, life threatening illnesses, domestic violence, and child abuse (DSM-5, 2013).

In the literature, several studies have been conducted to examine the lifetime prevalence rates of experiencing at least one traumatic event. The results of these studies showed that there is a wide range of prevalence rates, which were changing from 39% to 84% (Breslau, Davis, Andreski, & Peterson, 1991; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Norris, 1992; Karanci, Aker, Işıklı, 2009; Karanci, Aker, Işıklı, Erkan, Gül, & Yavuz, 2012; de Vries, & Olff, 2009).

Breslau et al. (1991), in their study with a sample of 1007 young adults from the city of Detroit in U.S., reported that the lifetime prevalence of exposure to traumatic events was 39.1%. Moreover, within a sample of 1000 adults equally distributed in terms of gender, age (younger, middle-aged, and older), and ethnicity (Black, or White), 690 (69%) participants experienced at least one traumatic event in their life (Norris, 1992). The results of the study conducted by Kessler et al. (1995) showed that 55.8% (N = 3277) of the participants reported that they have experienced at least one traumatic event. Furthermore, in Netherlands, de Vries and Olff (2009) conducted a prevalence research of traumatic events and they found that 80.7% of 1087 randomly selected adults with an age range of 18 to 80 reported a traumatic experience. In this study, among several traumatic events, sudden unexpected death of a loved one was the leading type of traumatic event (53.9%) and it was followed by injury or shocking experiences including motor vehicle accidents, and disasters (43.3%).

The studies focusing on traumatic events in Turkey became important after Marmara Earthquake, 1999. The study using data collected from Ankara, Kocaeli, and Erzincan was conducted to determine the effects and the prevalence rates of traumatic events in Turkey. The findings showed that 84.2% (N = 1055) of the participants experienced a traumatic event. 64% of these individuals were female, and the remaining 36% were males. Three top frequent traumatic events reported were natural disasters, the loss of a loved one, and severe accidents, fire,

or explosion, respectively. Only 44.9% of the events reported by the participants of the study as traumatic met DSM-IV-TR (2000) criteria A for traumatic events (Karanci et al., 2012).

### 1.1.2 Traffic Accidents in the World and Turkey

Traffic accidents are widespread in the industrialized world. Traffic accident, in other words motor vehicle accident or car accident was defined as the collision of a moving vehicle with another vehicle or object along a road. As it was reported in DSM-5 (2013), severe automobile accidents were classified as directly experienced traumatic events.

Traffic accidents causing human injuries or death are reported by World Health Organization (WHO, 2012) as the leading cause of death by injury and the tenth leading cause of all deaths. According to the World Health Organization, more than 3000 people die on the roads every day and tens of millions of people are injured or disabled every year. As Blanchard and Hickling (1998) stated, approximately 20% of the American population reported to have an experience of a severe traffic accident. Similarly, traffic accidents were reported as the most frequent trauma for American males and the second most frequent trauma for females (Kessler et al., 1995).

In Turkey, the prevalence rates of traffic accidents are very high. According to the Republic of Turkey, General Directorate of Highways' report (Trafik Güvenliği Dairesi Başkanlığı, 2015), in 2014, the total number of traffic accidents in Turkey was 1.199.010; the number of death was 3524, and 285059 individuals were injured. Turkey ranked third among the European countries in terms of the number of accidents that resulted in death or injury, and fifth in terms of death rate. However, when the number of vehicles is proportioned, Turkey is one of the leading countries in the world in terms of death rates as a result of traffic accidents. Furthermore, despite its decreasing number, traffic accidents are still an important problem in Turkey; because, traffic accidents cause severe physical and psychological injuries due to the significant and permanent disabilities and also the death of loved ones. Furthermore, Özkan (2006), in his

cross cultural study examining the differences between countries in terms of traffic safety showed that Southern Europe and the Middle East countries that were investigated in this study, namely Greece, Iran, and Turkey were much more worse than Northern and Western Europe countries such as Finland, Great Britain, and the Netherlands in terms of traffic safety records.

The results of the studies in the literature supported the importance of the problem of the traffic accidents. As Blanchard and Hickling (1998) demonstrated, there are active research groups in Norway, the Netherlands, the United Kingdom, Australia, and Canada. However, in Turkey, due to high prevalence of traffic accidents and rates of injury and death as a result of these accidents there is a need for further studies about this issue. The psychological consequences of traffic accidents, and the variables related to these reactions need more attention in the psychology literature, especially so in Turkey, in order to understand which variables are related to psychological consequences so that effective intervention studies can be planned.

### 1.2 Psychological Effects of Traumatic Events on Survivors

In psychology literature, traumatic events have been widely examined in terms of their negative effects on survivors, namely posttraumatic stress and posttraumatic stress disorder. However, several studies showed that although its negative outcomes, traumatic events also produce some positive outcomes on trauma survivors. These positive outcomes have been called as posttraumatic growth.

Negative and positive psychological effects of traumatic events and the factors related to them will be examined in the following section of the current study. The findings on and the models explaining factors related to posttraumatic stress and posttraumatic growth will be examined respectively.

### 1.2.1 Posttraumatic Stress (PTS)

Individuals facing with potential traumatic events may develop some long-term severe emotional reactions and psychological problems. Posttraumatic stress disorder (PTSD) is a disorder characterized by some symptom clusters, such as re-experiencing stimuli related to the trauma; marked avoidance of stimuli associated with the trauma; and persistent arousal or increased anxiety. In DSM-5 (2013), PTSD was classified as four symptom clusters including twenty symptoms. These clusters are intrusion symptoms related to, and avoidance of stimuli associated with the traumatic event; distorted cognitions associated with the traumatic event; and increased arousal and reactivity. All these symptoms should occur in the aftermath of the traumatic event. Moreover, the symptoms are long lasting or have a delayed onset (Oltmanns & Emery, 2007). It was reported that this disorder may be especially severe or long lasting when the event is human made trauma such as torture, rape, or accidents (DSM-IV-TR, 2000). Furthermore, DSM-5 (2013) stated that the higher the intensity of the stressor; the higher the probability of developing this disorder was. Additionally, the findings of Ai, Tice, Whitsett, Ishisaka, and Chim (2007) were consistent with this finding revealing that there was a dose-response relationship between exposure to traumatic event and PTSD occurrence.

#### 1.2.1.1 Models of PTS and PTSD

In the literature, there are several models focusing on the factors associated with posttraumatic stress following traumatic experiences. In the present study, the Multivariate Risk Factor Model (Freedy, Kilpatrick, & Resnick, 1993) and The Cognitive Model of Posttraumatic Stress Disorder (Ehlers & Clark, 2000) will be presented.

The Multivariate Risk Factor Model (Freedy, Kilpatrick, & Resnick, 1993) was developed to examine the factors associated with mental health adjustment of individuals following natural disaster exposure. The model proposed that the mental health adjustment of individuals was influenced by different factors presented in three groups, namely the factors existing before (pre-disaster), the

factors existing during (within-disaster), and the factors existing after (post-disaster) the event. Pre-disaster factors include demographic characteristics, mental health history, and life events. Furthermore, exposure to disaster, perception of high threat and low controllability and predictability were classified as within disaster factors. Finally, post disaster factors include acute and ongoing experiences, resource loss, and coping and social support (See Table 1).

In the Multivariate Risk Factor Model (Freedy et al., 1993) it was proposed that mental health outcomes might be either positive or negative depending on the experiences and resources of individuals. These experiences and resources have an influence on each other and form the adjustment process following disaster.

In the present study, the Multivariate Risk Factor Model (Freedy et al., 1993) will be used in order to examine the factors associated with PTS following traffic accidents.

Table 1 The Multivariate Risk Factor Model of Natural Disaster Adjustment

| *Pre-disaster Factors* | *Within-disaster Factors* | *Post-disaster Factors* | *Mental Health Outcomes* |
|---|---|---|---|
| Demographic characteristics | Disaster exposure | Basic needs | Depression |
| Mental health history | | Initial distress level | Anxiety |
| High magnitude life events | Cognitive appraisal of exposure: | Stressful life events | Somatic complaints |
| Low magnitude life events | - low control<br>- low predictability<br>- high life threat | Resource loss<br><br>Coping behavior | Substance abuse |
| | | Social support | Positive experiences |

The Cognitive Model of Posttraumatic Stress Disorder was developed by Ehlers and Clark (2000). In their model, Ehlers and Clark (2000) suggested that individuals develop PTSD when they evaluate the trauma and its negative impacts as a threat. This threat can occur in two different aspects namely, external and internal. The external threat is characterized by a threat to safety and internal threat is a perceived threat to self and the future.

How individuals appraise the event and its negative consequences, and how they build a memory of the event and its relation to their personal memories determine the occurrence of a threat perception.

According to this model, the sense of threat is accompanied by arousal, anxiety, intrusions, and negative emotional responses. It also leads to some behavioral and cognitive responses that aim to inhibit the threat and distress, and to reach a balanced situation. However, this process prevents some possible healthy cognitive changes and then leads to the development of PTSD (Ehlers & Clark, 2000).

### 1.2.2 Posttraumatic Growth (PTG)

Highly stressful and traumatic life events, despite negative psychological effects can also promote some positive changes in individuals, which is called posttraumatic growth (PTG) (Joseph & Linley, 2008; Tedeschi & Calhoun, 1995).

In mid-1980s, there was an increasing tendency to investigate PTG in individuals who have experienced traumatic events. Tedeschi and Calhoun (1995) defined the term Posttraumatic Growth as "positive psychological change experienced as a result of the struggle with highly challenging life circumstances". Positive psychological changes have been referred to with different concepts in the literature, such as stress-related growth (Park, Cohen, & Murch, 1996); perceived benefits (McMillen & Fisher, 1998); and adversarial growth (Linley & Joseph, 2004).

Tedeschi and Calhoun (2004) proposed that for PTG to occur, the traumatic event must be severe enough. In other words, they suggested that the more severe the event, the more growth will be experienced. Additionally, they stated that this positive psychological change could be both a process and an

outcome of a traumatic event and was composed of five main domains of posttraumatic growth such as greater appreciation of life, changes in relationships with others, greater sense of personal strength, recognition of new possibilities, and spiritual changes. In order to report having PTG, it is enough to show positive change in at least one of these domains. Each of the PTG domains represents positive changes in different areas of life.

Increased appreciation of life can be defined as a change in the sense of priorities, in other word, the sense of what is important for the individual's life. The domain of changes in relationships with others is designated by having closer and more meaningful relationships with friends, and family and having increased compassion and empathy for others (Sheikh, 2008; Tedeschi, Park, & Calhoun, 1998). The domain of personal strength is manifested by understanding that bad things can happen and saying: "If I can handle this experience then I can also handle anything in my life". Identification of new possibilities domain of PTG is defined as perceiving the possibility of choosing a new and different direction in life. Lastly, spiritual change is identified by more commitment with spiritual and existential questions in the aftermath of the traumatic event. Tedeschi and Calhoun (2004) reported that even atheistic individuals could experience spiritual growth as a result of the trauma.

Findings of research on PTG showed that it was important to further understand PTG and its benefits for individuals. Similarly, Karanci, Aker, Işıklı, Erkan, Gül, and Yavuz (2012) stated that it was crucial to take into account the timing of the assessment because of the fact that PTG can refer to different processes after trauma in different time periods following trauma.

#### 1.2.2.1 Models of PTG

Important models that have been developed to better understand the process of PTG are The Functional Descriptive Model of Posttraumatic Growth (Tedeschi & Calhoun, 1995), The Model of Life Crises and Personal Growth (Schaefer & Moos, 1992), and the Conservation of Resources Theory (COR) (Hobfoll, 1989).

The Functional Descriptive Model of PTG (Tedeschi & Calhoun, 1995) (See Figure 1) proposed that the occurrence of PTG, rather than an outcome is an ongoing process of struggle with the new reality of trauma survivors' life. The model emphasizes the crucial role of individuals' personality characteristics, challenging conditions, management of the emotional distress, social influences, self-disclosure, and especially ruminations as part of the cognitive processing that was shattered by the traumatic event. Moreover, the model emphasizes that PTG is in a mutual interaction with life wisdom and the narrative development.

The traumatic events shatter the assumptive world of the individual. In order to cope with the distress that resulted from this challenge; cognitive processing is activated. This constructive cognitive processing works as the mechanism that aims to change schemas. Early responses to traumatic experiences are always automatic, in other words, they include intrusive ruminations. Since the distress caused by the traumatic event keeps the cognitive processing active; the process of schema change can take time. Tedeschi and Calhoun (1995) called this process as "grief work" because of the fact that the sense of loss, which is related to trauma, is gradually accepted by the individual. With the contribution of the self-disclosure and social support, individual becomes more able to deliberately ruminate and to analyze the event and its consequences in an intentional way. Therefore, the schema change and posttraumatic growth can be achieved.

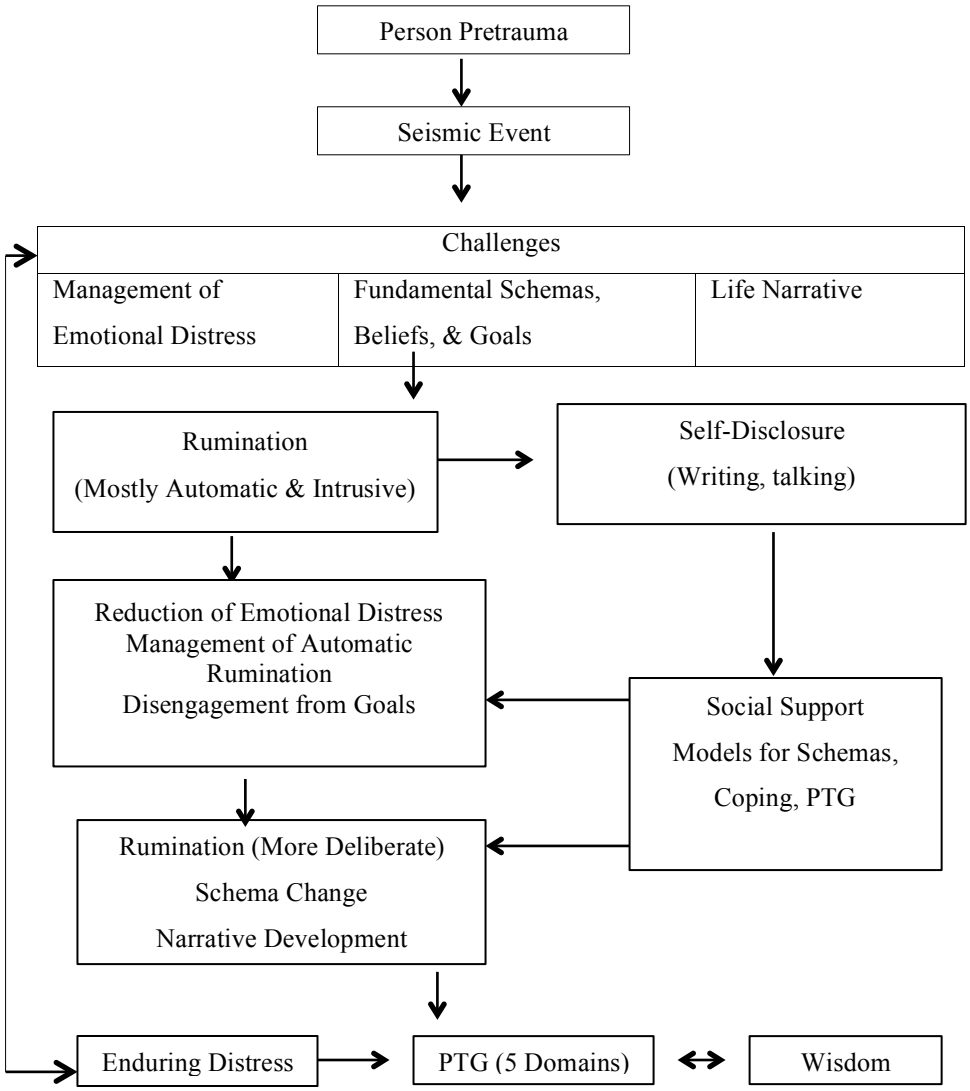


Figure 1 The Functional Descriptive Model of PTG (Tedeschi & Calhoun, 1995)

The Model of Life Crises and Personal Growth (See Figure 2) was developed by Schaefer and Moos (1992) in order to conceptualize the determinants of positive outcomes of life crises. With the aim of understanding how individuals are positively adapted to life crises, the model emphasizes that it is crucial to work on the factors facilitating individuals' maintenance of their

healthy functioning and their own resources leading to posttraumatic growth in the aftermath of crises.

As the model proposed, personal and environmental system factors that are present before the event shape traumatic events and life crises. These traumatic event characteristics influence cognitive appraisal and coping responses. Moreover, coping and appraisals contribute to the development of personal growth or positive outcomes following life crises. Each stage of the model has an influence on all other stages; in other words, all parts of the model are connected with each other via feedback loops.

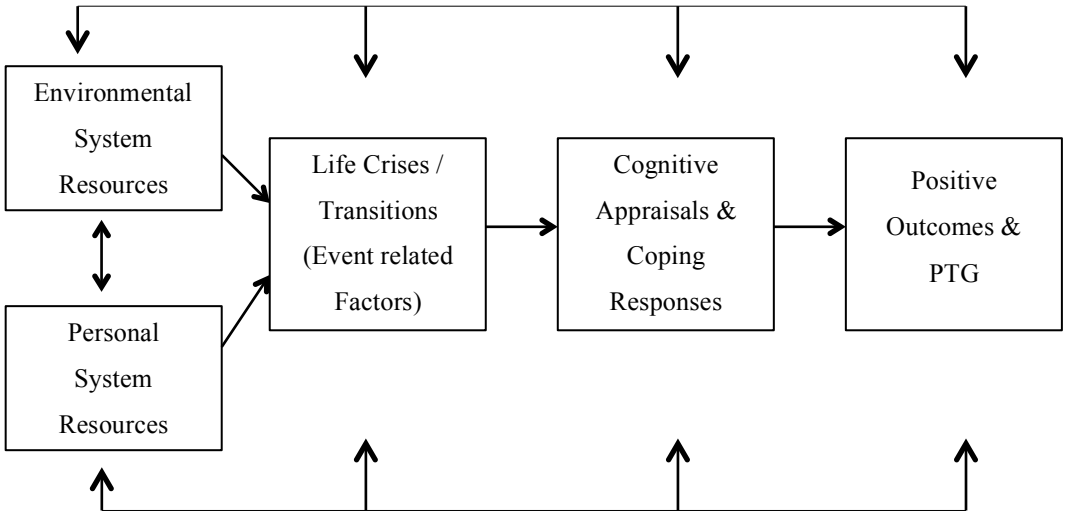


Figure 2 The Model of Life Crises and Personal Growth (Schaefer & Moos, 1992)

Personal system resources consist of socio-demographic characteristics such as marital status, gender, education level, and age, and personality characteristics.

Environmental system resources include financial status, and living conditions such as family environment and quality of life determinants.

Furthermore, perceived or objective severity, duration, and timing of the life crisis constitute the event related factors that represent life crisis and transition panel of the model.

In their model, Schaefer and Moos (1992) divided coping responses into two types namely, avoidance and approach coping. Individuals using avoidance coping tend to suppress the problem and they are unwilling to take action to change the situation and its possible emotional consequences. On the other hand, approach coping represents the reappraisal of the crisis and trying to actively analyze the event rationally and taking action to cope with it.

Therefore, The Model of Life Crises and Personal Growth (Schaefer & Moos, 1992) demonstrates that the occurrence of positive outcomes and PTG is determined by the combination of the individual's personal and environmental resources, the factors related to the traumatic event and the type of appraisal and coping strategy.

In the literature, there is a growing debate on the illusory side of PTG. There are several studies focusing on the illusory side of growth following trauma (Taylor, 1983; Taylor & Aymor, 1996; Maercker & Zoellner, 2004; Zoellner & Maercker, 2006). It has been proposed that PTG might be related to the distorted positive illusions serving to decrease the distress level of individuals in the aftermath of trauma. The Janus Face Model was developed by Maercker and Zoellner (2004) in order to examine the components of growth following traumatic experience. These components were named as the constructive and illusory sides of PTG. Constructive side represents a positive adaptation to trauma and occurs when individuals effectively coped with the traumatic experience and its negative effects. Whereas, illusory side of PTG is a perception of growth that is not genuine and that serves to counter balance negative emotions following trauma that individual was unable to cope with. Furthermore, studies showed that there was a need for an action, in other words, a shift from growth cognitions to growth actions, in order to note a more constructive and permanent PTG following traumatic experience (Pat-Horenczyk & Brom, 2007; Hobfoll et al., 2007; Johnson, Hobfoll, Hall, Canetti-Nisim, Galea, & Palmieri, 2007).

The Conservation of Resources (COR) Theory (Hobfoll, 1989) is an integrative theory that focuses on both environmental and internal processes

equally. In this theory, Hobfoll (1989) proposed that people are motivated to obtain, build and protect resources that are socially accepted and meaningful for them and that help them to cope with stress and survive. Hobfoll (2001) affirmed that stress could occur when individuals' resources were threatened with loss; when they were actually lost; or when individuals failed to replenish resources after significant resource investment. The resources can be objects, personal characteristics, conditions, or energies (Hobfoll, 1989) and they are the necessity for understanding stress.

According to COR Theory (Hobfoll, 1989), it is important to focus on the effects of resource losses and gains following traumas. In this theory, there are three fundamental principles: the primacy of loss, resource investment, and loss and gain spirals.

The first principle is the primacy of resource loss, saying that resource loss is always more prominent than resource gain. The primacy of loss was explained by individual's giving more importance to negative information than positive information named as "negativity bias" (Hobfoll, 2001).

The second principle is the resource investment. In this principle, it was suggested that: "people must invest resources in order to protect against resource loss, recover from losses, and gain resources". Therefore, people with more resources are less vulnerable to resource loss and more capable of gaining resources; and those with fewer resources are more vulnerable to resource loss and less capable of gaining resources. Consistently, it was stated that individuals who were able to invest their resources more successfully, resisted negative impacts of traumatic stressors better than individuals who are lacking or misusing their resources (Freedy & Hobfoll, 1995). Individuals when they are under stressful conditions must use their resources in order to successfully cope with stress; however, resource reservoirs become depleted in traumatic stress due to the fact that in trauma, resource losses are abrupt, deep, and broad. Therefore, the loss cycle develops (Hobfoll, 2001). With greater resource loss, the level of distress increases because of the fact that individuals become less capable of responding to stress (Dekel & Hobfoll, 2007; Freedy & Hobfoll, 1995).

The third principle of COR Theory is loss and gain spirals. The initial loss makes individuals more vulnerable to further loss; therefore, when they face with

secondary stressors, additional resource losses occur and each loss makes individual more vulnerable to psychological distress as resources are continuously depleted.

The Conservation of Resources (COR) Theory (Hobfoll, 1989) differs from other stress theories due to its emphasis on understanding the individual in terms of personal, social, and larger system resources rather than focusing only on individual psychology (Freedy & Hobfoll, 1995).

According to Hobfoll et al. (2007), action is an important element in the growth process. In the COR theory, it was proposed that the benefits of PTG were dependent on the transition from cognition to action which is called as "action based growth". In order to report posttraumatic growth that embodies real positive adaptation, it is necessary that the action accompany the cognitions of individuals.

The findings of the research on 11 September 2001 and in Israel during the times of violence and terrorism revealed that PTG was significantly related to the high level of distress. Additionally, it was indicated that individuals exhibited PTG only if they translated their cognitions of growth to the growth actions (Hobfoll et al., 2007).

## 1.3 Empirical Findings: Factors Associated with PTS and PTG

In the aftermath of traumatic experiences both reactions of distress and growth become important topics to focus on. Several studies on various traumatic events were conducted to examine the factors leading to posttraumatic stress and posttraumatic growth reactions. In the following section of the current study, empirical findings on the factors associated with PTS and PTG, respectively.

### 1.3.1 Factors Associated with PTS

#### 1.3.1.1 Socio-demographic and Personality Characteristics

Socio-demographic variables and personality characteristics that existed before the traumatic event and as the models of PTS proposed, they have an important influence on reactions of individuals to trauma.

In the literature, socio-demographic characteristics such as age, gender, income, and social support have been found to be related to the occurrence of PTS.

Age seems to be an important factor related to PTS. However, there are conflicting findings about the relationship between age and the occurrence of PTSD. According to DSM-5 (2013), younger age at the time of trauma exposure is a risk factor for developing PTSD. On the other hand, old age was found to be positively related to the development of PTSD (Davidson, Hughes, Blazer, & George, 1991; Norris, 1992; Perkonigg, Kessler, Storz, & Wittchen, 2000).

Several research studies revealed that being female is a risk factor for the development of posttraumatic stress (Tolin & Foa, 2006; Ehlers, Mayou, & Bryant, 1998). Accordingly, Karanci et al. (2012) reported that being female was positively related to the severity of stress in the aftermath of traumatic events. The results of motor vehicle accident research are consistent with these findings (Ursano, Fullerton, Epstein, Crowley, Kao, Vance, Craig, Dougall, & Baum, 1999; Fullerton, Ursano, Epstein, Crowley, Vance, Kao, Dougall, & Baum, 2001; Lucas, 2003; Iteke, Bakare, Agomoh, Uwakwe, & Onwukwe, 2011). Consistently, DSM-5 (2013) also suggested that female gender was a factor that increases the risk of developing PTSD in the aftermath of trauma.

According to research findings, social support is a protective factor for PTSD; in other words, as social support increases the occurrence of PTSD decreases (Hobfoll, Hall, Canetti-Nisim, Galea, Johnson, & Palmieri, 2007; Hobfoll, Canetti-Nisim, Johnson, Palmieri, Varley, & Galea, 2008; DSM-5, 2013). Moreover, the results of the study that systematically reviewed 49 papers on road traffic crashes showed that the lack of social support for the accident victims significantly predicted PTSD (Heron-Delaney, Kenardy, Charlton, & Matsuoka, 2013).

In the literature there are some studies reporting a relationship between income level of the trauma survivors and the development of posttraumatic stress symptoms in the aftermath of the traumatic experience. Karanci et al. (2012) reported that income level was negatively related with the severity of PTSD symptoms and all three subscales of PTSD, measured by the Impact of Event Scale-Revised (Horowitz, Wilner, & Alvarez, 1979), namely re-experiencing, avoidance, and hypervigilance. Similarly, low-income level was found to be

associated with PTSD (Perkonigg et al., 2000; Norris, Murphy, Backer, Perilla, Rodriguez, & Rodriguez, 2003). On the other hand, the study conducted with motor vehicle accident victims showed that income level was not significantly associated with PTSD (Ursano et al., 1999).

Several studies investigating the relationship between the basic personality characteristics and posttraumatic stress revealed significant findings. Karanci et al. (2012), in their study conducted with the survivors of different types of trauma found that neuroticism, agreeableness, and extraversion were significantly associated with PTS. Neuroticism and agreeableness were found to be positive associates of PTS, whereas extraversion was negatively related to PTS. Consistently, Jaksic, Brajkovic, Ivezic, Topic, and Jakovljevic (2012), in their review article, indicated that neuroticism was related to PTSD in different samples experiencing a traumatic event. In addition, higher neuroticism and lower levels of agreeableness and conscientiousness were found to be positively related to stress following traumatic events (Caska & Renshaw, 2013). The results of the study performed with motor vehicle accident victims showed that neuroticism was positively correlated with the occurrence of acute stress disorder and the level of acute stress severity (Harvey & Bryant, 1999). Additionally, Dörfel, Rabe, and Karl (2008) in their research with 44 survivors of severe motor vehicle accidents showed that both extraversion and neuroticism significantly predicted PTS severity. In other words, PTS severity was found to be negatively correlated with extraversion and positively correlated with neuroticism.

According to the results in the literature, neuroticism and lower levels of extraversion are positively correlated with PTS. On the other hand, there are contradictory findings about the relationship between agreeableness and PTS.

#### 1.3.1.2 Event related Factors: Timing and Perceived Severity of the Event

Factors that are related to the traumatic event are important in the development of posttraumatic stress. Perceived severity and the timing of the traumatic experience are among the factors related to the event.

In the literature, the perceived severity of the traumatic experience was found to be related to the development of PTSD in trauma survivors (Malt, Hoivik,

& Blikra, 1993; Ehlers, et. al, 1998; Dörfel et al., 2008). In terms of investigating the impact of the motor vehicle accident severity on the occurrence of PTSD, Blanchard, Hickling, Mitnick, Taylor, Loos, and Buckley (1995) indicated that PTSD symptoms of motor vehicle accident survivors were predicted by the severity of the injury. Furthermore, the results of the 3-year follow up study conducted with traffic accident survivors revealed that the injury severity that was evaluated by the nurse of the orthopedics department, significantly predicted both the occurrence and severity of PTSD (Mayou, Ehlers, & Bryant, 2002).

Additionally, the findings of the study conducted with 44 severe traffic accidents survivors, indicated that the self-reported severity of the accident predicted PTSD severity (Dörfel, Rabe, & Karl, 2008). Similarly, the results of the study conducted with traffic accident survivors from Turkey were in consistency with these findings (Turan, Eşel, & Keleş, 2002). They found out that people who rated the accident as very severe showed significantly more PTSD symptoms than those who reported the accident as mildly severe.

However, there was no correlation between injury severity and PTSD symptoms in other research findings (Mayou, Bryant, & Duthie, 1993; Schnyder, Moergeli, Klaghofer, Buddeberg, 2001).

In the literature, timing of the traumatic event was found to be related to the development of PTSD following traumatic experiences (Southwick, Morgan, & Darnell, 1995; McFarlane, Atchison, & Yehuda, 1997; Grieger, Cozza, Ursano, Hoge, Martinez, Engel, & Wain, 2006). The results of the longitudinal study conducted with accident survivors showed that the passage of time was positively related with the development of PTSD symptoms (McFarlane et al., 1997). Furthermore, Grieger et al. (2006), in their study conducted with soldiers injured in a battle, demonstrated that the more the passage of time, the more is the risk of developing PTSD.

#### 1.3.1.3 Post trauma Factors: Coping and Rumination

Coping responses and cognitive appraisals are important elements of the process of adjustment following traumatic experience (Lazarus & Folkman, 1984; Freedy et al., 1993). They are the factors that facilitate or complicate the

adaptation of individuals to highly stressful events and then predict the occurrence of PTS, PTG, or both.

Recent studies emphasized the importance of different coping mechanisms in the development of negative responses of individuals to traumas (Nezu, & Carnevale, 1987; Wolfe, Keane, & Kaloupek, 1993; Amir, Kaplan, Efroni, Levine, Benjamin, & Kotler, 1997). Coping has been defined as cognitive and emotional efforts to manage the internal or external demands of the experienced stressful situation (Folkman & Lazarus, 1980). What is crucial for the adaptation to the experience of a stressful event is the process of struggling with the trauma rather than the trauma itself (Tedeschi & Calhoun, 2004). In other words, the effects of traumatic events on individuals may be positive, negative or the mixture of positive and negative depending on their coping styles (Jang, 2006). In the literature, the role of coping is to mediate the relationship between the experience of traumatic event and the outcome that may either be PTS, PTG, or both of them (Folkman & Lazarus, 1980; Bosson, Kelley, & Jones, 2012).

Coping has been studied generally in two different categories namely; emotion focused and problem focused coping styles (Folkman & Lazarus, 1980). However, in the literature several studies have been conducted and the results of factor analyses revealed different number of types of coping strategies.

Ginzburg, Solomon, and Bleich (2002) examined the relationship between coping styles and posttraumatic stress after myocardial infarction. They found that repressive coping negatively predicted acute stress disorder and PTSD. On the other hand, the findings of the research investigating the relationship between avoidant coping and PTS revealed that the avoidant coping style facilitated the development of PTS symptoms following motor vehicle accidents (Bryant & Harvey, 1995). Similarly, the results of the study investigating the predictors of acute stress following motor vehicle accidents showed that avoidance coping was positively associated with both acute stress disorder and acute stress severity (Harvey & Bryant, 1999). Likewise, another research studying motor vehicle accident victims showed similar findings, stating that avoidance, and self-blame were the risk factors for the development of PTS (Dörfel, Rabe, & Karl, 2008). Moreover, self-blame positively predicted severity of the PTS intrusion subscale; minimization (to devaluate intensity, duration, or importance of stress) coping

negatively predicted avoidance and hyperarousal dimensions of PTS. Additionally, situation control coping negatively predicted severity level of avoidance symptoms. However, situation control, (analyze the situation, plan actions, and act) and self-aggrandizement (to attribute less stress to oneself as compared with others) coping styles were reported as protective factors for PTS.

Furthermore, Compas, Connor-Smith, Saltzman, and Thomsen (2001) conducted a review study and they found that problem-focused coping was significantly associated with better adjustment, in other words, lower PTS reactions in the aftermath of the traumatic event. Consistently, the results of the study examining coping responses after a terrorist attack in Norway supported these findings (Jensen, Thoresen, & Dyb, 2015).

Traumatic events challenge the assumptive world and schemas of the individual (Janoff-Bulman, 1992; Tedeschi & Calhoun, 1995). Cognitive appraisals are an important element involved in the adaptation process of individual to the trauma and its effects on this assumptive world. Cognitive appraisals have been defined as a process of evaluating the event personally and trying to understand the meaning of the event for the individual. Rumination plays a crucial role in this process of appraising the situation. The word 'rumination' means, "to go over in the mind repeatedly and often casually or slowly" (Merriam Webster Online). In psychology literature, this term was generally used to define negative thinking about self and symptoms (Nolen-Hoeksema, Mc Bride, & Barson, 1997). Cann, Calhoun, Tedeschi, Triplett, Vishnevsky, and Lindstrom (2011) emphasized that despite its common use with the negative meaning, the term rumination also means repetitive thought that ponder on the information. Moreover, rumination is an adaptive process implying that individuals cognitively process and work through their experience.

In the literature, it has been indicated that ruminative thoughts can take two different forms (Watkins, 2008; Cann et al., 2011; Stockton, Hunt, & Joseph, 2011). The first one is intrusive thoughts that are not deliberate and are associated with the symptoms of distress and the second one is more controlled thoughts aiming to make a sense of the event and solve the problem, which is called deliberate rumination.

Different forms of rumination were also named differently. Treynor, Gonzalez, and Nolen-Hoeksema (2003) defined brooding as focusing on the causes and consequences of the negative experience in a way that solving problems becomes impossible because of the passive manner of thinking. On the other hand, individuals using reflective pondering voluntarily engage in adaptive problem solving. Reflective pondering is an adaptive form of rumination that is positively correlated with posttraumatic growth.

Similarly, Cann et al. (2011) defined intrusive rumination as invasions of individual's thoughts about the traumatic experience. However, deliberate rumination was defined as a volunteer rumination in order to understand the meaning and consequences of the event. Therefore, these two kinds of ruminations that follow the traumatic experience seem to differ in terms of the nature of their relationships with PTS and PTG.

In the current study, the terms of intrusive and deliberate rumination will be used.

Several research findings in the literature supported the positive relationship between rumination and PTS following traumatic events. In other words, repetitive and perseverative thinking about the traumatic event, its causes and consequences have been found to be significantly related to PTSD (Clohessy & Ehlers, 1999; Ehlers, Mayou, & Bryant, 1998; Murray, Ehlers, & Mayou, 2002). Similarly, the results of the study conducted with 185 women diagnosed with breast cancer showed that brooding which was defined as a perseverative and passive focus on negative events or emotions was positively associated with depression, anxiety, and stress (Soo & Sherman, 2015). Moreover, it was revealed that PTSD was significantly associated with compulsion to continue ruminating, occurrence of unproductive thoughts, "why" and "what if" type questions, and negative emotions before and after rumination (Michael, Halligan, Clark, & Ehlers, 2007).

Studies focusing on survivors of motor vehicle accidents revealed consistent results with the findings from different traumatic events in the literature. The occurrence and the perceived severity of PTSD symptoms were found to be positively related with rumination about and suppression of intrusive memories of the accident at 3 months and 1 year following the event (Ehlers, Mayou, & Bryant,

1998). The 3-year follow up study investigating PTSD after motor vehicle accidents supported these findings (Mayou et al., 2002). In line with previous studies, it was indicated that rumination was a significant predictor of PTSD and depression (Ehring, Frank, & Ehlers, 2008).

In this section, the factors associated with PTS and the nature of their relationship were presented in three different groups, namely socio-demographic and personality characteristics, event related factors, and post trauma factors. Being female, and low-income level were found to be positive associates of PTS, whereas perceived social support was found to be a protective factor for PTS. Regarding personality characteristics, neuroticism was positively related to PTS. Additionally, studies showed a negative relationship between agreeableness and conscientiousness, and PTS. In terms of event related factors, findings showed a positive relationship between perceived severity of the event and PTS. Regarding post trauma factors, intrusive rumination and avoidant coping have been found to be positively related to PTS. Moreover, problem solving coping was found to be negatively associated with PTS.

The occurrence of PTS in the aftermath of traumatic events represents the negative and distressing effects of trauma on individuals. On the other hand, there are also positive outcomes following traumatic event. In the following section, the factors associated with PTG, which represents these positive changes will be examined.

### 1.3.2 Factors Associated with PTG

#### 1.3.2.1 Socio-demographic and Personality Characteristics

Emprical research showed that socio-demographic characteristics such as age, gender, income, and social support are related with PTG.

Several studies examining the relationship between the development of PTG and age, consistently demonstrated a negative association between them (Polatinsky & Esprey, 2000; Evers, Kraaimaat, van Lankveld, Jongen, Jacobs, & Bijlsma, 2001). According to the results of a meta-analytic review, age was negatively correlated with benefit finding and growth (Helgeson, Reynolds, &

Tomich, 2006). These findings were supported by the results of the study conducted with veterans of operations enduring freedom (OEF) showing that younger veterans reported more growth than elders (Pietrzak, Goldstein, Malley, Rivers, Johnson, & Morgan, 2010). Consistently, being younger was related to greater traumatic growth among Jews exposed to terrorist attacks in Israel (Hobfoll, Canetti-Nisim, Johnson, Palmieri, Varley, & Galea, 2008). Furthermore, the results of the research investigating the relationship between PTG and individual characteristics in motor vehicle accident perpetrators, demonstrated that older individuals developed lower PTG than youngers (Merecz, Waszkowska, & Wezyk, 2012). Thus, several research studies in the literature found that as age increases posttraumatic growth scores decreases.

Gender is another factor, which is found to be related to PTG. Park et al. (1996) found that females reported more PTG than males. The findings of Linley and Joseph (2004) supported these findings. Similarly, among survivors of the Madrid train bombing, female survivors showed more PTG than males (Val & Linley, 2006).

In Turkey, there are more male drivers than female drivers. In agreement with this fact, in the trauma literature males have been reported to be more exposed to motor vehicle accidents than females (Emniyet Genel Müdürlüğü, Trafik Hizmetleri Başkanlığı, 2014; Frommberger, Stieglitz, Nyberg, Schlickewei, Kuner, & Berger, 1998). Harms and Talbot (2007), in their research on road trauma survivors, showed that males were less likely than females to report total score of PTG and its domains especially, relating to others and spiritual change. Similarly, in a study conducted with motor vehicle accident survivors, it was indicated that females reported more growth than males (Merecz et al., 2012). Therefore, although males are more exposed to motor vehicle accidents, females seem to experience more PTG.

According to the findings in the literature, social support was a facilitating factor in developing PTG (Park et al., 1996; Weiss, 2004; Prati & Pietrantoni, 2009; Pietrzak et al., 2010; Senol-Durak & Ayvasik, 2010). Likewise, in their study conducted with rheumatoid arthritis patients, Dirik and Karanci (2008) found that perceived social support of participants significantly predicted total score of PTG. The results of the study conducted by Dong, Gong, Jiang, Deng,

and Liu (2015) also supported these findings by revealing that perceived social support was a strong predictor of PTG.

Research on the factors associated with PTG, revealed that personality characteristics also have an important influence on the development of PTG in the aftermath of traumatic experiences. Studies investigating the relationship between personality traits and PTG often indicated a positive relationship between extraversion, openness to experience, agreeableness, and conscientiousness and a negative relationship between neuroticism and negative valence and PTG (Tedeschi & Calhoun, 1996; Karanci, Işıklı, Aker, Gül, Erkan, Özkol, & Güzel, 2012; Wang, Wang, Wang, Wu, & Liu, 2013). In order to develop Posttraumatic Growth Inventory (PTGI), Tedeschi and Calhoun (1996) conducted a study with 604 individuals with a history of different types of traumatic events including injury-producing accidents. In their study, they found out that agreeableness, openness to experience, extraversion, and conscientiousness were positively associated with the total score of PTG. In terms of the PTG domains, extraversion was significantly related to all of the PTG domains. Moreover, individuals who were open to new experiences reported higher levels of new possibilities and personal strength. Relating to others domain was positively related to agreeableness whereas; personal strength was positively associated with conscientiousness. Furthermore, Karanci et al. (2012) found that conscientiousness, agreeableness, and openness to experience were significantly related to the total score and domains of PTG. Conscientiousness and agreeableness were related to spiritual change and appreciation of life domains. Additionally, agreeableness and openness to experience were significantly related to the domain of relationship with others. The relationship between personality and PTG in traffic accident survivors has been studied in very few studies. Wang et al. (2013) investigated the predictors of PTG in motor vehicle and workplace accident survivors. The findings indicated that individuals who are open to new experiences reported more total PTG and growth in all of the domains. Moreover, agreeableness was significantly related to the appreciation of life domain. Extraversion was found to be a significant predictor of the domain of personal strength. In addition to the predictors that were positively related to PTG, the results of the research study focusing on myocardial infarction patients revealed

that neuroticism was negatively associated with PTG (Garnefski, Kraaij, & Schroevers, 2008).

#### 1.3.2.2 Event related Factors: Timing and Perceived Severity of the Event

As shown in the models of PTG, event related factors such as perceived severity and how recently the event occurred have also been found to be related with the development of PTG.

Tedeschi and Calhoun (2004) suggested that the more severe the event, the more growth will be experienced. Several studies in the literature supported this finding (Kesimci, Göral, & Gençöz, 2005; Solomon & Dekel, 2007; Feder, Southwick, Goetz, Wang, Alonso, Smith, Buchholz, Waldeck, Ameli, Moore, Hain, Charney, & Vythilingam, 2008; Morris & Shakespeare-Finch, 2011). Consistent with the literature, in their study conducted with university students, Kesimci et al. (2005) found a positive relationship between perceived severity of the traumatic event and stress-related growth. Similarly, Dirik and Karanci (2008) in their study performed with rheumatoid arthritis patients reported that perception of higher disease severity was associated with higher perception of growth in the self domain of PTG. In order to investigate this relationship in traffic accident survivors, Zoellner, Rabe, Karl, and Maercker (2008) conducted a research study with 102 survivors and found that both objective and subjective severity of the event were positively related to the total PTG score and higher subjective severity was significantly associated with higher scores in new possibilities, relating to others, and spiritual change domains of PTG. Likewise, the majority of the accident perpetrators with an injury, were in the high PTG group of the study conducted by Merecz et al. (2012). The findings of the study conducted with accidentally injured individuals in China, also revealed that the subjective accident severity positively predicted PTG (Dong et al., 2015).

How recently the traumatic event occurred also seems to be an important variable in the development of PTG (Schaefer & Moos, 1992). However, the results of the studies on the relationship between the timing of the event and PTG seem to have lead to contradictory findings.

A study conducted with breast cancer survivors revealed that the time since the diagnosis of the disease was negatively related to PTG (Weiss, 2004). On the contrary, the results of the study conducted with road trauma survivors showed that the passage of time after the event contributed to the growth perceptions (Harms & Talbot, 2007). Furthermore, Zoellner et al. (2008) indicated that the timing of the accident was not found to be significantly related to the total PTG, but it was positively related to the new possibilities and personal strength domains.

#### 1.3.2.3 Post trauma Factors: Coping and Rumination Styles

In The Model of Life Crises and Personal Growth (Schaefer & Moos, 1992), the importance of coping responses is also depicted. Similarly Lazarus and Folkman (1984) indicated that the coping strategies that were used in order to deal with highly stressful life events, influenced individuals' adjustment. According to Tedeschi (1999), individual's ways of coping, and the manner of cognitively processing the trauma predicted the development of PTG. Jang (2006) proposed that the effects of traumatic events on individuals may be positive, negative or the mixture of positive and negative depending on their coping styles.

Şenol-Durak (2007) found that individuals who were not using indirect coping and those using problem-focused coping strategy had higher scores on PTG. Moreover, the results of the study conducted with rheumatoid arthritis patients demonstrated that problem-focused coping was positively related to the total score of posttraumatic growth (Dirik & Karanci, 2008). Accordingly, it was proposed that active problem-solving coping used to deal with negative life events was related to positive long-term outcomes (Butler, Blasey, Garlan, McCaslin, Azarow, Chen, Desjardins, DiMiceli, Seagraves, Hastings, Kraemer, & Speigel, 2005; Dekel, Mandl, & Solomon, 2011). The results of the study examining the factors that are related to PTG among myocardial infarction patients are consistent with these findings by demonstrating that higher problem-solving coping was related with greater PTG (Senol-Durak & Ayvasik, 2010).

Furthermore, the findings of a meta-analytic study examining 103 studies demonstrated that religious coping strategy was a significant positive associate of

PTG (Prati & Pietrantoni, 2009). The findings of Bosson et al. (2012) supported these findings adding a mediator variable namely deliberate rumination to the relationship between the religious coping style and PTG.

According to our best knowledge, there is scarce research about PTG among motor vehicle accident survivors. In their study conducted with accidentally injured patients, Wang et al. (2013), defined positive coping as *"positive cognitive and behavioral strategies to manage emotional distress"* and found that it was positively associated with the total score of PTG.

The relationship between the various types of rumination and the development of PTG is an important issue in terms of understanding the process of positive changes in the aftermath of the traumatic event.

The findings of the study conducted by Cann, Calhoun, Tedeschi, and Solomon (2010) demonstrated that PTG was positively related with the disruption of core beliefs and deliberate rumination; whereas, it was negatively related with intrusive rumination about the traumatic experience. It is crucial to work on these two types of rumination in order to understand the posttraumatic adaptation process leading to the occurrence of PTG.

Taku, Cann, Tedeschi, and Calhoun (2009) conducted a study with distinct traumatic events and two different samples. They compared the link between PTG and the rumination soon after the traumatic event, and the recent rumination about the event. The results of this study demonstrated that while intrusive rumination soon after the event was positively associated with PTG, recent deliberate rumination was more strongly associated with PTG in both samples. Furthermore, the findings of the study conducted with the participants who were exposed to a variety of traumatic events supported the findings of Taku et al. (2009). In this study, it was reported that deliberate rumination positively predicted PTG, whereas ruminative brooding was not associated with PTG (Stockton, Hunt, & Joseph, 2011).

## 1.4 The Purpose and Hypotheses of the Present Study

### 1.4.1 The Purpose of The Study

The purpose of the current study is to examine the predictive role of the personality characteristics (extraversion, conscientiousness, agreeableness, openness to experience, negative valence, and neuroticism), event related factors such as the perceived severity and timing of the event, coping (problem solving, helplessness, fatalistic, and seeking support coping strategies), and rumination (deliberate and intrusive) processes on the development of PTS and PTG separately on the basis of the Multivariate Risk Factor Model (Freedy et al., 1993) and the Model of Life Crises and Personal Growth (Schaefer, & Moos, 1992), respectively.

Furthermore, another purpose of the current study is to test the combination of the Model of Life Crises and Personal Growth (Schaefer & Moos, 1992), and the Conservation of Resources (COR) Theory (Hobfoll, 1989). The aim of this model combination testing is to investigate the role of the possible changes in the positive driver behaviors experienced by the current sample of the traffic accident survivors who are drivers on their PTG levels.

In the present study, the basic personality characteristics, gender, and, perceived social support have been taken as personal resources, and income level has been taken as the environmental resource. However, all these variables except basic personality characteristics have been taken as control variables. Moreover, the event related factors included timing and perceived severity of the event, and being a driver or a passenger during the accident. Various types of coping responses with the traumatic event and event related ruminations have been taken as post accident variables. Finally, posttraumatic growth and posttraumatic stress have been taken as the dependent variables of the current study.

As the first model proposed (See Figure 3), each of the groups of variables has an influence on the following variable groups.

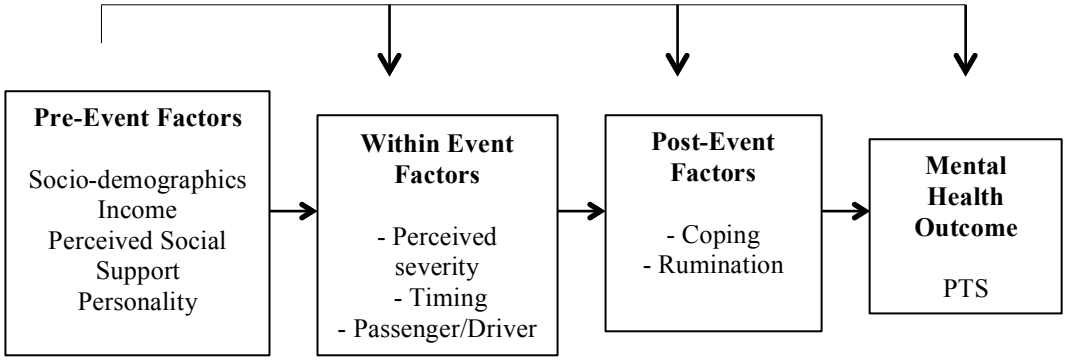


Figure 3 The first proposed model

As the second model proposed (See Figure 4), each of the groups of variables has an influence on the following variable groups.

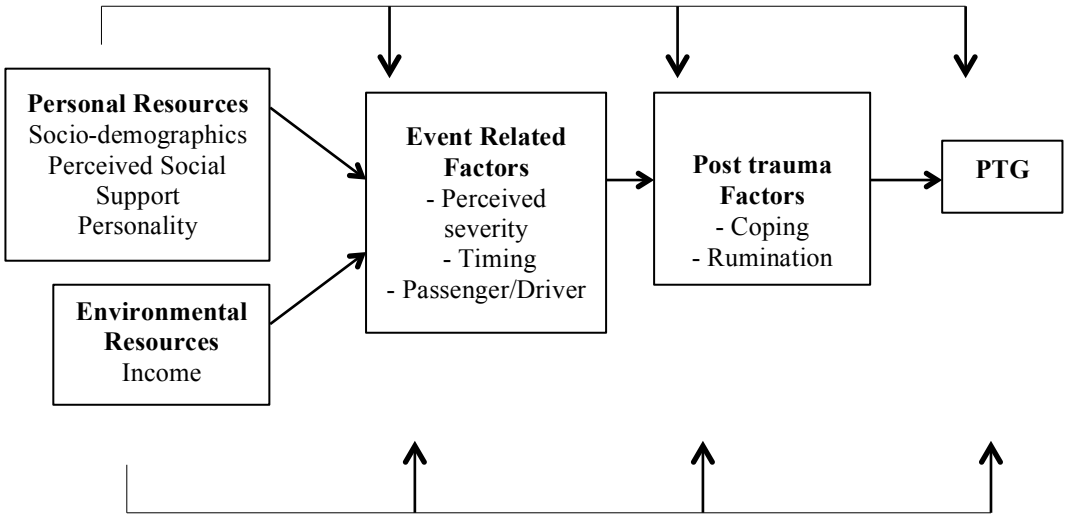


Figure 4 The second proposed model

Furthermore, the COR Theory (Hobfoll, 1989) and The Model of Life Crises and Personal Growth (Schaefer & Moos, 1992) have been combined in order to investigate the role of action, in this thesis, the changes in the positive driver behaviors on the survivors who are drivers, on the developmental process of PTG.

As the third model proposed (See Figure 5), each of the groups of variables has an influence on the following variable groups.

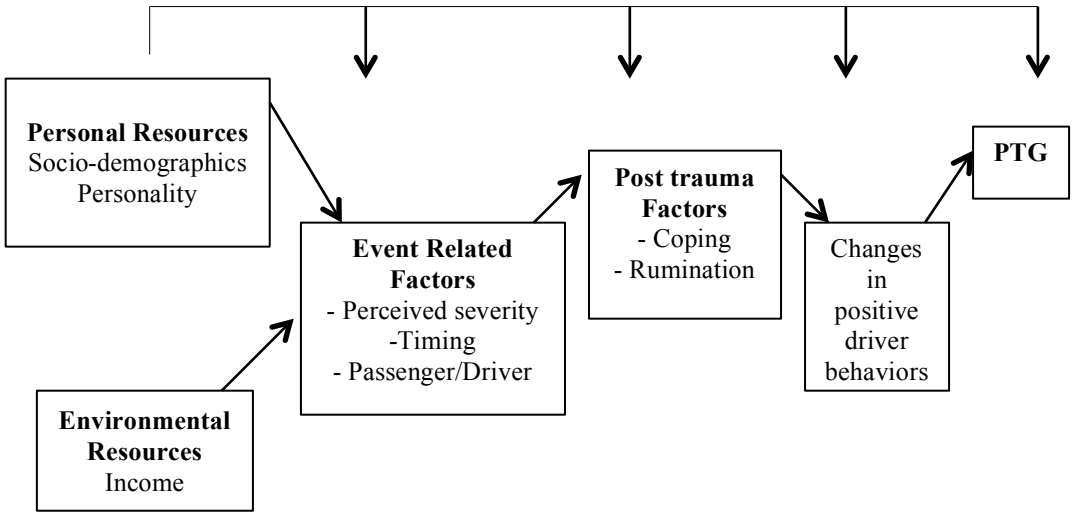


Figure 5 The third proposed model

### 1.4.2 The Hypotheses of The Present Study

The models of the present study were presented above. However, in the statistical analyses conducted to test the hypotheses of the present study, gender, income, being driver or passenger during the accident, and perceived social support were taken as control variables. Then personality characteristics (extraversion, conscientiousness, agreeableness, openness to experience, negative valence, and neuroticism) were entered into the regression equation followed by

event related variables (perceived severity and timing of the event) in the third step. Finally, post trauma variables were entered into the regression equation including coping strategies (problem solving, fatalistic, seeking support, and helplessness), and rumination (intrusive and deliberate) variables.

The hypotheses of the present study will be presented in two groups, namely the hypotheses for PTS and the hypotheses for PTG.

#### 1.4.2.2 Hypotheses for PTS

**Hypothesis 1:** After controlling for the effect of gender, income, being driver or passenger during the accident, and perceived social support; personality variables, perceived severity of the accident, coping, and rumination will predict (i.e. explain a significant variance) PTS scores and all of the three domains.

**Hypothesis 2:** Different factors will predict each of the three domains of PTS.

**Hypothesis 3:** Coping and rumination will mediate the relationship between PTS and personality.

#### 1.4.2.1 Hypotheses for PTG

**Hypothesis 4:** After controlling for the effect of gender, income, being driver or passenger during the accident, and perceived social support; personality variables, perceived severity of the accident, coping, and rumination will predict (i.e. explain a significant variance) PTG scores and all of the five domains.

**Hypothesis 5:** Different factors will predict each of the five domains of PTG.

**Hypothesis 6:** The changes in the positive driver behaviors as a result of the accident, for the drivers' sample will positively predict PTG and will augment the explained variance of the model.

**Hypothesis 7:** Coping and rumination will mediate the relationship between PTG and personality.

# CHAPTER II

# METHOD

## 2.1 Sample

The sample of the present study consisted of 225 adult traffic accident survivors from Turkey with a history of a traffic accident within the last ten years. In terms of gender, 105 (46.7%) of the participants were males and 120 (53.3%) of them were females. The mean age of the participants was 30.48 (*SD* = 7.32) with a range of 17 to 60.

The majority of the sample was single (*N* = 126, 56%) and the education level was very high. Most of the participants were with a Bachelor's degree (*N* = 117, 52%). This was followed by M.S. Degree (*N* = 66, 29.3%), PhD. Degree (*N* = 23, 10.2%), and high school degree (*N* = 19, 8.4%). In terms of employment status, 177 (78.7%) participants were employed, whereas, 48 (21.3%) of them were unemployed or retired. Self reported income level of the participants ranged between very low and high. The majority of the participants (N= 102, 45.3%) reported middle-income level.

Detailed information about socio-demographic characteristics of the sample are provided in Table 2.

Table 2 Demographic characteristics of the sample ($N = 225$)

| Variables | N | % | Mean | SD | Range |
|---|---|---|---|---|---|
| ***Age*** | | | 30.48 | 7.32 | 17 - 60 |
| ***Gender*** | | | | | |
| Male | 105 | 46.7 | | | |
| Female | 120 | 53.3 | | | |
| ***Marital Status*** | | | | | |
| Single | 126 | 56 | | | |
| Engaged | 9 | 4 | | | |
| Married | 83 | 36.9 | | | |
| Divorced | 7 | 3.1 | | | |
| Widow | - | - | | | |
| ***Education Level*** | | | | | |
| High school | 19 | 8.4 | | | |
| Bachelor's Degree | 117 | 52 | | | |
| M.S Degree | 66 | 29.3 | | | |
| PhD. Degree | 23 | 10.2 | | | |
| ***Employment Status*** | | | | | |
| Employed | 177 | 78,7 | | | |
| Time of Employment (year) | | | 6.88 | 7.13 | 1 - 33 |
| Unemployed | 48 | 21,3 | | | |
| ***Self-Reported Income Level*** | | | | | |
| Very low | 3 | 1.3 | | | |
| Low | 34 | 15.1 | | | |
| Middle | 102 | 45.3 | | | |
| Upper-middle | 73 | 32.4 | | | |
| High | 13 | 5.8 | | | |

Furthermore, the characteristics of the sample were also examined in terms of traffic accident characteristics and the results are presented in Table 3.

As can be seen from Table 2, the reported number of traffic accidents ranged between 1 and 20. The participants with an experience of only one traffic accident within ten years constitute 60.9 percent ($N = 137$) of the sample. While, 53 participants (23.6%) experienced two traffic accidents, the rest of the sample reported 3 and more accident (15.5%).

The time elapsed since the traffic accident ranged between 6 months and 120 months because of the fact that the time elapsed since the traffic accident was limited to the range of 6 and 120 months (6 months-10 years). Approximately 50% of the sample reported time elapsed since the accident as 34 months or less,

and the second half of the sample reported it as between 34 and 120 months.

Only individuals, who were drivers or passengers during the accident, and not pedestrians, participated in the present study and 61.3 % ($N$ = 138) of them were drivers and 87 (38.7%) participants were passengers during the accident.

The vast majority of the sample (85.8%) experienced the accident in a private car ($N$ = 193). Moreover, the rest of the sample ($N$ = 32) experienced the accident in a commercial vehicle such as taxi, bus, or minibus.

Table 3 Characteristics of Traffic Accident

| Variables | N | % | Mean | SD |
|---|---|---|---|---|
| ***Number of accident within last 10 years*** | | | | |
| 1 | 137 | 60.9 | | |
| 2 | 53 | 23.6 | | |
| 3 | 24 | 10.7 | | |
| More | 11 | 4.8 | | |
| ***Timing of the accident (month)*** | | | 38.65 | 26.36 |
| ***Role in the accident*** | | | | |
| Driver | 138 | 61.3 | | |
| Passenger | 87 | 38.7 | | |
| ***Type of Vehicle*** | | | | |
| Private Car | 193 | 85.8 | | |
| Taxi | 6 | 2.7 | | |
| Bus | 12 | 5.3 | | |
| Minibus | 14 | 6.2 | | |
| Truck | - | - | | |
| ***Degree of damage in vehicle**** | | | | |
| None | 5 | 2.2 | | |
| Very light | 17 | 7.6 | | |
| Light | 51 | 22.7 | | |
| Medium | 55 | 24.4 | | |
| Severe | 59 | 26.2 | | |
| Very severe | 38 | 16.9 | | |
| ***Degree of damage in other vehicles**** | | | | |
| None | 66 | 29.3 | | |
| Very light | 26 | 11.6 | | |
| Light | 45 | 20.0 | | |
| Medium | 51 | 22.7 | | |
| Severe | 26 | 11.6 | | |
| Very severe | 11 | 4.9 | | |
| ***Degree of self-injury**** | | | | |
| None | 130 | 57.8 | | |
| Very light | 33 | 14.7 | | |
| Light | 24 | 10.7 | | |
| Medium | 23 | 10.2 | | |
| Severe | 9 | 4.0 | | |
| Very severe | 6 | 2.7 | | |
| ***Degree of injury of other survivors**** | | | | |
| None | 149 | 66.2 | | |
| Very light | 15 | 6.7 | | |
| Light | 19 | 8.4 | | |
| Medium | 21 | 9.3 | | |
| Severe | 6 | 2.7 | | |
| Very severe | 15 | 6.7 | | |
| ***Presence of Death*** | | | | |
| Yes | 10 | 4.4 | | |
| No | 215 | 95.6 | | |

* Based on participants' subjective ratings of a six points scale (1 = none, 6 = very severe)

## 2.2 Instruments

The research instrument contained a Socio-demographic Information Form, the Basic Personality Traits Inventory, the Event Related Rumination Inventory, the Ways of Coping Inventory, the Posttraumatic Growth Inventory, the Impact of Events Scale - Revised, the Multidimensional Scale of Perceived Social Support, and the Positive Driver Behavior Scale. In this section, detailed information about the measurement tools are presented.

### 2.2.1 The Socio-demographic Information Form

The Socio-demographic Information Form was developed in order to collect information about age, gender, marital status, education level, vocation, work status (employed, if yes; time of employment), and income level rated on a 5-point scale rangin from 1 (very low) to 5 (high) (See Table 1). Moreover, the job statuses of the participants are presented in Table 4.

Table 4 Information about job status of the participants

| Job Status | N | % |
|---|---|---|
| Engineer | 48 | 21.3 |
| Student | 26 | 11.6 |
| Psychologist | 25 | 11.1 |
| Academician | 20 | 8.9 |
| Teacher | 11 | 4.9 |
| Financial positions | 9 | 4.0 |
| Officer | 9 | 4.0 |
| Medical doctor | 8 | 3.6 |
| Architect | 4 | 1.8 |
| Judicial positions | 4 | 1.8 |
| Retired | 3 | 1.3 |
| Other | 58 | 25.7 |

Questions related to the accident were also developed in order to collect information about the number of traffic accidents during the last ten years (from

2004 to 2014), the time of the most serious accident (if there are more than one accident), participants' role in the accident (driver or passenger), and the type of vehicle (private car, taxi, bus, minibus, truck, and other).

Moreover, additional questions were developed with the aim of assessing the damage that resulted from the accident. The severity of financial damage in participants' vehicle and other vehicles, and the severity of participants' injury were assessed using 6-point scales ranging from 1 (none) to 6 (very severe). Furthermore, injury status of other individuals involved in the accident (number of injured individuals and the degree of the most severe injury) and others being dead (the number of death and the proximity of the participant to that individual) were assessed by questions rated on a 6-point scale ranging from 1 (none) to 6 (very severe).

Additionally, with the aim of examining the perceived severity of the accident, the degree of perceived threat of death (self or others); intense fear or horror, and helplessness were rated on 5-point scale (from 1 "*none*" to 5 "*very much*"). Moreover, the disturbance caused by the accident was rated in 6-point scale ranging from 1 (none) to 6 (very severe).

In order to develop a unique measurement representing the perceived severity of the event, 8 questions examining the severity of the accident were integrated into one statistical value. A unique value of perceived severity was calculated for each participant of the study by transforming 5-point scales into 6-point scale ranging from 1 (none) to 6 (very severe) (See the items from Table 5). Cronbach's alpha coefficient of this perceived severity scale was found to be .72.

Table 5 Items of the Perceived Severity Scale

| *Items* |
|---|
| **1.** What was the degree of financial damage on the vehicle you were in? |
| **2.** What was the degree of financial damage on the other vehicles? |
| **3.** What was the degree of your injury? |
| **4.** What was the degree of others' injury? |
| **5.** During the accident, how much the thought of your own/others' death came to your mind? |
| **6.** During the accident, what was the degree of intense fear or horror you felt? |
| **7.** During the accident, what was the degree of helplessness you felt? |
| **8.** What was the degree of disturbance you felt after the accident? |

Finally, physical and psychological treatment, and the duration of recovery process were also asked (see Appendix A for Socio-demographic Information Form).

### 2.2.2 Basic Personality Traits Inventory (BPTI)

Basic Personality Traits Inventory (BPTI) was developed by Gençöz and Öncül (2012) in order to assess basic personality traits in Turkish culture. It consists 45 adjectives of personality rated on a 5-point scale ranging from 1 (*"This characteristic does not represent me at all"*) to 5 (*"This characteristic represents me very well"*). The results of factor analysis with varimax rotation revealed six factors, five of which were consistent with the literature but the sixth factor related to negative valence was extracted in this study. These factors were extraversion ($\alpha$ = .89), conscientiousness ($\alpha$ = .85), agreeableness ($\alpha$ = .85), neuroticism ($\alpha$ = .83), openness to experience ($\alpha$ = .80), and negative valence ($\alpha$ =.71) (Gençöz, & Öncül, 2012).

Karanci, Işıklı, Aker, Gül, Erkan, Özkol, and Güzel (2012) used BPTI in their study conducted with a Turkish community sample of 969 subjects. The researchers conducted exploratory factor analysis and as in the original research of Gençöz and Öncül (2012) they found six factors explaining 44.96% of the total variance. The internal reliability coefficients of these factors; namely,

agreeableness, conscientiousness, extraversion, neuroticism, openness to experience, and negative valence were .83, .78, .78, .76, .67, and .59, respectively.

In the present study, BPTI was used to assess personality characteristics of traffic accident survivors. The internal reliability coefficients of the subscales were extraversion ($\alpha$ = .87), agreeableness ($\alpha$ = .87), conscientiousness ($\alpha$ = .81), openness to experience ($\alpha$ = .71), neuroticism ($\alpha$ = .69), and negative valence ($\alpha$ = .63). The internal reliability coefficient of the total scale was found to be .77. The scale is presented in Appendix B.

### 2.2.3 Event Related Rumination Inventory (ERRI)

Event Related Rumination Inventory (ERRI) was developed by Cann, Calhoun, Tedeschi, Triplett, Vishnevsky, and Lindstrom (2011) in order to assess ruminations that were activated during the cognitive processing in the aftermath of trauma. The first 10 items were the items of the intrusive rumination subscale and the next 10 items were part of the deliberate rumination subscale. The participants were asked to rate these subscales separately. All of the 20 items were rated on a 4-point scale ranging from 0 (not at all) to 3 (often). Cann et al. (2011) reported high levels of internal consistency levels for intrusive and deliberate rumination, .94 and .88, respectively. Furthermore, in their study, Bosson, Kelley, and Jones (2012) reported Cronbach's alpha level of .93 for the whole scale.

The Turkish adaptation of the ERRI was conducted by Çalışır, Tüzün, Piri, Cann, Tedeschi, and Calhoun (in progress). The results of the factor analysis showed that in Turkish sample the scale was also represented by two subscales namely, intrusive and deliberate. Their study on reliability and validity of ERRI is continuing. Gül (2014), in her study with a community sample from Izmir, used the ERRI with high internal consistency levels of .93, and .87 for intrusive and deliberate ruminations, respectively.

In the present study, ERRI was used to examine participants' rumination during the cognitive processing of the accident. The internal reliability of the total scale was very high ($\alpha$ = .95). Cronbach's alpha coefficients of the intrusive and deliberate rumination subscales were .94, and .91, respectively (See Appendix C

for the ERRI).

### 2.2.4 Ways of Coping Inventory (WCI)

The Ways of Coping Inventory (WCI) was developed by Folkman and Lazarus (1985) in order to assess the coping processes following stressful situations. The original scale was composed of 66 items. The Turkish adaptation of WCI (Siva, 1991) includes 74 items because 8 items representing fatalism of Turkish people in dealing with stressful situations were added to the scale.

In their study conducted with survivors of Dinar earthquake, Karanci, Alkan, Akşit, Sucuoğlu, and Balta, (1999) shortened WCI into 42 items and the response format reduced to 3-points. The results of the factor analysis revealed 5 factors namely, problem solving/optimistic ($\alpha$ = .75), fatalistic ($\alpha$ = .78), helplessness ($\alpha$ = .69), social support ($\alpha$ = .59), and escape ($\alpha$ = .51). Furthermore, the factor analysis results of Kesimci (2003) revealed four factors namely, fatalistic coping, optimistic/seeking social support coping, problem solving coping, and helplessness coping, with Cronbach's alpha coefficients of .90, .76, .81, and .78, respectively.

In the present study, 42 item, shortened form, and four-factor solution (fatalistic coping, optimistic/seeking social support coping, problem solving coping, and helplessness coping) of WCI was used. Items of the scale were rated on 4-point Likert type scale ranging from 0 *(never)* to 3 *(always)*. The internal reliability coefficient of the total WCI was very high ($\alpha$ = .95). Cronbach's alpha coefficients of fatalistic, optimistic/seeking social support, problem solving, and helplessness coping subscales were .90, .88, .92, and .85, respectively. The scale is presented in Appendix D.

### 2.2.5 Posttraumatic Growth Inventory (PTGI)

The Posttraumatic Growth Inventory was developed by Tedeschi and Calhoun (1996) in order to measure positive changes in the aftermath of traumatic events. It consists of 21 items rated on a 6-point scale ranging from 0 (*"I did not*

*experience this change as a result of my crisis")* to 5 *("I experienced this change to a very great degree"*). PTGI includes 5 subscales measuring new possibilities (5 items), relating to others (7 items), personal strength (4 items), spiritual changes (2 items), and appreciation of life (3 items). Tedeschi and Calhoun (1996) reported the internal consistency of PTGI as .90, and the internal consistency of 5 subscales were reported as: new possibilities (α = .84), relating to others (α = .85), personal strength (α = .72), spiritual change (α = .85), and appreciation of life (α = .67).

The scale was translated into Turkish by Kılıç (2005). In this translation, Kılıç (2005), instead of the original 6-point scale, used 5-point scale and made some modifications in wording of the items. In 2006, Dirik translated PTGI into Turkish by also using Kılıç's translation as a guide, and preferred to use 6-point scale as in the original inventory. In the study conducted with rheumatoid arthritis patients (Dirik, 2006), the results of the factor analysis revealed three factors named as: relationship with others (α = .86), philosophy of life (α = .87), and self-perception (α = .88). The Cronbach's alpha level of the whole scale was reported as .94.

In a study conducted with 1253 participants, Karancı, Aker, Işıklı, Erkan, Gül, and Yavuz (2012), used the Turkish adaptation of PTGI (Dirik, 2006) and the factor analysis revealed 5 factors as in the original scale. The internal reliability coefficients of new possibilities, spiritual change, relating to others, personal strength, and appreciation of life were found to be .81, .76, .79, .79, and .83, respectively. The internal reliability of the whole scale was reported as .93.

In the present study, PTGI was used to assess positive changes in the aftermath of motor vehicle accident. The Turkish translation of Dirik (2006) and the 5-factor solution of Karanci et al. (2012) were used in this study. The internal reliability coefficients of new possibilities, spiritual change, relating to others, personal strength, and appreciation of life were found to be .92, .85, . 86, .84, and .93, respectively. The internal reliability of the whole scale was statistically good (α = .96) (See Appendix E for PTGI).

### 2.2.6 The Impact of Events Scale - Revised (IES-R)

The Impact of Event Scale (IES) was developed by Horowitz, Wilner, and Alvarez (1979) in order to assess the frequency of posttraumatic stress symptoms experienced during the past week. The scale consisted of 15 items rated on a 4-point scale namely, 0 (not at all), 1 (rarely), 3 (sometimes), and 5 (often). IES includes two subscales namely intrusion and avoidance with internal reliability coefficients of .79 and .82, respectively (Horowitz et al., 1979).

Intrusion and avoidance subscales of the IES were not sufficient to characterize Posttraumatic Stress Disorder according to DSM-III-R, therefore Weiss and Marmar (1997) revised the scale and 6 items characterizing hyperarousal symptoms and 1 item characterizing intrusion were added to the scale. Therefore, the number of item was increased to 22 and the name of the scale changed to Impact of Event Scale-Revised. IES-R includes intrusion, avoidance, and hyperarousal subscales. Weiss and Marmar (1997) reported high levels of internal reliability of intrusion ($\alpha$ = .87), avoidance ($\alpha$ = .84), and hyperarousal ($\alpha$ = .79) subscales.

The Turkish translation and adaptation of the scale was performed by Işıklı (2006). In this Turkish version, the scale was rated on a 5-point scale ranging from 0 (never) to 4 (very much). Cronbach's alpha coefficients of hyperarousal, intrusion, and avoidance subscales were .90, .83, and .82, respectively. The internal reliability of the total scale was reported as very high ($\alpha$ = .93).

In the present study, the IES-R was used to measure posttraumatic stress level of participants after the traffic accident. The internal reliability of intrusion, avoidance, and hyperarousal subscales were .92, .81, and .89, respectively. The reliability coefficient of the total scale was .94. The IES-R is presented in Appendix F.

### 2.2.7 Multidimensional Scale of Perceived Social Support (MSPSS)

Multidimensional Scale of Social Support (MSPSS) was developed by Zimet, Dahlem, Zimet, and Farley (1988). The scale was composed of 12 items designed to measure perceived social support acquired from three sources, namely family, friends, and significant others. Higher scores on the scale indicate high levels of social support perception. The MSPSS is a 7-point Likert type scale ranging from 1 (very strongly disagree) to 7 (very strongly agree) and it has 3 subscales, each containing 4 items. In the original scale, the reliability of the total scale was reported as .88, and the internal reliability coefficients of the subscales of significant other ($\alpha$ = .91), family ($\alpha$ = .87), and friends ($\alpha$ = .85) were statistically good (Zimet et al., 1988).

The Turkish adaptation of Multidimensional Scale of Perceived Social Support was conducted by Eker and Arkar (1995), and Eker, Arkar, and Yaldız (2001). The research was conducted in three different samples namely, psychiatric inpatients, patients who had a surgical operation, and randomly selected patient visitors. The Cronbach's alpha coefficients of the scale for each sample were found to be .86, .91, and .83, respectively (Eker et al., 2001).

In the present study, the MSPSS was used to assess the perceived social support of traffic accident survivors in Turkey. In this study, the total social support score was used. The Cronbach's alpha reliability of the whole scale was .95 (See Appendix G for the MSPSS).

### 2.2.8 Positive Driver Behaviors Scale

The Positive Driver Behavior Scale was developed by Özkan and Lajunen (2005) in order to provide a positive driver behavior dimension to Driver Behavior Questionnaire (Reason, Manstead, Stradling, Baxter, & Campbell, 1990). The aim of the Positive Driver Behavior Scale was to determine the frequency of positive driver behaviors by 14 items, rated on 6-point scale ranging from 1 (never) to 6 (very often). Özkan and Lajunen (2005), in their study conducted with 312 drivers in Ankara, developed this scale as a subscale of the Driver

Behavior Questionnaire (DBQ) and they found the alpha reliability coefficient of positive driver behaviors as .84.

In the present study, the instruction of the original scale was modified in order to assess the degree of change in positive driver behaviors of participants after the accident. The participants were asked to rate whether there was an increase in the frequency of their positive driver behaviors following their accident experience. The rating scale was also changed and the items were rated on 6-point scale ranging from 1 (*"I did not experience this increase as a result of the accident"*) to 6 *("I experienced this increase to a very great degree"*). The internal reliability coefficient of the total scale was calculated only for 187 participants who were driver and answered this scale, and the resulting value was very high ($\alpha$ = .97). The scale is presented in Appendix H.

### 2.3 Procedure

In order to collect data of the present study permission was obtained from Middle East Technical University Graduate School of Social Science Ethics Committee.

Data of the present study was collected from traffic accident survivors in Turkey. For data collection online survey software called Survey Monkey was used. The sources of social media such as Facebook, LinkedIn, Twitter, and also e-mail groups were used to collect data.

The written informed consent was prepared and given to the participants at the beginning of the measurement tools (See Appendix I). Individuals who accepted to participate in the study and approved the informed consent, filled out the Socio-demographic Information Form, Basic Personality Traits Inventory, Event Related Rumination Inventory, Ways of Coping Inventory, Posttraumatic Growth Inventory, Impact of Event Scale-Revised, and Multidimensional Scale of Perceived Social Support. The participants who are drivers also completed Positive Driver Behavior Scale.

In order to test the Hypothesis 6 (The changes in the positive driver behaviors as a result of the accident, for the drivers sample will positively predict

PTG and will augment the explained variance of the model) of the present study, the cases including active driver participants were selected and the sample size of these active drivers was 187. For the statistical analyses including the variable of change in the positive driver behaviors, this sample including only active drivers was used.

### 2.4 Statistical Analyses, Data Screening and Cleaning

In the present study, data were analyzed by the Statistical Package of Social Sciences (SPSS), version 22 for Mac. Because of the fact that data were collected through Survey Monkey, there were no missing cases. In order to perform the mediation analyses, PROCESS macro for IBM SPSS developed by Hayes (2013) was used.

Prior to the analyses, the data were examined for accuracy of data entry, normality, and the assumptions of multivariate analysis. The multivariate outlier analysis was performed by calculating the Mahalanobis distance. The results of multivariate outlier analysis indicated that there were two multivariate outliers and these were excluded from the data.

Internal reliability analysis of the measurement tools and their subscales was performed using Cronbach's alpha coefficients. Bivariate correlations and descriptive statistics of all variables of the study were analyzed.

The hierarchical regression analyses using PTS, PTG, and all their subscales as dependent variables, were conducted. Furthermore, with the aim of testing the behavioral change in the aftermath of accident, a regression analysis including the change in driver behavior variable as an independent variable, was also performed with a sample of only drivers.

Additionally, with the aim of examining the nature of the relationship between dependent variables and their predictors, mediation analyses were conducted separately for both PTG and PTS.

# CHAPTER 3

# RESULTS

In the results section of the current study, initially, descriptive statistics of the main variables will be presented. In the second part, bivariate correlations between all the variables of the study will be presented. In the third part of this section, the results of regression analyses will be given. Finally, the findings of the mediation analyses will be presented for both PTG and PTS.

## 3.1 Descriptive Statistics

The descriptive statistics (mean, standard deviation, and range) of the essential variables of the study are presented in the Table 6.

Table 6 Descriptive statistics for the variables of the study

| Variables | N | Mean | SD | Min - Max |
|---|---|---|---|---|
| ***Personality Characteristics*** | | | | |
| Extraversion | 225 | 3.68 | 0.77 | 1 - 5 |
| Conscientiousness | 225 | 3.71 | 0.65 | 2 - 5 |
| Agreeableness | 225 | 4.18 | 0.53 | 1 - 5 |
| Openness to Experience | 225 | 3.74 | 0.57 | 1 - 5 |
| Negative Valence | 225 | 1.63 | 0.50 | 1 - 5 |
| Neuroticism | 225 | 2.80 | 0.60 | 1 - 5 |
| ***Event-Related Variables*** | | | | |
| Timing of the Event (month) | 225 | 38.76 | 26.71 | 6 - 128 |
| Perceived Severity of Event | 225 | 2.94 | 0.91 | 1 - 6 |
| ***Event Related Rumination*** | | | | |
| Intrusive Rumination | 225 | 1.33 | 0.82 | 0 - 3 |
| Deliberate Rumination | 225 | 1.15 | 0.78 | 0 - 3 |
| ***Ways of Coping*** | | | | |
| Fatalistic coping | 225 | 1.28 | 0.76 | 0 - 3 |
| Problem Focused coping | 225 | 1.61 | 0.78 | 0 - 3 |
| Helplessness coping | 225 | 0.89 | 0.63 | 0 - 3 |
| Seeking Support coping | 225 | 1.69 | 0.76 | 0 - 3 |
| ***DBQ*** | 187 | 51.91 | 21.54 | 14 - 84 |
| ***PTG*** | | | | |
| New Possibilities | 225 | 1.45 | 1.37 | 0 - 5 |
| Spiritual Change | 225 | 1.60 | 1.37 | 0 - 5 |
| Relating to Others | 225 | 1.81 | 1.28 | 0 - 5 |
| Personal Strength | 225 | 2.18 | 1.37 | 0 - 5 |
| Appreciation of Life | 225 | 2.41 | 1.53 | 0 - 5 |
| Total PTG score | 225 | 1.84 | 1.20 | 0 - 5 |
| ***PTS*** | | | | |
| Intrusion | 225 | 0.97 | 0.96 | 0 - 4 |
| Avoidance | 225 | 1.02 | 0.79 | 0 - 4 |
| Hyperarousal | 225 | 0.82 | 0.92 | 0 - 4 |
| Total PTS score | 225 | 0.95 | 0.80 | 0 - 4 |

### 3.2 Bivariate Correlations among the Variables of the Study

Bivariate correlations between all the variables of the study are presented in Table 7.

PTG, the first dependent variable of the study, was positively correlated with income level ($r$ = .15, $p$ < .05), timing of the event ($r$ = .20, $p$ < .01), perceived severity of the event ($r$ = .49, $p$ < .01), being passenger ($r$ = .14, $p$ < .05), conscientiousness ($r$ = .16, $p$ < .01), agreeableness ($r$ = .28, $p$ < .01), openness to experience ($r$ = .16, $p$ < .01), perceived social support ($r$ = .15, $p$ < .05), intrusive rumination ($r$ = .46, $p$ < .01), deliberate rumination ($r$ = .62, $p$ < .01), fatalistic coping ($r$ = .51, $p$ < .01), problem solving coping ($r$ = .55, $p$ < .01), helplessness coping ($r$ = .37, $p$ < .01), seeking support coping ($r$ = .56, $p$ < .01), change in positive driver behavior ($r$ = .50, $p$ < .01), total PTS score ($r$ = .51, $p$ < .01), intrusion ($r$ = .48, $p$ < .01), avoidance ($r$ = .47, $p$ < .01), hyperarousal ($r$ = .44, $p$ < .01), and negatively correlated with negative valence ($r$ = -.12, $p$ < .05).

PTS, the second dependent variable of the study, was correlated with being female ($r$ = .12, $p$ < .05), positively correlated with perceived severity of the event ($r$ = .47, $p$ < .01), agreeableness ($r$ = .12, $p$ < .05), neuroticism ($r$ = .15, $p$ < .05), intrusive rumination ($r$ = .64, $p$ < .01), deliberate rumination ($r$ = .56, $p$ < .01), fatalistic coping ($r$ = .45, $p$ < .01), problem solving coping ($r$ = .29, $p$ < .01), helplessness coping ($r$ = .64, $p$ < .01), seeking support coping ($r$ = .41, $p$ < .01), change in positive driver behavior ($r$ = .41, $p$ < .01), total score of PTG ($r$ = .51, $p$ < .01), new possibilities ($r$ = .51, $p$ < .01), spiritual change ($r$ = .54, $p$ < .01), relating to others ($r$ = .37, $p$ < .01), personal strength ($r$ = .42, $p$ < .01), and appreciation of life ($r$ = .41, $p$ < .01).

Table 7 Bivariate correlations between variables of the study

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Age | 1 | | | | | | | | | | | | | | | | |
| 2. | Gender | -.10 | 1 | | | | | | | | | | | | | | | |
| 3. | Marital Status | .53** | -.03 | 1 | | | | | | | | | | | | | | |
| 4. | Education | -.08 | .19** | -.03 | 1 | | | | | | | | | | | | | |
| 5. | Employment Status | -.23** | .14* | -.19** | -.28** | 1 | | | | | | | | | | | | |
| 6. | Income | .07 | -.04 | .16** | -.05 | -.10 | 1 | | | | | | | | | | | |
| 7. | Recency of Event | .18** | .01 | .13* | -.12* | .06 | -.01 | 1 | | | | | | | | | | |
| 8. | Perceived Severity of Event | .01 | .15* | -.05 | -.01 | .15* | .17** | .19** | 1 | | | | | | | | | |
| 9. | Driver / Passenger | -.10* | .18** | -.01 | -.04 | .17** | -.05 | .21** | .35** | 1 | | | | | | | | |
| 10. | Extraversion | .08 | .10 | .06 | .03 | -.06 | .07 | .01 | .06 | -.04 | 1 | | | | | | | |
| 11. | Conscientiousness | .17** | .07 | .26** | .02 | .09 | .09 | -.03 | .09 | .13* | .25** | 1 | | | | | | |
| 12. | Agreeableness | .18** | .02 | .16** | .06 | -.04 | .12* | .13* | .12* | .01 | .35** | .41** | 1 | | | | | |
| 13. | Openness to Experience | .06 | -.17** | .05 | .04 | -.09 | .10 | .04 | .01 | -.03 | .52** | .32** | .46** | 1 | | | | |
| 14. | Negative Valence | -.11 | -.14* | -.07 | -.05 | .05 | -.01 | .03 | -.07 | .05 | -.40** | -.31** | -.45** | -.21** | 1 | | | |
| 15. | Neuroticism | .05 | .08 | .01 | .09 | -.05 | .06 | -.05 | .03 | -.05 | -.27** | -.10 | -.15* | -.16** | .39** | 1 | | |
| 16. | Social Support | .01 | .15* | .01 | .09 | -.03 | .05 | -.01 | .05 | -.06 | .29** | .21** | .35** | .28** | -.31** | -.16** | 1 | |
| 17. | Intrusive R. | -.05 | .22** | -.01 | -.01 | .14* | .09 | .07 | .55** | .14* | -.02 | .08 | .15* | -.06 | -.11 | .12* | .06 | 1 |

Table 7 (cont'd)

| | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Age | -.02 | -.02 | .09 | -.06 | .03 | .10 | -.01 | .01 | -.03 | -.01 | .02 | .06 | -.06 | .04 | .01 | .01 |
| 2. Gender | .18** | .07 | .10 | .16** | .14* | .10 | .12* | .13* | .06 | .13* | .05 | .02 | .04 | .09 | .03 | .05 |
| 3. Marital Status | -.07 | -.02 | .08 | -.05 | .05 | .03 | -.04 | .01 | -.10 | .01 | -.04 | -.03 | -.09 | -.03 | -.07 | .03 |
| 4. Education | .11* | -.12* | -.04 | .09 | -.01 | .07 | -.06 | -.01 | -.09 | -.06 | -.09 | -.05 | -.15* | -.05 | -.11 | -.01 |
| 5. Employment Status | .11 | .16** | .08 | .06 | .15* | .06 | .09 | .08 | .09 | .07 | .10 | .07 | .15* | .04 | .11* | .05 |
| 6. Income | .11* | .17** | .13* | .06 | .16* | .13* | .07 | .06 | .10 | .01 | .15* | .09 | .10 | .19** | .14* | .12* |
| 7. Timing of Event | .06 | .05 | .15* | -.04 | .08 | .12* | .04 | .01 | .06 | .03 | .20** | .21** | .18** | .17** | .14* | .18** |
| 8. Perceived Severity of Event | .51** | .30** | .21** | .28** | .27** | .34** | 47** | .48** | .33** | .45** | .49** | .47** | .47** | .37** | .40** | .47** |
| 9. Driver/Passenger | .10 | -.03 | -.02 | -.07 | .03 | .11 | .11 | .12* | .02 | .16** | .14* | .17** | .15* | .04 | .07 | .20** |
| 10. Extraversion | .02 | .05 | .17** | -.07 | .05 | .11 | -.04 | -.01 | .01 | -.12* | .05 | .03 | -.01 | .01 | .06 | .14* |
| 11. Conscientiousness | .09 | .13* | .19** | -.05 | .19** | .12 | .10 | .14* | .04 | .06 | .16** | .19** | .13* | .08 | .13* | .20** |
| 12. Agreeableness | .22** | .15* | .28** | .05 | .21** | .26** | .12* | .18** | .03 | .11* | .28** | .28** | .16** | .22** | .25** | .32** |
| 13. Openness to Experience | .07 | -.03 | .18** | -.20** | .11* | .09 | -.04 | -.03 | .03 | -.11* | .16** | .19** | .04 | .11 | .18** | .20** |
| 14. Negative Valence | -.12* | .01 | -.15* | .03 | -.14* | -.11 | -.09 | -.14* | -.01 | -.07 | -.12* | -.09 | -.05 | -.09 | -.09 | -.21** |
| 15. Neuroticism | .14* | .04 | -.06 | .28** | .02 | .07 | .15* | .17** | .03 | .20** | -.04 | -.06 | .01 | .01 | -.07 | -.05 |
| 16. Social Support | .02 | .13* | .25** | -.04 | .22** | .15* | .03 | -.02 | .13* | -.03 | .15* | .09 | .08 | .21** | .12* | .15* |
| 17. Intrusive R. | .65** | .34** | .25** | .57** | .40** | .39** | .64** | .68** | .38** | .65** | .46** | .45** | .43** | .39** | .31** | .41** |

Table 7 (cont'd)

| | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18. Deliberate R. | 1 | .44** | .42** | .55** | .49** | .42** | .56** | .61** | .36** | .54** | .62** | .60** | .57** | .47** | .53** | .53** |
| 19. Fatalistic Coping | | 1 | .61** | .49** | .58** | .37** | .45** | .41** | .44** | .35** | .51** | .40** | .53** | .45** | .50** | .33** |
| 20. Problem Solving Coping | | | 1 | .36** | .83** | .41** | .29** | .25** | .32** | .20** | .55** | .47** | .43** | .54** | .55** | .42** |
| 21. Helplessness Coping | | | | 1 | .47** | .33** | .64** | .64** | .47** | .62** | .37** | .36** | .35** | .38** | .26** | .24** |
| 22. Seeking Support Coping | | | | | 1 | .38** | .41** | .36** | .42** | .32** | .56** | .48** | .44** | .55** | .54** | .43** |
| 23. Positive Driver Behavior | | | | | | 1 | .41** | .42** | .34** | .34** | .50** | .47** | .43** | .42** | .46** | .45** |
| 24. PTS | | | | | | | 1 | .95** | .82** | .93** | .51** | .51** | .54** | .37** | .42** | .41** |
| 25. Intrusion | | | | | | | | 1 | .62** | .90** | .48** | .49** | .49** | .33** | .37** | .41** |
| 26. Avoidance | | | | | | | | | 1 | .60** | .47** | .44** | .47** | .36** | .43** | .32** |
| 27. Hyperarousal | | | | | | | | | | 1 | .44** | .44** | .48** | .30** | .31** | .38** |
| 28. PTG | | | | | | | | | | | 1 | .91** | .89** | .88** | .88** | .81** |
| 29. New Possibilities | | | | | | | | | | | | 1 | .81** | .72** | .72** | .66** |
| 30. Spiritual Change | | | | | | | | | | | | | 1 | .71** | .71** | .68** |
| 31. Relating to Others | | | | | | | | | | | | | | 1 | .74** | .63** |
| 32. Personal Strength | | | | | | | | | | | | | | | 1 | .67** |
| 33. Appreciation of Life | | | | | | | | | | | | | | | | 1 |

### 3.3 Hierarchical Multiple Regression Analyses

In the present study, a set of hierarchical multiple regression analyses were conducted for both dependent variables of the study (posttraumatic growth and posttraumatic stress) and all of their subscales. The aim of these analyses was to examine the effects of personality traits, event related factors, variables related with coping and rumination process on PTG and PTS, by controlling the effects of socio-demographic characteristics correlated with PTS and PTG (gender and income), perceived social support, and the role of the participants during the accident (driver or passenger).

#### 3.3.1 Predictors of PTS

A hierarchical multiple regression analysis was performed in order to examine the predictor variables of posttraumatic stress and to test the Hypothesis 1 **(**After controlling for the effect of gender, income, being driver or passenger during the accident, and the perceived social support; the perceived severity of the accident, coping, and rumination will predict (i.e. explain a significant variance) PTS scores and all of the three domains) of the present study. As can be seen from Table 8, the variables were entered into the regression equation in four steps. In order to control for the effects of gender, income, perceived social support, and the role of the participants during the accident (driver or passenger), these variables were forced to 'enter' into the equation in the first step. In the second, third, and fourth steps of the regression, stepwise method was used with the aim of revealing significant associates of PTS. In the second step of the regression, the personality variables (extraversion, conscientiousness, agreeableness, openness to experience, negative valence, and neuroticism) were entered into the equation. In the third step, event related factors (timing and perceived severity of the event) were added to the equation. Finally, in the last step, coping and rumination variables (problem solving, helplessness, seeking support, and fatalistic coping strategies; deliberate and intrusive ruminations) were entered to the equation.

Table 8 Steps of hierarchical multiple regression analyses for PTS

| Variables | Method |
|---|---|
| **I. *Control Variables*** | Enter |
| Gender (1: Male, 2: Female) | |
| Income | |
| Driver / Passenger (0: Driver, 1: Passenger) | |
| Perceived Social Support | |
| **II. *Personal Resources*** | Stepwise |
| **Personality** | |
| Extraversion | |
| Conscientiousness | |
| Agreeableness | |
| Openness to experience | |
| Negative Valence | |
| Neuroticism | |
| **III. *Event Related Factors*** | Stepwise |
| Perceived severity of the event | |
| Timing of the event (month) | |
| **IV. *Coping and Rumination Variables*** | Stepwise |
| **Ways of Coping** | |
| Problem Solving coping | |
| Helplessness coping | |
| Fatalistic coping | |
| Seeking Support coping | |
| **Event Related Ruminations** | |
| Deliberate rumination | |
| Intrusive rumination | |

As can be seen from Table 9, the findings of the hierarchical regression analysis conducted for PTS showed that 3% of the variance was explained by control variables of the study. None of the control variables was significant.

From the personality variables, neuroticism ($\beta$ = .15, $t$ = 2.21, $p$ < .05) positively predicted PTS, whereas, negative valence ($\beta$ = -.16, $t$ = -2.19, $p$ < .05) was negatively related to the outcome variable. The entrance of neuroticism into the equation increased the explained variance to 5% ($R^2$ *change* = .02, *F change* (1, 219) = 4.86, $p$ < .05), and with the inclusion of negative valence to the

equation, the explained variance reached 7% ($R^2$ *change* = .02, *F change* (1, 218) = 4.79, $p < .05$).

The entrance of event related variables into the equation improved the explained variance to 26% ($R^2$ *change* = .19, *F change* (1, 217) = 53.99, $p < .001$). Only perceived severity of the event positively predicted PTS ($\beta = .48$, $t = 7.35$, $p < .001$).

From coping and rumination variables, helplessness coping positively predicted PTS ($\beta = .57$, $t = 10.68$, $p < .001$), and its inclusion to the equation increased the explained variance to 52% ($R^2$ *change* = .26, *F change* (1, 216) = 114.16, $p < .001$). Furthermore, intrusive rumination ($\beta = .29$, $t = 4.53$, $p < .001$) positively predicted PTS, and its entrance into the equation increased the explained variance to 56% ($R^2$ *change* = .04, *F change* (1, 215) = 20.50, $p < .001$). Lastly, fatalistic coping ($\beta = .13$, $t = 2.41$, $p < .05$) positively predicted PTS and ameliorated the explained variance to 57% ($R^2$ *change* = .01, *F change* (1, 214) = 5.78, $p < .05$).

With all the variables in the equation, in the last step, perceived severity of the event ($t = 2.57$, $p < .01$), helplessness coping ($t = 6.00$, $p < .001$), intrusive rumination ($t = 4.60$, $p < .001$), and fatalistic coping ($t = 2.41$, $p < .01$) remained to be significant predictors of PTS.

Table 9 Variables associated with Posttraumatic Stress

| ***Block*** | ***Beta*** ***(β* within set)** | ***t*** **(within set)** | **$R^2$ change** | ***t*** **(last step)** | **Partial *r*** **(last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Posttraumatic Stress | | | | | | |
| **I. *Control Variables*** | | | .03 | | | .03 |
| Gender | .10 | 1.47 | | -1.37 | -.09 | |
| Income | .07 | 1.11 | | -.70 | -.05 | |
| Driver / Passenger | .09 | 1.38 | | 1.15 | .08 | |
| Perceived Social Support | .01 | .21 | | -.07 | -.01 | |
| **II. *Personality*** | | | | | | .07 |
| Neuroticism | .15 | 2.21* | .02 | .75 | .05 | |
| Negative Valence | -.16 | -2.19* | .02 | -1.60 | -.11 | |
| **III. *Event-related variables*** | | | | | | .26 |
| Severity | .48 | 7.35*** | .19 | 2.57* | .17 | |
| **IV. *Post-event variables*** | | | | | | .57 |
| Helplessness coping | .57 | 10.68*** | .26 | 6.00*** | .38 | |
| Intrusive rumination | .29 | 4.53*** | .04 | 4.60*** | .30 | |
| Fatalistic coping | .13 | 2.41* | .01 | 2.41* | .16 | |

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

### 3.3.1.1 Predictors of PTS Subscales

In order to examine significant predictors of PTS subscales and to test the Hypothesis 2 (Different factors will predict each of the three domains of PTS) of the present study, hierarchical regression analyses were conducted separately for each subscale of PTS. These subscales are intrusion, avoidance, and hyperarousal.

The findings of the hierarchical regression analyses conducted to examine predictors of intrusion subscale revealed that 3% of the variance was explained by the control variables. None of these control variables was significant.

From personality variables, agreeableness ($\beta$ = .21, $t$ = 2.95, $p < .01$) positively predicted intrusion, and its inclusion to the regression equation increased the explained variance to 7% ($R^2$ *change* = .04, *F change* (1, 219) = 8.71, $p < .01$). Moreover, neuroticism ($\beta$ = .18, $t$ = 2.79, $p < .01$) was positively related to intrusion, and with its entrance into the equation, the explained variance

reached 10% ($R^2$ *change* = .03, *F change* (1, 218) = 7.76, $p < .01$). Additionally, negative valence ($\beta$ = -.20, $t$ = -2.54, $p < .05$) negatively predicted intrusion subscale, and its inclusion to the equation improved the explained variance to 13% ($R^2$ *change* = .03, *F change* (1, 217) = 6.44, $p < .05$).

When the event related variables were entered into the equation, the explained variance reached 31% ($R^2$ *change* = .18, *F change* (1, 216) = 55.70, $p < .001$). Perceived severity of the event ($\beta$ = .47, $t$ = 7.46, $p < .001$) positively predicted intrusion subscale of PTS.

In terms of coping and rumination variables, helplessness coping ($\beta$ = .54, $t$ = 10.46, $p < .001$) and intrusive rumination ($\beta$ = .35, $t$ = 5.73, $p < .001$) were positively associated with intrusion. The inclusion of helplessness coping to the equation increased the explained variance to 54% ($R^2$ *change* = .23, *F change* (1, 215) = 109.39, $p < .001$). Furthermore, the entrance of intrusive rumination into the regression equation enhanced the explained variance to 60% ($R^2$ *change* = .06, *F change* (1, 214) = 32.81, $p < .001$).

With all the variables in the equation, in the last step, negative valence ($t$ = -2.62, $p < .01$), perceived severity of the event ($t$ = 2.80, $p < .01$), helplessness coping ($t$ = 7.03, $p < .001$), and intrusive rumination ($t$ = 5.73, $p < .001$) were significant predictors of the intrusion subscale of PTS (See Table 10).

Table 10 Variables associated with intrusion

| ***Block*** | ***Beta*** ***(β* within set)** | ***t*** **(within set)** | **$R^2$ change** | ***t*** **(last step)** | **Partial *r*** **(last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Intrusion | | | | | | |
| **I. *Control Variables*** | | | .03 | | | .03 |
| Gender | .12 | 1.75 | | -1.31 | -.09 | |
| Income | .07 | 1.05 | | -.72 | -.05 | |
| Driver / Passenger | .10 | 1.47 | | 1.19 | .08 | |
| Perceived Social Support | -.04 | -.58 | | -1.61 | -.11 | |
| **II. *Personality*** | | | | | | .13 |
| Agreeableness | .21 | 2.95** | .04 | 1.30 | .09 | |
| Neuroticism | .18 | 2.79** | .03 | 1.52 | .10 | |
| Negative Valence | -.20 | -2.54* | .03 | -2.62** | -.18 | |
| **III. *Event-related variables*** | | | | | | .31 |
| Severity | .47 | 7.46*** | .18 | 2.80** | .19 | |
| **IV. *Post-event variables*** | | | | | | .60 |
| Helplessness coping | .54 | 10.46*** | .23 | 7.03*** | .43 | |
| Intrusive rumination | .35 | 5.73*** | .06 | 5.73*** | .37 | |

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

As can be seen from Table 11, according to the results of the regression analysis conducted for avoidance subscale of PTS, control variables explained 3% of the variance.

The addition of personality variables did not increase the explained variance. In other words, none of the personality variables entered into the equation.

The entrance of event related variables increased the explained variance to 14% ($R^2$ *change* = .11, *F change* (1, 219) = 26.86, $p < .001$). Perceived severity of the event ($\beta = .36$, $t = 5.18$, $p < .001$) positively predicted avoidance subscale of PTS.

Finally from coping and rumination variables helplessness coping positively predicted avoidance ($\beta = .42$, $t = 6.79$, $p < .001$), and its inclusion to the equation increased the explained variance to 29% ($R^2$ *change* = .15, *F change* (1,

218) = 46.09, $p < .001$). Furthermore, fatalistic coping ($\beta = .22$, $t = 3.26$, $p < .01$) was positively related to avoidance subscale, and with its entrance into the regression equation, the explained variance reached 32% ($R^2$ *change* = .03, *F change* (1, 217) = 10.65, $p < .01$).

With all the variables in the equation, in the last step, perceived severity of the event ($t = 2.67$, $p < .01$), helplessness coping ($t = 4.81$, $p < .001$), and fatalistic coping ($t = 3.26$, $p < .01$) were the significant predictors of avoidance subscale of PTS.

Table 11 Variables associated with avoidance

| ***Block*** | ***Beta*** ***(β* within set)** | ***t*** **(within set)** | **$R^2$ change** | ***t*** **(last step)** | **Partial *r* (last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Avoidance | | | | | | |
| **I. *Control Variables*** | | | .03 | | | .03 |
| Gender | .04 | .57 | | -.90 | -.06 | |
| Income | .10 | 1.49 | | .16 | .01 | |
| Driver / Passenger | .02 | .30 | | -.03 | -.01 | |
| Perceived Social Support | .12 | 1.76 | | 1.92 | .13 | |
| **III. *Event-related variables*** | | | | | | .14 |
| Severity | .36 | 5.18*** | .11 | 2.67** | .18 | |
| **IV. *Post-event variables*** | | | | | | .32 |
| Helplessness coping | .42 | 6.79*** | .15 | 4.81*** | .31 | |
| Fatalistic coping | .22 | 3.26** | .03 | 3.26** | .22 | |

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

As Table 12 demonstrated, the results of the regression analysis conducted for hyperarousal subscale of PTS showed that 4% of the variance was explained by control variables. Being passenger ($\beta = .14$, $t = 2.01$, $p < .05$) was positively associated with hyperarousal.

From personality variables neuroticism ($\beta = .20$, $t = 3.01$, $p < .01$)

positively predicted hyperarousal, whereas negative valence ($\beta$ = -.19, $t$ = -2.52, $p$ < .05) was negatively related to hyperarousal. The inclusion of neuroticism to the equation improved the explained variance to 8% ($R^2$ *change* = .04*, F change* (1, 219) = 9.05, $p$ < .01), and with the inclusion of negative valence to the equation, the explained variance reached 10% ($R^2$ *change* = .02*, F change* (1, 218) = 6.34, $p$ < .05).

Furthermore, the event related variables were entered into the equation and the explained variance reached 26% ($R^2$ *change* = .16*, F change* (1, 217) = 45.79, $p$ < .001). Only perceived severity of the event ($\beta$ = .44, $t$ = 6.77, $p$ < .001) positively predicted hyperarousal subscale of PTS.

In terms of coping and rumination variables, helplessness coping ameliorated the explained variance to 49% ($R^2$ *change* = .23*, F change* (1, 216) = 97.31, $p$ < .001) and was a significant predictor of hyperarousal ($\beta$ = .54, $t$ = 9.86, $p$ < .001). Similarly, intrusive rumination ($\beta$ = .36, $t$ = 5.62, $p$ < .001) positively predicted hyperarousal and its entrance into the equation increased the explained variance to 55% ($R^2$ *change* = .06*, F change* (1, 215) = 31.54, $p$ < .001).

With all the variables in the equation, in the last step, being passenger ($t$ = 2.06, $p$ < .05), perceived severity of the event ($t$ = 2.03, $p$ < .05), helplessness coping ($t$ = 6.47, $p$ < .001), and intrusive rumination ($t$ = 5.62, $p$ < .001) were significant predictors of hyperarousal subscale of PTS.

Table 12 Variables associated with hyperarousal

| ***Block*** | ***Beta*** ***(β* within set)** | ***t*** **(within set)** | **$R^2$ change** | ***t*** **(last step)** | **Partial *r*** **(last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Hyperarousal | | | | | | |
| **I. *Control Variables*** | | | .04 | | | .04 |
| Gender | .11 | 1.62 | | -1.37 | -.09 | |
| Income | .02 | .36 | | -1.42 | -.10 | |
| Driver / Passenger | .14 | 2.01* | | 2.06* | .14 | |
| Perceived Social Support | -.04 | -.55 | | -.68 | -.05 | |
| **II. *Personality*** | | | | | | .10 |
| Neuroticism | .20 | 3.01** | .04 | 1.77 | .12 | |
| Negative Valence | -.19 | -2.52* | .02 | -1.76 | -.12 | |
| **III. *Event-related variables*** | | | | | | .26 |
| Severity | .44 | 6.77*** | .16 | 2.03* | .14 | |
| **IV. *Post-event variables*** | | | | | | .55 |
| Helplessness coping | .54 | 9.86*** | .23 | 6.47*** | .40 | |
| Intrusive rumination | .36 | 5.62*** | .06 | 5.62*** | .36 | |

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

Table 13 summarizes the results of the hierarchical regression analyses performed to examine the predictors of PTS and its subscales.

Table 13 Significant predictors of PTS and PTS subscales

| *Dependent Variable* | *Predictor Variables* | *Model $R^2$* |
|---|---|---|
| - PTS | Neuroticism<br>Negative Valence<br>Perceived Severity of the event<br>Helplessness Coping<br>Intrusive Rumination<br>Fatalistic Coping | .57 |
| - Intrusion | Agreeableness<br>Neuroticism<br>Negative Valence<br>Perceived Severity of the event<br>Helplessness Coping<br>Intrusive Rumination | .60 |
| - Avoidance | Perceived Severity of the event<br>Helplessness Coping<br>Fatalistic Coping | .32 |
| - Hyperarousal | Being passenger<br>Negative Valence<br>Neuroticism<br>Perceived Severity of the event<br>Helplessness Coping<br>Intrusive Rumination | .55 |

### 3.3.2 Predictors of PTG

A series of hierarchical multiple regression analyses was conducted to examine the predictor variables of posttraumatic growth and to test the Hypothesis 4 (After controlling for the effect of gender, income, being driver or passenger during the accident, and perceived social support; personality variables, perceived severity of the accident, coping, and rumination will predict (i.e explain a significant variance) PTG scores and all of the five domains) of the present study. The variables were entered into the regression equation in four steps. In order to control the effects of gender, income, perceived social support, and being driver

or passenger during the accident, these variables were forced to 'enter' into the equation in the first step. In the second, third, and fourth steps of the regression, stepwise method was used with the aim of revealing significant associates of PTG. In the second step of the regression, the personality traits (extraversion, conscientiousness, agreeableness, openness to experience, negative valence, and neuroticism) were entered. In the third step, event related factors (timingx and perceived severity of the event) were added to the equation. In the last step, coping and rumination variables (intrusive and deliberate ruminations, helplessness, problem solving, seeking support, and fatalistic ways of coping) were included to the equation (See Table 14).

Table 14 Steps of the hierarchical multiple regression analyses for PTG

| Variables | Method |
|---|---|
| **I. *Control Variables*** | Enter |
| Gender (1: Male, 2: Female) | |
| Income | |
| Driver (0) / Passenger (1) | |
| Perceived Social Support | |
| **II. *Personal Resources*** | Stepwise |
| **Personality** | |
| Extraversion | |
| Conscientiousness | |
| Agreeableness | |
| Openness to experience | |
| Negative Valence | |
| Neuroticism | |
| **III. *Event Related Factors*** | Stepwise |
| Perceived severity of the event | |
| Timing of the event (month) | |
| **IV. *Coping and Rumination Process*** | Stepwise |
| **Ways of Coping** | |
| Problem Solving coping | |
| Helplessness coping | |
| Fatalistic coping | |
| Seeking Support coping | |
| **Event Related Ruminations** | |
| Deliberate rumination | |
| Intrusive rumination | |

The results of regression analysis revealed that 7% of the variance was explained by control variables. Income ($\beta$ = .15, $t$ = 2.25, $p$ < .05), being passenger ($\beta$ = .15, $t$ = 2.30, $p$ < .05), and perceived social support ($\beta$ = .15, $t$ = 2.21, $p$ < .05) were found to be positively associated with PTG.

In the second step, when personality variables were entered into the equation, only agreeableness positively predicted PTG ($\beta$ = .24, $t$ = 3.53, $p$ < .01). The contribution of agreeableness enhanced the explained variance to 12% ($R^2$ *change* = .05, *F change* (1, 219) = 12.45, $p$ < .01).

In the third step of the regression, perceived severity of the event was positively associated with PTG ($\beta = .47$, $t = 7.56$, $p < .001$) and by the entrance of this variable, the explained variance reached 30% ($R^2$ *change* = .18, *F change* (1, 218) = 57.07, $p < .001$).

In the last step of the regression equation, with the inclusion of coping and rumination variables, the explained variance of PTG reached 54%. Problem solving coping ($\beta = .45$, $t = 8.40$, $p < .001$) and deliberate rumination ($\beta = .35$, $t = 5.94$, $p < .001$) positively predicted PTG.

When all variables of the analysis were in the equation, perceived severity of the event ($t = 3.93$, $p < .001$), problem solving coping ($t = 6.41$, $p < .001$), and deliberate rumination ($t = 5.94$, $p < .001$) were significant predictors, all relating positively to PTG (See Table 15).

Table 15 Predictors of PTG

| ***Block*** | ***Beta* (*β* within set)** | ***t* (within set)** | **$R^2$ change** | ***t* (last step)** | **Partial *r* (last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Posttraumatic Growth | | | | | | |
| **I. *Control Variables*** | | | .07 | | | .07 |
| Gender | .01 | .13 | | -1.99 | -.13 | |
| Income | .15 | 2.25* | | .30 | .02 | |
| Driver / Passenger | .15 | 2.30* | | .97 | .07 | |
| Perceived Social Support | .15 | 2.21* | | .70 | .05 | |
| **II. *Personality*** | | | | | | .12 |
| Agreeableness | .24 | 3.53** | .05 | 1.34 | .09 | |
| **III. *Event-related variables*** | | | | | | .30 |
| Severity | .47 | 7.56*** | .18 | 3.93*** | .26 | |
| **IV. *Post-event variables*** | | | | | | .54 |
| Problem solving coping | .45 | 8.40*** | .17 | 6.41*** | .40 | |
| Deliberate Rumination | .35 | 5.94*** | .07 | 5.94*** | .38 | |

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

### 3.3.2.1 Predictors of PTG Subscales

In order to examine predictors of PTG subscales and to test the Hypothesis 5 (Different factors will predict each of the five domains of PTG) of the present, hierarchical regression analyses were conducted separately for each subscale of PTG. These subscales are new possibilities, spiritual change, relating to others, personal strength, and appreciation of life.

The results of regression analysis conducted for new possibilities subscale, revealed that control variables explained 5% of the variance. Only being passenger in the accident ($\beta$ = .18, $t$ = 2.68, $p$ < .01) was found to be a significant predictor of new possibilities.

From personality variables, only agreeableness ($\beta$ = 28, $t$ = 4.02, $p$ < .001) was a significant predictor of new possibilities and the inclusion of personality variables to the equation increased the explained variance to 12% ($R^2$ *change* = .07, *F change* (1, 219) = 16.13, $p$ < .001).

Furthermore, with the event related variables in the equation, the explained variance reached 28% ($R^2$ *change* = .16, *F change* (1, 218) = 49.33, $p$ < .001). Only perceived severity of the event was positively associated with new possibilities ($\beta$ = *.45,* $t$ = 7.02, $p$ < .001).

From coping and rumination variables, the entrance of deliberate rumination into the equation increased the explained variance to 44% ($R^2$ *change* = .16, *F change* (1, 217) = 60.87, $p$ < .001), similarly, with the inclusion of the problem solving coping to the equation the explained variance was increased to 49% ($R^2$ *change* = .05, *F change* (1, 216) = 21.03, $p$ < .001). For this last step, significant associates of new possibilities were deliberate rumination ($\beta$ = .48, $t$ = 7.80, $p$ < .001), and problem solving coping ($\beta$ = .26, $t$ = 7.59, $p$ < .001).

With all the variables in the equation, gender ($t$ = -2.31, $p$ < .05), agreeableness ($t$ = 2.10, $p$ < .05), perceived severity of the event ($t$ = 3.27, $p$ < .01), deliberate rumination ($t$ = 6.05, $p$ < .001), and problem solving coping ($t$ = 4.59, $p$ < .001) were found to be significant predictors of new possibilities (See Table 16).

Table 16 Variables associated with new possibilities

| ***Block*** | ***Beta*** ***(β* within)** | ***t*** **(within)** | **$R^2$ change** | ***t*** **(last step)** | **Partial *r*** **(last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: New possibilities | | | | | | |
| **I. *Control Variables*** | | | .05 | | | .05 |
| Gender | -.02 | -.04 | | -2.31* | -.16 | |
| Income | .09 | 1.41 | | -.68 | -.05 | |
| Driver / Passenger | .18 | 2.68** | | 1.48 | .10 | |
| Perceived Social Support | .10 | 1.46 | | -.15 | -.01 | |
| **II. *Personality*** | | | | | | .12 |
| Agreeableness | .28 | 4.02*** | .07 | 2.10* | .14 | |
| **III. *Event-related variables*** | | | | | | .28 |
| Severity | .45 | 7.02*** | .16 | 3.27** | .22 | |
| **IV. *Post-event variables*** | | | | | | .49 |
| Deliberate Rumination | .48 | 7.80*** | .16 | 6.05*** | .38 | |
| Problem Solving Coping | .26 | 4.59*** | .05 | 4.59*** | .30 | |

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

As can be seen from Table 17, the results of regression analysis conducted for spiritual change, showed that control variables explained 4% of the variance. From control variables, only being passenger was associated with spiritual change ($\beta = .16$, $t = 2.39$, $p < .05$).

For spiritual change, none of the personality variables was found to be significant predictor, whereas, with the entrance of event related variables the explained variance reached 22% ($R^2$ *change* = .18, *F change* (1, 219) = 50.16, $p < .001$). Perceived severity of the event was a significant predictor relating positively to spiritual change ($\beta = .46$, $t = 7.08$, $p < .001$).

In the last step, coping and rumination variables were entered into the equation and the explained variance increased to 46%. With the entrance of fatalistic coping into the regression equation, the explained variance reached 39% ($R^2$ *change* = .17, *F change* (1, 218) = 59.90, $p < .001$); moreover, the explained variance was increased to 46% by the inclusion of deliberate rumination to the

equation ($R^2$ *change* = .07, *F change* (1, 217) = 28.90, $p < .001$). From these variables fatalistic coping ($\beta = .44$, $t = 7.74$, $p < .001$), and deliberate rumination ($\beta = .34$, $t = 5.38$, $p < .001$) were significant predictors of spiritual change.

With all the variables in the equation, perceived severity of the event ($t = 2.77$, $p < .01$), fatalistic coping ($t = 5.89$, $p < .001$), and deliberate rumination ($t = 5.38$, $p < .001$) were found to be significant predictors, all relating positively to spiritual change.

Table 17 Variables associated with spiritual change

| ***Block*** | ***Beta* (*β* within set)** | ***t* (within set)** | **$R^2$ change** | ***t* (last step)** | **Partial *r* (last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Spiritual Change | | | | | | |
| **I. *Control Variables*** | | | .04 | | | .04 |
| Gender | .01 | .08 | | -1.75 | -.12 | |
| Income | .10 | 1.55 | | -.52 | -.04 | |
| Driver / Passenger | .16 | 2.39* | | 1.51 | .10 | |
| Perceived Social Support | .08 | 1.16 | | .71 | .05 | |
| **III. *Event-related variables*** | | | | | | .22 |
| Severity | .46 | 7.08*** | .18 | 2.77** | .19 | |
| **IV. *Post-event variables*** | | | | | | .46 |
| Fatalistic Coping | .44 | 7.74*** | .17 | 5.89*** | .37 | |
| Deliberate Rumination | .34 | 5.38*** | .07 | 5.38*** | .34 | |

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

The regression analysis conducted for relating to others subscale revealed that control variables explained 8% of the variance. Income ($\beta = .19$, $t = 2.91$, $p < .01$), and perceived social support ($\beta = .19$, $t = 2.88$, $p < .01$) were positively associated with relating to others.

With the entrance of personality variables into the equation, only agreeableness ($\beta = .15$, $t = 2.17$, $p < .05$) was positively associated with relating to

others dimension of PTG and it increased the explained variance to 10% ($R^2$ *change* = .02, *F change* (1, 219) = 4.71, $p < .05$).

The inclusion of event related variables to the equation increased the explained variance to 20% ($R^2$ *change* = .10*, F change* (1, 218) = 27.77, $p < .001$). Perceived severity of the event was found to positively predict ($\beta = .35$, $t = 5.27$, $p < .001$) relating to others subscale of PTG.

Finally, with problem solving coping in the equation, explained variance increased to 37% ($R^2$ *change* = .17*, F change* (1, 217) = 60.01, $p < .001$) and with the entrance of deliberate rumination into the equation the explained variance reached 40% ($R^2$ *change* = .03*, F change* (1, 216) = 10.19, $p < .01$). Both problem solving coping ($\beta = .45$, $t = 7.75$, $p < .001$), and deliberate rumination ($\beta = .22$, $t = 3.19$, $p < .01$) were found to be significant predictors of relating to others dimension of PTG.

Therefore, with all variables in the regression equation 40% of the variance was explained. In the last step, perceived severity of the event ($t = 2.53$, $p < .01$), problem solving coping ($t = 6.31$, $p < .001$), and deliberate rumination ($t = 3.19$, $p < .01$) positively predicted relating to others dimension of PTG (See Table 18).

Table 18 Variables associated with relating to others

| ***Block*** | ***Beta*** ***(β* within set)** | ***t*** **(within set)** | **$R^2$ change** | ***t*** **(last step)** | **Partial *r*** **(last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Relating to Others | | | | | | |
| **I. *Control Variables*** | | | .08 | | | .08 |
| Gender | .06 | .85 | | -.44 | -.03 | |
| Income | .19 | 2.91** | | 1.57 | .11 | |
| Driver / Passenger | .05 | .70 | | -.42 | -.03 | |
| Perceived Social Support | .19 | 2.88** | | 1.56 | .11 | |
| **II. *Personality*** | | | | | | .10 |
| Agreeableness | .15 | 2.17* | .02 | .09 | .01 | |
| **III. *Event-related variables*** | | | | | | .20 |
| Severity | .35 | 5.27*** | .10 | 2.53** | .17 | |
| **IV. *Post-event variables*** | | | | | | .40 |
| Problem Solving Coping | .45 | 7.75*** | .17 | 6.31*** | .39 | |
| Deliberate Rumination | .22 | 3.19** | .03 | 3.19** | .22 | |

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

According to the results of regression analysis conducted for personal strength subscale, control variables explained 4% of the variance. Only income ($\beta = .14$, $t = 2.11$, $p < .05$) was positively associated with personal strength.

From personality variables, only agreeableness positively predicted personal strength ($\beta = .21$, $t = 3.07$, $p < .01$) and it increased the explained variance to 8% ($R^2$ *change* = .04, *F change* (1, 219) = 9.41, $p < .01$).

The addition of event related variables to the equation increased the explained variance to 21% ($R^2$ *change* = .13, *F change* (1, 218) = 35.67, $p < .001$). In this step, perceived severity of the event was a significant predictor of personal strength ($\beta = .40$, $t = 5.97$, $p < .001$).

In the last step, from coping and rumination variables, problem solving coping ($\beta = .47$, $t = 8.28$, $p < .001$), deliberate rumination ($\beta = .27$, $t = 4.19$, $p < .001$), and fatalistic coping ($\beta = .15$, $t = 2.21$, $p < .05$) positively predicted personal strength. On the other hand, personal strength was negatively predicted

by helplessness coping ($\beta$ = -.17, $t$ = -2.62, $p$ < .01). With the entrance of problem solving coping into the equation, the explained variance of personal strength reached 40% ($R^2$ *change* = .19, *F change* (1, 217) = 68.61, $p$ < .001); the inclusion of deliberate rumination to the equation increased the explained variance to 44% ($R^2$ *change* = .04, *F change* (1, 216) = 17.52, $p$ < .001). Additionally, with the entrance of fatalistic coping into the regression equation, the explained variance of personal strength reached 45% ($R^2$ *change* = .01, *F change* (1, 215) = 4.88, $p$ < .05), and finally with the inclusion of helplessness coping, the explained variance increased to 47% ($R^2$ *change* = .19, *F change* (1, 214) = 6.85, $p$ < .01).

With all the variables in the equation, perceived severity of the event ($t$ = 2.66, $p$ < .01), problem solving coping ($t$ = 4.73, $p$ < .001), deliberate rumination ($t$ = 4.52, $p$ < .001), and fatalistic coping ($t$ = 2.87, $p$ < .01) remained as the significant predictors, all relating positively to personal strength, whereas helplessness coping ($t$ = -2.62, $p$ < .01) remained negatively predicting personal strength (See Table 19).

Table 19 Variables associated with personal strength

| ***Block*** | ***Beta*** ***(β* within set)** | ***t*** **(within set)** | **$R^2$ change** | ***t*** **(last step)** | **Partial *r*** **(last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Personal Strength | | | | | | |
| **I. *Control Variables*** | | | .04 | | | .04 |
| Gender | -.01 | -.03 | | -1.41 | -.10 | |
| Income | .14 | 2.11* | | .12 | .01 | |
| Driver / Passenger | .09 | 1.32 | | -.08 | -.01 | |
| Perceived Social Support | .12 | 1.81 | | -.18 | -.01 | |
| **II. *Personality*** | | | | | | .08 |
| Agreeableness | .21 | 3.07** | .04 | .92 | .06 | |
| **III. *Event-related variables*** | | | | | | .21 |
| Severity | .40 | 5.97*** | .13 | 2.66** | .18 | |
| **IV. *Post-event variables*** | | | | | | .47 |
| Problem Solving Coping | .47 | 8.28*** | .19 | 4.73*** | .31 | |
| Deliberate Rumination | .27 | 4.19*** | .04 | 4.52*** | .30 | |
| Fatalistic Coping | .15 | 2.21* | .01 | 2.87** | .19 | |
| Helplessness Coping | -.17 | -2.62** | .02 | -2.62** | -.18 | |

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

The results of regression analysis conducted for appreciation of life subscale showed that 8% of the variance was explained by control variables. Being passenger ($\beta = .21$, $t = 3.20$, $p < .01$), and perceived social support ($\beta = .16$, $t = 2.39$, $p < .05$) were positive associates of appreciation of life.

The entrance of personality variables to the equation improved the explained variance to 15% ($R^2$ *change* = .07*, F change* (1, 219) = 19.08, $p < .001$). Only agreeableness ($\beta = .29$, $t = 4.37$, $p < .001$) was a significant predictor of appreciation of life.

In the following step, perceived severity of the event was positively associated with appreciation of life ($\beta = .42$, $t = 6.79$, $p < .001$) and its addition to the regression equation improved the explained variance to 30% ($R^2$ *change* = .15*, F change* (1, 218) = 46.05, $p < .001$).

From coping and rumination variables, with the entrance of deliberate rumination into the equation, the explained variance reached 40% ($R^2$ *change* = .10*, F change* (1, 217) = 33.85, $p < .001$), and the inclusion of problem solving coping increased the explained variance of appreciation of life to 43% ($R^2$ *change* = .03*, F change* (1, 216) = 11.65, $p < .01$). These variables namely, deliberate rumination ($\beta = .37$, $t = 5.82$, $p < .001$), and problem solving coping ($\beta = .20$, $t = 3.41$, $p < .01$) positively predicted appreciation of life subscale.

With all the variables in the equation, in the last step, agreeableness ($t = 2.80$, $p < .01$), perceived severity of the event ($t = 3.61$, $p < .001$), deliberate rumination ($t = 4.40$, $p < .001$), and problem solving coping ($t = 3.41$, $p < .01$) remained predicting appreciation of life (See Table 20).

Table 20 Variables associated with appreciation of life

| ***Block*** | ***Beta*** **(*β* within set)** | ***t*** **(within set)** | **$R^2$ change** | ***t*** **(last step)** | **Partial *r*** **(last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Appreciation of Life | | | | | | |
| **I. *Control Variables*** | | | .08 | | | .08 |
| Gender | -.01 | -.11 | | -1.64 | -.11 | |
| Income | .12 | 1.81 | | -.06 | -.01 | |
| Driver / Passenger | .21 | 3.20** | | 1.83 | .12 | |
| Perceived Social Support | .16 | 2.39* | | .79 | .05 | |
| **II. *Personality*** | | | | | | .15 |
| Agreeableness | .29 | 4.37*** | .07 | 2.80** | .19 | |
| **III. *Event-related variables*** | | | | | | .30 |
| Severity | .42 | 6.79*** | .15 | 3.61*** | .24 | |
| **IV. *Post-event variables*** | | | | | | .43 |
| Deliberate Rumination | .37 | 5.82*** | .10 | 4.40*** | .29 | |
| Problem Solving Coping | .20 | 3.41** | .03 | 3.41** | .23 | |

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

Table 21 summarizes the results of the hierarchical regression analyses performed to examine the predictors of PTG and its subscales.

Table 21 Significant predictors of PTG and PTG subscales

| ***Dependent Variable*** | ***Predictor Variables*** | ***Model $R^2$*** |
|---|---|---|
| - PTG | Agreeableness<br>Perceived Severity of the event<br>Problem Solving Coping<br>Deliberate Rumination | .54 |
| - New Possibilities | Being male<br>Agreeableness<br>Perceived Severity of the event<br>Deliberate Rumination<br>Problem Solving Coping | .49 |
| - Spiritual Change | Perceived Severity of the event<br>Fatalistic Coping<br>Deliberate Rumination | .46. |
| - Relating to Others | Agreeableness<br>Perceived Severity of the event<br>Problem Solving Coping<br>Deliberate Rumination | .40 |
| - Personal Strength | Agreeableness<br>Perceived Severity of the event<br>Problem Solving Coping<br>Deliberate Rumination<br>Fatalistic Coping<br>Helplessness Coping | .47 |
| - Appreciation of Life | Agreeableness<br>Perceived severity of the event<br>Deliberate Rumination<br>Problem Solving Coping | .43 |

### 3.4 Mediation Analyses

Mediation analyses were conducted in order to investigate the nature of the relationship between predictors and their outcome variables namely, PTS and PTG by using PROCESS macro for IBM SPSS developed by Hayes (2013). These mediation analyses were performed in two parts. In the first part, the mediation analysis for the outcome variable PTS was conducted. Then, in the second part, the results of the mediation analysis performed for PTG were presented.

#### 3.4.1 Mediation Analysis for PTS

Mediation analysis was conducted in order to test the Hypothesis 3 (Coping and rumination will mediate the relationship between PTS and personality) of the present study. In this analysis, neuroticism was the predictor, PTS was the outcome, and helplessness coping was the mediator.

As presented in Figure 6, the results revealed that neuroticism was a significant predictor of helplessness coping ($b$ = 0.33, $SE$ = .08, $p$ < .001) and that helplessness coping was a significant predictor of PTS ($b$ = 1.69, $SE$ = .14, $p$ < .001). These findings supported the mediation hypothesis. Neuroticism was no longer a predictor of PTS after controlling for the mediator namely helplessness coping ($b$ = -0.06, $SE$ = .18, n.s). 44% of the variance was explained by the predictors ($R^2$ = 44, $F$ (6, 218) = 28.51, $p$ < .001).

The indirect effect of helplessness coping was examined using bootstrap estimation approach with 1000 samples. As a result, it was revealed that the indirect effect of helplessness coping was statistically significant ($b$ = 0.55, $SE$ = .15, *95% CI* = .2255 - .8320) (See Table 22 for the findings).

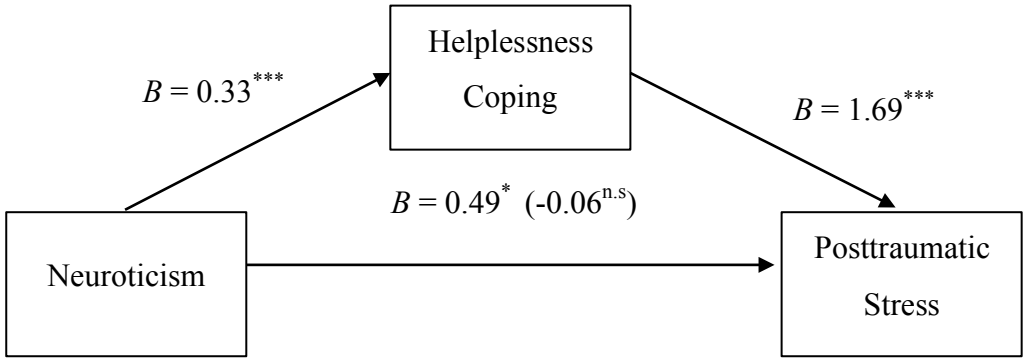


Figure 6 Neuroticism and Posttraumatic Stress Relationship with Helplessness Coping as the Mediator

*Note.* $B$ = unstandardized regression coefficient, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Table 22 Mediation effects of Helplessness Coping on the Relationship between Neuroticism and PTS (N = 225)

| | ***B*** | ***t*** | ***p*** |
|---|---|---|---|
| Mediation path *a* (Neuroticism on helplessness coping) | 0.33 | 3.89 | .001 |
| Mediation path *b* (Helplessness coping on PTS) | 1.69 | 12.34 | .001 |
| Indirect effect bootstrapped 95% Confidence Interval [0.23 - 0.83] | 0.55 | | |
| Total effect, path *c* (Neuroticism on PTS) | 0.49 | 2.21 | .05 |
| Direct effect path *c'* (Neuroticism on PTS with mediation) | -0.06 | -0.37 | .715 |
| Covariates | | | |
| Gender | 2.91 | 1.21 | .227 |
| Driver / Passenger | 3.76 | 1.55 | .122 |
| Income | 1.33 | 0.95 | .342 |
| Perceived Social Support | 0.04 | 0.61 | .542 |
| Model $R^2$ = .44, $F$ (6, 218) = 28.51, $p < .001$ | | | |

*B* = unstandardized coefficient

### 3.4.2 Mediation Analyses for PTG

Mediation analysis was conducted in order to test the Hypothesis 7 (Coping and rumination will mediate the relationship between PTG and personality) of the present study. In this analysis, agreeableness was the predictor, PTG was the outcome, and deliberate rumination, and problem solving coping were mediators.

As can be seen from Figure 7, the results indicated that agreeableness was a significant predictor of problem solving coping ($b$ = 0.45, $SE$ = .15, $p < .01$) and

deliberate rumination ($b$ = 0.44, $SE$ = .13, $p$ < .001). Moreover, problem solving coping was a significant predictor of PTG ($b$ = 0.91, $SE$ = .15, $p$ < .001), as was deliberate rumination ($b$ = 1.49, $SE$ = .18, $p$ < .001). These results supported the mediation hypothesis. Agreeableness was no longer a predictor of PTG ($b$ = 0.37, $SE$ = .31, n.s) after controlling for the mediators that were problem solving coping, and deliberate rumination. The predictors accounted for 51% of the variance in PTG ($R^2$ = .51, $F$ (7, 217) = 32.57, $p$ < .001).

The indirect effects of problem solving coping and deliberate rumination were tested using bootstrap estimation approach with 1000 samples. The results indicated that the indirect coefficients of problem solving coping ($b$ = 0.41, $SE$ = .14, *95% CI* = .1588 - .7380), and deliberate rumination ($b$ = 0.65, $SE$ = .22, *95% CI* = .2763 - .1.1871) were statistically significant (See Table 23).

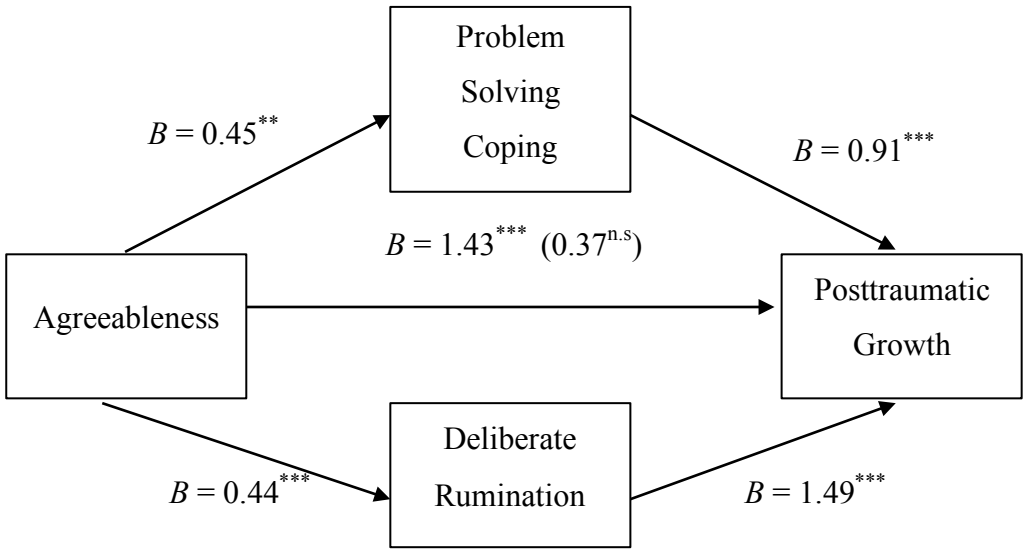


Figure 7 Agreeableness and Posttraumatic Growth Relationship with Problem Solving Coping and Deliberate Rumination as the Mediators

*Note.* $B$ = unstandardized regression coefficient, $^{*}p$ < .05, $^{**}p$ < .01, $^{***}p$ < .001

Table 23 Mediation effects of Problem Solving Coping and Deliberate Rumination on the Relationship between Agreeableness and PTG (N = 225)

| | ***B*** | ***t*** | ***p*** |
|---|---|---|---|
| Mediation path *a* (Agreeableness on problem solving coping) | 0.45 | 2.99 | .01 |
| Mediation path *b* (Problem solving coping on PTG) | 0.91 | 6.17 | .001 |
| Indirect effect bootstrapped 95% Confidence Interval [0.16 - 0.74] | 0.41 | | |
| Mediation path *a* (Agreeableness on deliberate rumination) | 0.44 | 3.45 | .001 |
| Mediation path *b* (Deliberate rumination on PTG) | 1.49 | 8.48 | .001 |
| Indirect effect bootstrapped 95% Confidence Interval [0.28 - 1.19] | 0.65 | | |
| Total effect, path *c* (Agreeableness on PTG) | 1.43 | 1.53 | .001 |
| Direct effect path *c'* (Agreeableness on PTG with both mediations) | 0.37 | 1.20 | .233 |
| Covariates | | | |
| Gender | 0.92 | 0.28 | .781 |
| Driver / Passenger | 7.42 | 2.21 | .028 |
| Income | 3.71 | 1.91 | .057 |
| Perceived Social Support | 0.09 | 0.88 | .382 |
| Model $R^2 = .51$, $F\ (7, 217) = 32.57$, $p < .001$ | | | |

*B* = unstandardized coefficient

### 3.5 Testing The Effects of Change in Positive Driver Behavior on PTG

In order to test the hypotheses for the change in positive driver behavior, the cases that include the driver subjects were selected in SPSS. The number of

the subjects who were drivers was 187. All the statistical analyses including driver behaviors were conducted with this data.

### 3.5.1 Regression Analyses for PTG, including Change in Positive Driver Behavior

A hierarchical multiple regression analysis was conducted in order to test the Hypothesis 6 (The changes in the positive driver behaviors as a result of the accident, for the drivers sample will positively predict PTG and will augment the explained variance of the model) of the present study.

The results shown in Table 24 indicated that 6% of the variance was explained by control variables. Perceived social support ($\beta = .16$, $t = 2.12$, $p < .05$) positively predicted PTG.

The entrance of personality variables into the equation increased the explained variance to 11% ($R^2$ *change* = .05*, F change* (1, 181) = 1.08, $p < .01$). Agreeableness ($\beta = .25$, $t = 3.33$, $p < .01$) positively predicted PTG.

Furthermore, with the inclusion of event related variables to the equation, the explained variance reached 30% ($R^2$ *change* = .05*, F change* (1, 180) = 49.61, $p < .001$). Perceived severity of the event appeared as a predictor of PTG ($\beta = .48$, $t = 7.04$, $p < .001$).

Coping and rumination variables were included into the equation and problem solving coping ($\beta = .45$, $t = 7.39$, $p < .001$), deliberate rumination ($\beta = .35$, $t = 5.59$, $p < .001$), and fatalistic coping ($\beta = .15$, $t = 2.11$, $p < .05$) were positive associates of PTG. With the entrance of problem solving coping the explained variance reached to 46% ($R^2$ *change* = .16*, F change* (1, 179) = 54.67, $p < .001$). The inclusion of deliberate rumination to the equation ameliorated 8% of the explained variance ($R^2$ *change* = .08*, F change* (1, 178) = 31.21, $p < .001$), and the entrance of the fatalistic coping variable increased the explained variance to 55% ($R^2$ *change* = .02*, F change* (1, 177) = 4.46, $p < .05$).

In the fifth and last step of the hierarchical regression analysis, the behavioral change variable was entered into the equation. The inclusion of this variable to the equation increased the explained variance of PTG to 57% ($R^2$

*change* = .02*, F change* (1, 176) = 7.35, $p < .01$). Change in positive driver behavior was found to be a positive predictor of PTG ($\beta = .16$, $t = 2.71$, $p < .01$).

With all the variables in the equation, in the last step, perceived severity of the event ($t = 3.11$, $p < .01$), problem solving coping ($t = 3.37$, $p < .01$), deliberate rumination ($t = 4.70$, $p < .001$), fatalistic coping ($t = 1.98$, $p < .05$), and change in positive driver behavior ($t = 2.71$, $p < .01$) were positive predictors of PTG.

Table 24 Variables associated with posttraumatic growth (N = 187)

| ***Block*** | ***Beta*** ***(β* within set)** | ***t*** **(within set)** | **$R^2$ change** | ***t*** **(last step)** | **Partial *r*** **(last step)** | **Model $R^2$** |
|---|---|---|---|---|---|---|
| Dependent Variable: Posttraumatic Growth | | | | | | |
| **I. *Control Variables*** | | | .06 | | | .06 |
| Gender | .03 | .34 | | -1.39 | -.10 | |
| Income | .14 | 1.88 | | -.25 | -.02 | |
| Driver / Passenger | .12 | 1.64 | | .84 | .06 | |
| Perceived Social Support | .16 | 2.12$^{*}$ | | -.16 | -.01 | |
| ***II. Personality Variables*** | | | | | | |
| Agreeableness | .25 | 3.33$^{**}$ | .05 | 1.06 | .08 | .11 |
| **III. *Event-related variables*** | | | | | | .30 |
| Severity | .48 | 7.04$^{***}$ | .19 | 3.11$^{**}$ | .23 | |
| **IV. *Post-event variables*** | | | | | | .55 |
| Problem Solving coping | .45 | 7.39$^{***}$ | .16 | 3.37$^{**}$ | .25 | |
| Deliberate Rumination | .35 | 5.59$^{***}$ | .08 | 4.70$^{***}$ | .33 | |
| Fatalistic Coping | .15 | 2.11$^{*}$ | .01 | 1.98$^{*}$ | .15 | |
| ***V. Behavioral Change Variable*** | | | | | | |
| Change in Positive Driver Beh..16 | | 2.71$^{**}$ | .02 | 2.71$^{**}$ | .20 | .57 |

$^{***}p < .001$, $^{**}p < .01$, $^{*}p < .05$

### 3.5.2 Mediation Analysis for Change in Positive Driver Behavior

Mediation analysis was performed in order to test the Hypothesis 8 (Changes in the positive driver behaviors as a result of the accident will mediate the relationship between PTG and personality) of the present study. In this analysis, agreeableness was the predictor, PTG was the outcome, and change in positive driver behavior was the mediator.

As can be seen from Figure 8, the results indicated that agreeableness was a significant predictor of change in positive driver behavior ($b$ = 1.14, $SE$ = .38, $p$ < .05) and that change in positive driver behavior was a significant predictor of PTG ($b$ = 0.52, $SE$ = .08, $p$ < .001). These findings supported the mediation hypothesis. After controlling for the mediator (change in positive driver behavior), the predictive power of agreeableness decreased ($b$ = 0.90, $SE$ = .41, $p$ < .05). 29% of the variance was explained by the predictors ($R^2$ = 29, $F$ (6, 180) = 12.14, $p$ < .001) (See Table 25 for the findings).

The indirect effect of change in positive driver behavior was examined using bootstrap estimation approach with 1000 samples. Therefore, it was indicated that the indirect effect of change in positive driver behavior was statistically significant ($b$ = 0.60, $SE$ = .24, *95% CI* = .2091 - 1.128).

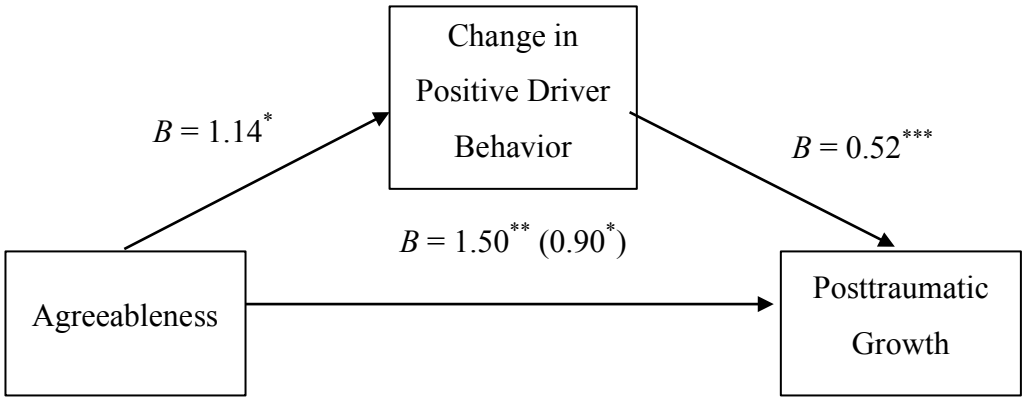


Figure 8 Agreeableness and Posttraumatic Growth Relationship with Change in Positive Driver Behavior as the Mediator

*Note.* $B$ = unstandardized regression coefficient, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Table 25 Mediation effects of Change in Positive Driver Behavior on the Relationship between Agreeableness and PTG (N = 187)

| | ***B*** | ***t*** | ***p*** |
|---|---|---|---|
| Mediation path *a* (Agreeableness on change in positive driver behavior) | 1.14 | 2.99 | .05 |
| Mediation path *b* (Change in positive driver behavior on PTG) | 0.52 | 6.66 | .001 |
| Indirect effect bootstrapped 95% Confidence Interval [0.21 - 1.13] | 0.60 | | |
| Total effect, path *c* (Agreeableness on PTG) | 1.50 | 3.33 | .01 |
| Direct effect path *c'* (Agreeableness on PTG with mediation) | 0.90 | 2.17 | .031 |
| Covariates | | | |
| Gender | 1.78 | 0.49 | .627 |
| Driver / Passenger | 6.57 | 1.69 | .093 |
| Income | 3.31 | 1.55 | .122 |
| Perceived Social Support | 0.09 | 0.83 | .405 |
| Model $R^2 = .29$, $F(6, 180) = 12.14$, $p < .001$ | | | |

*B* = unstandardized coefficient

# CHAPTER IV

# DISCUSSION

The purpose of the current study was to examine the effects of personality characteristics (extraversion, conscientiousness, agreeableness, openness to experience, negative valence, and neuroticism), event (i.e., traffic accident) related factors such as the perceived severity and timing of the event, coping (problem solving, helplessness, fatalistic, and seeking support coping strategies), and rumination (deliberate and intrusive) processes on the levels of PTS and PTG using the framework of the Multivariate Risk Factor Model (Freedy, Kilpatrick, & Resnick, 1993) and the Model of Life Crises and Personal Growth (Schaefer & Moos, 1992) respectively.

Moreover, another purpose of the current study was to test the combination of the Model of Life Crises and Personal Growth (Schaefer & Moos, 1992), and the Conservation of Resources (COR) Theory (Hobfoll, 1989) in order to examine the role of changes in positive driver behaviors of driver accident survivors on PTG.

In order to test the hypotheses of the current study, a set of hierarchical multiple regression analyses were conducted for the two dependent variables, namely PTS and PTG, and all of their domains. Furthermore, mediation analyses were conducted with the aim of investigating the nature of the relationships between personality characteristics and the dependent variables of the current study.

This section is composed of three main parts. In the first part, the findings of the current study will be discussed in relation to the hypotheses and the literature findings. In the second part, the strengths and clinical implications of the

study will be presented. The final part of this section will demonstrate the limitations of the current study and discuss the directions for future research studies. In the first part of the discussion section, the findings of the current study will be discussed in three groups, namely results pertaining to PTS, PTG, and the effects of change in the positive driver behaviors on PTG**,** respectively.

## 4.1 PTS, PTG, and the Relationship Between Change in Positive Driver Behaviors and PTG

The findings of the statistical analyses conducted to examine the factors related to PTS and PTG, and the effects of changes in the positive driver behaviors on PTG will be discussed respectively in this section.

### 4.1.1 Posttraumatic Stress and the Three Domains of PTS

Posttraumatic stress (PTS) is a psychological response of individuals to traumatic events including distress reactions characterized by arousal, intrusion, and avoidance. The Impact of Event Scale-Revised (IES-R; Horowitz et al., 1979) was used to obtain an overall PTS score, and the three domains of PTS, namely intrusion, avoidance, and hyperarousal. In order to examine the factors related to PTS and all of its three domains, hierarchical multiple regression analyses were conducted for each of the domains and the overall PTS score.

Personal system resources (gender, perceived social support, and personality characteristics: extraversion, conscientiousness, agreeableness, openness to experience, negative valence, and neuroticism); environmental system resources (income); event related variables such as perceived severity and timing of the accident, and being a driver or a passenger during the accident; cognitive appraisals (intrusive and deliberate ruminations); and coping with the aftermath of the accident (problem solving, helplessness, fatalistic, and seeking support coping) were used to examine their relative roles in explaining the occurrence of posttraumatic stress of survivors of traffic accidents.

Due to the unbalanced sample size regarding drivers and passengers, the effect of being driver or passenger variable was controlled in the regression analysis. Similarly, among the socio-demographic variables income was used as a control variable due to its correlation with PTG and its level between middle and upper. Furthermore, in the literature there are several studies examining the relationship of gender and perceived social support with PTS and PTG following trauma. Therefore, since the role of these variables was not the focus of the present study they were used as control variables.

The findings of the current study showed that neuroticism, perceived severity of the accident, helplessness and fatalistic coping strategies and intrusive rumination were positively related to PTS. Moreover, negative valence was a significant negative associate of PTS.

Regarding personality characteristics, in the current study, neuroticism was positively associated with PTS. This finding was consistent with the literature findings showing that neuroticism was a positive associate of PTS in survivors of motor vehicle accidents and various traumatic events (Harvey & Bryant, 1999; Dörfel et al., 2008; Karanci et al., 2012; Jaksic et al., 2012). However, in the current study, when helplessness coping was entered into the regression equation, neuroticism and negative valence were no longer significant. In other words, they shared the explained variance with helplessness coping; but helplessness coping had more significant contribution to the explained variance of PTS. This means that personality characteristics may exert an influence on PTS by determining the type of coping strategies that individuals tend to use and thus when the coping style is included they do not sufficiently explain the occurrence of PTS. Accordingly, the mediating role of coping mechanisms between personality and PTS was examined by mediation analyses and the results will be discussed later in this section.

Neuroticism is a personality trait characterized by anxiety, distress, emotional instability, feelings of helplessness and proneness to worry (Gencoz & Oncul, 2012). In the current study, neurotic individuals experiencing traffic accident may have had difficulty in managing their negative and anxiety related emotions and therefore showed high levels of distress following the accident.

Furthermore, due to the fact that neurotic individuals have an exaggerated perception of threat, they have a risk for feeling helpless and an increased distress in the face of an accident.

Regarding negative valence, as Gencoz and Oncul (2012) described, negative valence was negative self-attributions characterized by submissively accepting the situation, avoiding struggling, and low levels of self-esteem. In the present study, negative valence was negatively associated with PTS. Negative valence is a personality trait associated with a sense of low self-esteem and self worth. Individuals high in negative valence, may directly focus on themselves and their negative personality characteristics such as low self worth rather than feeling distress following the accident. This may directly lead to depressive thoughts rather than feelings of distress or anxiety. Therefore, in future studies the use of measures of depression will allow to examine the role of different personality traits in other possible consequences of accidents, such as depression. Event related variables were also examined in the current study. Timing and perceived severity of the event were entered into the regression analysis as event related variables. In the Multivariate Risk Factor Model (Freedy, et al., 1993), perceived severity of the event was among important within event factors. As it was depicted in the model, within event factors influence mental health in the aftermath of trauma. Literature findings also showed a positive relationship between perceived severity and the negative effects of traumatic events (Mayou et al., 2002; Turan et al., 2002; Dörfel et al., 2008).

In the current study, perceived severity of the accident is the only variable that related positively with PTS, and all of its three domains. These findings were in agreement with the Multivariate Risk Factor Model (Freedy et al., 1993) and the literature showing that the high level of perceived severity of the event leads to a high risk of experiencing PTS (Mayou et al., 2002; Turan et al., 2002; Dörfel et al., 2008). High level of severity perception increases the distress level following accidents due to the fact that perception of severity is also based on a perception of life threat. Perceiving the event as severe means that individuals realize the presence of a threat to their integrity. Therefore, this perception may have an effect on their worldview, shake their schemas and forces them to process

the traumatic event and then they may develop some distress reactions.

Moreover, coping and rumination variables were also investigated in the present study as the post event factors of the Multivariate Risk Factor Model (Freedy et al., 1993). Folkman and Lazarus (1980) defined coping as cognitive and emotional efforts to manage the internal or external demands of experienced stressful situation. Tedeschi and Calhoun (2004) clarified this definition by emphasizing the crucial role of the process of struggling with trauma in order to adapt to the experience of a stressful event.

In the present study, helplessness and fatalistic coping strategies were positively associated with overall PTS. These results were supported by the literature findings due to the fact that these two coping mechanisms are among emotion focused and more passive ways of coping, which were the mechanisms facilitating the occurrence of PTS following traumatic event (Bryant & Harvey, 1995; Harvey & Bryant, 1999; Dörfel et al., 2008). Additionally, as Folkman and Lazarus (1989) indicated, individuals who perceive the event as uncontrollable tend to cope with its negative effects via emotion-focused strategies. In the present study, survivors of traffic accident who used emotion focused coping strategies such as fatalistic and helplessness coping in order to deal with their distress following the accident seemed to be more prone to distress reactions. In the short run these strategies may alleviate the distress by accepting the traumatic experience, however they are not effective in the long run due to the fact that they lack some active efforts to process the negative effects of trauma and to deal with them, rather they facilitate the occurrence of PTS.

In addition to coping mechanisms, ruminations are also important post event factors related to PTS. The term rumination means, “to go over in the mind repeatedly and often casually or slowly” (Merriam Webster Online). There are two types of rumination, namely deliberate and intrusive ruminations. Deliberate rumination is a type of rumination composed of controlled thoughts aiming to make a sense of the event and solve the problem; whereas intrusive rumination is an unintentional focus on negative effects of traumatic events such as the symptoms of distress; therefore it results in posttraumatic stress following an accident (Cann et al., 2011). The findings of the present study showed that there

was a significant positive association between intrusive rumination and PTS. Several studies examining the relationship between intrusions and the occurrence of negative outcomes following traumatic events suggested that high levels of intrusive thoughts are related to increased distress and decreased opportunity to cope with the accident; therefore they lead to a high risk of PTS (Ehlers & Clark, 2000; Murray et al., 2002; Taku et al., 2008). Rumination may reflect an ongoing attempt to process or to suppress the negative effects of trauma. As Watkins (2008) indicated, when the curiosity and searching for new experiences motivates the rumination, this deliberate rumination leads to processing the event and ends up with more positive psychological outcomes. However, intrusive rumination, which is motivated by neurotic and anxiety related concerns, leads to more suppression and distress related negative outcomes. In the present study, survivors who report experiencing intrusive rumination, characterized by undesired ruminative process, is motivated by anxiety and perception of threat following the accident were more prone to show distress reactions, namely PTS.

In the light of all these findings, Hypothesis 1 (After controlling for the effect of gender, income, being driver or passenger during the accident, and perceived social support; personality variables, perceived severity of the accident, coping, and rumination will predict (i.e. explain a significant variance) PTS scores and all of the three domains) of the present study was supported.

The results of the mediation analyses that were conducted to understand the relationship between personality and PTS, in order to test Hypothesis 3 (Coping and rumination will mediate the relationship between PTS and personality) of the current study, showed that helplessness coping had a mediator role on the relationship between neuroticism and PTS. As literature findings (Folkman & Lazarus, 1980; Bosson et al., 2012) showed, coping mechanisms have a mediator role on the relationship between the experience of traumatic event and the development of posttraumatic stress. Moreover, the Multivariate Risk Factor Model (Freedy et al., 1993) supported these findings, suggesting that the mental health outcomes depend on the combination of pre-event, within-event, and post-event factors. Neuroticism is a personality trait accompanied by difficulty in emotion regulation, feelings of helplessness, a sense of low

controllability of and low responsibility about the event. The sense of uncontrollability and external locus of control may lead neurotic individuals to feel helpless about the situation and to take a passive stance in face of the negative effects of the accident. This may maintain the feelings of distress and anxiety that are destructive emotions including irrational beliefs that negatively affect individual's adaptation to the new situation, and facilitate the occurrence of PTS.

Regarding the factors predicting the three domains of posttraumatic stress, namely intrusion, avoidance, and hyperarousal, the results of the current study showed that neuroticism was a positive associate of both intrusion and hyperarousal domains. However, in both regression analyses conducted separately for intrusion and hyperarousal, neuroticism was no longer significant when helplessness coping was entered into the regression equation. In other words, individuals with neurotic personality tended to use helplessness coping in order to deal with the negative effects of the accident; but helplessness coping seems to be a maladaptive strategy since rather than helping individuals to cope with the trauma it facilitated an ongoing distress about the accident. On the other hand, none of the personality characteristics predicted the avoidance domain of PTS. Meaning that the avoidance cluster of PTS is not related to personality characteristics. As Goral, Kesimci, and Gencoz (2006) found, avoidance responses increased as the controllability of the event decreased. Accordingly, traffic accidents are among potential traumatic events that are perceived as uncontrollable once they occur and producing distress on individuals. Regarding negative valence, as Gencoz and Oncul (2012) described, negative valence was negative self-attributions characterized by submissively accepting the situation and avoiding struggling. In the present study, negative valence was negatively associated with intrusion and hyperarousal domains of PTS. In the regression analysis conducted for the hyperarousal domain, with the entrance of intrusive rumination, negative valence was no longer significant; however, when all the variables of the study were in the regression equation, negative valence still negatively predicted the intrusion domain of PTS. Intrusion domain includes reactions shown to adapt to the new situation creating distress; however, individuals with negative valence might tend to accept the event with its negative

aspects rather than attempting to cope with them. Therefore, individuals low in negative valence scores may show more intrusion following traffic accidents. Regarding the three domains of PTS, namely intrusion, avoidance, and hyperarousal, the findings of the current study showed that avoidance domain seems to be a different component that may be regarded by the participants as an adaptive coping strategy. In the light of all these findings, Hypothesis 2 (Different factors will predict each of the three domains of PTS) of the present study was supported.

In the present study, helplessness coping positively predicted all three domains of PTS, namely intrusion, avoidance, and hyperarousal. The relationship of helplessness coping with PTS was discussed in the mediation findings on PTS. In addition to helplessness coping, fatalistic coping was also positively associated with the avoidance domain of PTS. Attributing the event to an outer and uncontrollable source such as the God, accepting the event as it is, and a sense of external locus of control are related features of fatalistic coping. In the short term, passively accepting the event and its negative effects may serve to decrease the distress level and psychological burden of the individual, however it is not effective in the long term. Due to the fact that the participants of the current study used avoidance domain of PTS as a coping strategy, fatalistic coping also served to ignore the experience of the accident and its negative effects, in other words to avoid the situation.

In regards to ruminations, the findings of the analyses on PTS domains were in agreement with the findings on overall PTS score and they showed that intrusive rumination was positively associated with both intrusion and hyperarousal domains. However, according to the findings, there was no association between intrusive rumination and avoidance domain of PTS. This result may be related to the fact that ruminative thought serves as the appraisal of the event, but individuals with the tendency to avoid traumatic event in order to cope with the negative effects of the accident do not need to attribute a meaning to the event thus they do not ruminate on the accident. Because of the fact that the participants of the study may have considered the avoidance domain of PTS as an adaptive coping that serves to reduce the distress and facilitate the adjustment

following accident in the short run, they may disregard the ruminative thoughts about accident. Therefore, they may be using avoidance as a coping strategy and delay the processing and meaning making of the trauma.

The results of the analyses conducted to examine the factors associated with PTS and the nature of their relationship have been discussed and most of these findings were supported by the literature. As it was mentioned before, understanding the factors, which were related to PTG, and the nature of their relationship, was another purpose of the current study. Thus, in the next part, the results of the analyses on PTG will be discussed in relation to the hypotheses of the present study and literature findings.

### 4.1.2 Posttraumatic Growth and Five Domains of PTG

Posttraumatic growth (PTG) was defined as positive psychological change experienced as a result of the struggle with highly challenging life events (Tedeschi & Calhoun, 1995). In the current study, an overall PTG score was measured by Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) including five domains, namely new possibilities, spiritual change, relating to others, personal strength, and appreciation of life. One of the purposes of the current study was to investigate the factors associated with PTG and all of the five domains. These factors were examined based on the Model of Life Crisis and Personal Growth (Schaefer & Moos, 1992) by conducting a series of hierarchical multiple regression analyses.

Personal system resources (gender, perceived social support, and personality characteristics (extraversion, conscientiousness, agreeableness, openness to experience, negative valence, and neuroticism); environmental system resources (income); event related variables such as perceived severity and timing of the event, and being driver or passenger during the accident; cognitive appraisals (intrusive and deliberate ruminations); and coping mechanisms (problem solving, helplessness, fatalistic, and seeking support coping) were examined in order to understand their relationship with posttraumatic growth and all its five domains on survivors of traffic accidents.

The findings of the present study showed that income level, being a passenger during the accident, perceived social support, agreeableness, perceived severity of the accident, problem solving coping and deliberate rumination, all positively predicted PTG. However, when all variables were in the regression equation, only perceived severity of the accident, problem solving coping, and deliberate rumination were significantly associated with PTG.

Regarding personality characteristics, the findings of the present study showed a positive association between agreeableness and PTG. On the other hand, with the entrance of problem solving coping into the regression equation, agreeableness lost its statistical significance. In other words, problem solving coping contributed more than agreeableness to explain the variance of PTG. With the aim of understanding the nature of this relationship, mediation analysis was conducted and the results showed that problem solving coping and deliberate rumination had a mediator role on the relationship between agreeableness and PTG. As a personality trait, agreeableness was characterized by tolerance to frustration, more developed adaptability skills, and a sense of self control (Gencoz & Oncul, 2012). Furthermore, as Tedeschi & Calhoun (1996) indicated, a feeling of control was positively related to problem solving coping, which was also related to PTG (Sheikh, 2008). Accordingly, in the present study, agreeable individuals might perceive the accident and its effects as controllable and then this sense of controllability helped them to actively cope with the negative effects of the accident. This problem solving approach might help them to reappraise the accident deliberately in a more objective and positive manner leading to an enhanced self-esteem and self-efficacy (Sheikh, 2008) and also fostering the belief that the individual is able to struggle with the accident and to deal with future possible negative circumstances. Therefore, more long-term personal growth and meaning making of the accident might be facilitated.

The findings on the mediation analyses in PTG revealed that Hypothesis 7 (Coping and rumination will mediate the relationship between PTG and personality) of the present study was supported.

Post trauma variables are appraisals and coping responses that follow the experience of traumatic events. Coping responses are important factors that

facilitate or complicate the adaptation of individuals to highly stressful circumstances (Lazarus & Folkman, 1984; Schaefer & Moos, 1992). Accordingly, Tedeschi and Calhoun (2004) emphasized the importance of the process of struggling with trauma rather than trauma itself, thus they also stressed the importance of coping mechanisms. The Model of Life Crises and Personal Growth (Schaefer & Moos, 1992) covered the coping mechanisms as post trauma factors which are important in facilitating positive outcomes following traumatic experiences. In the present study, the results of the regression analysis conducted for PTG showed that problem solving coping was positively related to PTG. Because of the fact that problem solving coping is a coping strategy that focuses directly on the problem in order to deal with it by taking some actions, individuals using this type of coping are ready to take the initiative to deal with the negative consequences of trauma.

Regarding ruminations, the results of the present study showed that deliberate rumination was significantly related to PTG and all of its five domains such as new possibilities, spiritual change, relating to others, personal strength, and appreciation of life. As Cann et al. (2011) defined the term deliberate rumination as a purposeful rumination aiming to understand the meaning and consequences of the event. Regarding the current study, a traffic accident perceived as a traumatic event, violates the existing cognitive schemas of individuals about themselves and the world. This violation is painful for the individuals because of disrupting their balance, therefore they tend to reappraise the situation in order to acquire a new balance and relieve pain. Therefore, they have the opportunity to find benefits of the accident, rebuild their core beliefs and assumptive world, which leads to personal growth.

In regard to event related variables, similar to the findings on PTS, perceived severity of the event was also consistently and positively associated with PTG and all its five domains namely new possibilities, spiritual change, relating to others, personal strength, and appreciation of life. As depicted in the Model of Life Crisis and Personal Growth (Schaefer & Moos, 1992), perceived severity of the event is an event related factor producing perception of danger to the physical and psychological integrity of the individual. This is in agreement

with Tedeschi and Calhoun's (2004) assertion that the more strong the event is the more need there is to process and thus to arrive at meaning and growth.

In the light of all these findings, Hypothesis 4 (After controlling for the effect of gender, income, being driver or passenger during the accident, and perceived social support; personality variables, perceived severity of the accident, coping, and rumination will predict (i.e. explain a significant variance) PTG scores and all of the five domains) of the present study was supported.

Regarding the factors predicting the five domains of PTG, namely new possibilities, spiritual change, relating to others, personal strength, and appreciation of life, the results of the present study showed that agreeableness was a positive associate of new possibilities and appreciation of life domains. These findings were supported by the findings in the literature showing that agreeableness was positively related to appreciation of life domain on trauma survivors (Karanci et al., 2012; Wang et al., 2013). As these findings showed, agreeable individuals are more apt to tolerate the frustration, they have an increased sense of control, and trust, and therefore they may perceive the accident as an experience that they can cope with by searching resources to deal with negative effects of the accident. Moreover, since they are compliant individuals they may be more prone to become aware of the positive sides and appreciate the value of their lives, in other words they tend to appreciate their life and realize new possibilities in the aftermath of accident.

Regarding coping mechanisms, the findings showed that problem solving coping was a positive associate of new possibilities, relating to others, personal strength, and appreciation of life domains. Furthermore, fatalistic coping was significantly related to spiritual change and personal strength domains. As it was mentioned before, fatalistic coping is a passive and emotion focused coping strategy that can facilitate the occurrence of PTS; however, the passive stance of individuals using fatalistic coping in face of negative effects of trauma may be related to high external locus of control. Although external locus of control was linked to posttraumatic stress in the literature, in Turkish culture religious beliefs and trusting the God are very important concepts facilitating coping. Moreover, it is believed that taking some necessary actions is needed to deserve the God's help

in order to deal with negative life events. Therefore, in the present study, fatalistic coping might serve to regulate the negative emotions that resulted from the accident and facilitate the acceptance of the accident and its effects as they are. This acceptance of the accident and need for the help of the God, might serve to facilitate positive spiritual changes and a sense of personal strength for possible future negative life events.

In terms of PTG domains, the results of the present study showed that the factor related to the five domains of PTG differed especially in spiritual change domain. Spiritual change domain, in addition to fatalistic coping, was predicted also by deliberate rumination. Therefore, spiritual change, although it includes a fatalistic coping, which is less active coping strategy than problem solving coping, also includes an active and deliberate process of rumination serving to actively appraise the situation and finding meaning of the accident. This finding supported the idea that in the Turkish culture it is necessary to take some action to deserve the God's help.

All these findings revealed that Hypothesis 5 (Different factors will predict each of the five domains of PTG) of the study was supported.

### 4.1.3 The Effects of Change in Positive Driver Behaviors on PTG

As Hobfoll (1989) suggested in the Conservation of Resources (COR) Theory, in order to report a real, positive, and more constructive adaptation to traumatic experiences and their effects, a transition process from cognitions to action is necessary. This process was called as "action based growth". The need for a shift from growth cognitions to growth actions emerged from the findings on the illusory side of PTG (Taylor, 1983; Taylor & Aymor, 1996; Maercker & Zoellner, 2004; Zoellner & Maercker, 2006). In the literature, it was proposed that illusory side of PTG is a perception of growth that is not real and serves to balance negative emotions that individuals are unable to cope with. Therefore, these distorted positive illusions of growth decrease the distress level following trauma, however they are ineffective to promote a real and permanent growth in the long run.

In the present study, in order to examine the role of action on the growth process and to test Hypothesis 6 (The changes in positive driver behaviors as a result of the accident, for the drivers sample will positively predict PTG and will augment the explained variance of the model), data including 187 active driver survivors of traffic accident were entered into hierarchical regression analysis. The variable of changes in the positive driver behaviors was entered into the regression equation in the last step of the regression. The findings showed that perceived social support, agreeableness, perceived severity of the accident, problem solving coping, deliberate rumination, fatalistic coping, and changes in the positive driver behaviors were positive associates of PTG. However, with all variables in the regression equation, only perceived severity of the accident, problem solving coping, deliberate rumination, fatalistic coping, and changes in the positive driver behaviors remained significant. As Hobfoll et al. (2007) proposed, some action and active problem solving coping strategies have a crucial role on the development of a real and permanent PTG. In the present study, after all the variables predicting PTG were entered, still the changes in the positive driver behaviors significantly contributed to the explained variance in PTG. This finding emphasizes the crucial role of action rather than only cognitions, severity of accident and coping on the development of growth following an accident. The power of the changes in the positive driver behaviors of survivors emphasized the importance of action in the growth process following traffic accidents. Driver survivors with their negative experience in mind also tended to change their driving behaviors in a positive direction. This is a sign of a real positive adaptation due to the fact that it also accompanied deliberate rumination and problem solving coping strategies. The translation from growth cognitions to growth actions is beneficial to report a real PTG, since taking action restores the sense of control and feelings of competence. The experience of trauma shattered the beliefs about the self, world, and others, thus taking some action will restore the belief that one can handle the negative sides of the accident and is able to protect oneself and loved ones. In other words, accident survivors may actualize their growth cognitions, either illusory or real, through changes in the positive driver behaviors. These findings gave the opportunity to develop new programs

aiming to support PTG by motivating traffic accident survivors to take some action as well as deliberately ruminating and coping with the accident.

Furthermore, a mediation analysis was performed in order to test whether change in the positive driver behavior has a mediator role on the relationship between personality and PTG. The results of the mediation analysis showed that changes in the positive driver behaviors of accident survivors mediated the relationship between agreeableness and PTG. Therefore Hypothesis 8 (Changes in the positive driver behaviors as a result of the accident will mediate the relationship between PTG and personality) of the current study was supported. This finding is in agreement with another finding of the present study showing the mediator role of problem solving coping and deliberate rumination on the relationship between agreeableness and PTG. In other words, both problem solving coping and deliberate rumination are post event processes including active efforts to adjust to the accident, similarly changes in the positive driver behaviors also resulted from a purposeful effort to change the driving behaviors in a positive way. Since agreeable individuals are more adaptive to new situations, they are also more likely to change their behaviors in order to eliminate the risk of re-experiencing a traffic accident. Similar to the findings of the regression analysis, this finding was also important in terms of revealing the role of action in the growth process of traffic accident survivors as depicted by Hobfoll et al. (2007).

The findings of the present study on PTS and PTG were discussed in this section. In terms of factors related to PTS and PTG, perceived severity of the accident was positively related to both dependent variables and all their domains. Severity perception may shake the basic assumptions of the individual about the world and increase both the distress reactions and growth following the accident (Tedeschi & Calhoun, 2004). The factors associated with PTS and PTG differed in terms of personality characteristics and event related ruminations. While neuroticism and intrusive rumination were positively related to PTS; agreeableness and deliberate rumination were positive associates of PTG. Intrusive and deliberate types of rumination differ in terms of the motivational factors. In other words, neuroticism is a personality trait related to feelings of anxiety, whereas agreeableness is related to adaptiveness and frustration tolerance.

Furthermore, intrusive rumination is an unintentional focus on negative effects of the accident and symptoms of distress therefore was related to PTS; however deliberate rumination is composed of controlled thoughts aiming to meaning making about the event and solve the problem, therefore it was related to PTG.

## 4.2 Strengths and Clinical Implications of the Current Study

The positive and negative effects of various traumatic events on survivors are frequently studied in the psychology literature. Especially posttraumatic stress that results from the experience of traffic accidents was frequently examined in the literature. However, psychological growth in the aftermath of traffic accidents is a relatively rarer topic studied in the literature. Understanding the factors related to positive outcomes of traffic accidents becomes crucial in order to support psychological health of accident survivors by assisting their awareness about the positive sides of the accident through psychotherapy or training processes.

In the light of comprehensive models such as the Model of Life Crisis and Personal Growth (Schaefer & Moos, 1992), the Multivariate Risk Factor Model (Freedy et al., 1993), and COR Theory (Hobfoll, 1989), the present study led to a better understanding of the factors explaining the occurrence of PTG as well as PTS. Neurotic personality, perceived severity of the accident, helplessness coping and intrusive rumination were the associates of PTS; whereas, agreeable personality, perceived severity of the accident, problem solving coping, and deliberate rumination were the factors related to PTG. These findings of the current study especially those related to PTG are also beneficial for developing an intervention manual to provide support for traffic accident survivors and teaching them how to better adapt to the experience of accident by fostering the use of effective coping and rumination strategies. In the intervention programs aiming to support accident survivors, it can be more beneficial to teach them firstly to take an action so to drive more safely due to the fact that the presence of action might facilitate a true personal growth following trauma.

The findings of the current study demonstrated that helplessness and problem solving approaches were related to PTS and PTG, respectively. In order to increase PTG and decrease PTS, developing specific training programs and manuals for traffic accident survivors that aim to encourage the use of problem solving coping including accident specific coping behaviors and some active behavioral changes as well as voluntary cognitive processes such as enforcing deliberate ruminations rather than intrusive ruminations about the accident is important.

In psychotherapy process, in order to support psychological health of the survivors, it is very important to clearly understand the experience of traffic accident and the meaning of it for the individual. Clinicians working with survivors of traffic accidents may focus on supporting volunteer and active appraisals and coping mechanisms in the aftermath of accidents. Since, this may increase the opportunity to take action while showing some cognitive changes to cope with the event. Moreover, listening to survivors' growth experiences such as the changes in their sense of self, the world, and their relationships and supporting them to become aware of these positive changes may foster the development of PTG. Furthermore, discussing differences between pre accident and post accident perceptions of survivors about their coping strategies, sense of self efficacy, may emphasize the positive adaptation and support personal growth following accident. In the psychotherapy process, it is also very important not to force the individual to become aware of positive outcomes of the event but to allow them to realize the benefits of their coping process such as increased self efficacy, self confidence, and sense of control. It is also beneficial that the clinicians listen to their patients in order to just understand the accident, its psychological effects on the individual and the feelings that resulted from the experience of the accident by being a facilitator of the adaptation and growth process rather than trying to solve the problem as an expert. This may give the clients trust and the sense of being understood by the clinician. In addition, clinician's belief on the possibility of personal growth following trauma is crucial in the process of psychotherapy. Accordingly, the findings of the present study can be used in psychotherapy process and specific training programs addressing traffic accident survivors, to

support the positive changes following the accident.

Furthermore, the findings of the present study are important in terms of emphasizing the importance of focusing on the aim of increasing positive driving behaviors rather than decreasing negative ones. Therefore, conducting more research in order to understand the most effective way on making survivors drive more safely on the traffic might be beneficial. Therefore, this information can be used in psychotherapy process and specific training programs addressing traffic accident survivors, to support the changes in positive driver behaviors.

Moreover, the findings of the current study provided information about the nature of the relationship between personality traits, and PTS and PTG by means of mediation analyses. Due to the findings of these analyses, the importance of post trauma variables was delineated. Putting forward the appraisals and coping strategies is very important in order to develop successful interventions for accident survivors.

Besides several strengths and clinical implications of the current study, limitations of the current study and directions for future research will be discussed in the following section.

### 4.3 Limitations of the Current Study and Directions for Future Research

Regarding the limitations of the current study, self-report method was used in order to collect the data. This method increases the risk of self-report bias. Therefore, the reliability of participants' answers to some of the items, like accident severity, needs to be questioned.

Another limitation of the current study is that Survey Monkey method was used to reach the participants. Due to the fact that Survey Monkey is available on the web, only individuals from higher education levels are likely to provide responses, which may produce a biased sample. Therefore, a problem of representativeness and generalizability of the findings to the general population arises. Future studies can involve a variety of participants from different socio-economic status, for instance drivers of commercial vehicles, and participants who have no Internet access.

Another limitation of the present study is the use of cross sectional design. Because of the fact that posttraumatic stress and posttraumatic growth are both time evolving processes, future longitudinal research studies are needed to provide information about the effect of time elapsed since the accident.

## REFERENCES


Ai, A. L., Tice, T. N., Whitsett, D. D., Ishisaka, T., & Chim, M. (2007). *The Journal of Positive Psychology, 2*(1), 55-65.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders, fifth edition.* Washington, DC: London, England.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders, fourth edition, text revision.* Washington, DC: American Psychiatric Association.

Amir M, Kaplan Z, Efroni R, Levine Y, Benjamin J, Kotler M. (1997). Coping styles in post-traumatic stress disorder (PTSD) patients. *Journal of Personality and Individual Differences, 23*, 399-405.

Blanchard, E. B., Hickling, E. J., Mitnick, N., Taylor, A. E., Loos, W. R., & Buckley, T. C. (1995). The impact of severity of physical injury and perception of life threat in the development of post-traumatic stress disorder in motor vehicle accident victims. *Journal of Behaviour Research and Therapy, 33*(5), 529-534.

Blanchard, E.B. & Hickling, E. J. (1998). *After the Crash.* Washington, DC: American Psychological Association.

Bosson, Kelley, Jones, (2012). Deliberate cognitive processing mediates the relation between positive religious coping and posttraumatic growth. *Journal of Loss and Trauma, 17,* 439-451.

Breslau, N., Davis, G. C., Andreski, P., & Peterson, E. (1991). Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Archives of General Psychiatry, 48*(3), 216-222.

Bryant, R. A., & Harvey, A. G. (1995). Avoidant coping style and post-traumatic stress following motor vehicle accidents. *Behavior Research Theory, 33*(6), 631-635.

Butler, L. D., Blasey, C. M., Garlan, R. W., McCaslin, S. E., Azarow, J., Chen, X., Desjardins, J. C., DiMiceli, S., Seagraves, D. A., Hastings, T. A., Kraemer, H. C., & Speigel, D. (2005). Posttraumatic growth following the terrorist attacks of September 11, 2001: Cognitive, coping, and trauma symptom predictors in an Internet convenience sample. *Traumatology, 11*(4)*,* 247-267.

Cann, A., Calhoun, L. G., Tedeschi, R. G., & Solomon, D. T. (2010). Posttraumatic Growth and Depreciation as Independent Experiences and Predictors of Well-Being. *Journal of Loss and Trauma*, *15*(3), 151-166.

Cann, A., Calhoun, L. G., Tedeschi, R. G., Triplett, K. N., Vishnevsky, T., & Lindstrom, C. M. (2011). Assessing posttraumatic cognitive processes: the Event Related Rumination Inventory. *Anxiety, stress, and coping*, *24*(2), 137–56.

Caska, C. M., Renshaw, K. D. (2013). Personality traits as moderators of the associations between deployment experiences and PTSD symptoms in OEF/OIF service members. *Anxiety, Stress, and Coping, 26(1),* 36-51.

Clohessy, S., & Ehlers, A. (1999). PTSD symptoms, response to intrusive memories and coping in ambulance serviceworkers. *British Journal of Clinical Psychology, 38*(3), 251-265.

Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H. & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin, 127*, 87–127.

Çalışır, M., Tüzün, Z., Piri, S., Cann, A., Tedeschi, R., Calhoun, L. (hazırlık aşamasında). "Event-Related Rumination Inventory Türkçe çevirisi, geçerlilik ve güvenirlik çalışması": Doktora tez çalışması. *Doctoral Thesis in progress.* Hacettepe Üniversitesi.

Davidson, J.R.T., Hughes, D., Blazer, D.G., & George, L.K., (1991). Post-traumatic stress disorder in the community: An epidemiologic study. *Psychological medicine, 21,* 713-721.

De Vries, G. J., & Olff, M. (2009). The lifetime prevalence of traumatic events and posttraumatic stress disorder in the Netherlands. *Journal of Traumatic Stress, 22*(4), 259-267.

Dekel, R., & Hobfoll, S. E. (2007). The impact of resource loss on Holocaust survivors facing war and terrorism in Israel. *Aging and Mental Health, 11*(2), 159-162.

Dekel S., Mandl, C., & Solomon, Z. (2011). Shared and unique predictors of posttraumatic growth and distress. *Journal of Clinical Psychology, 67*(3), 241-252.

Dirik, G. (2006). *Posttraumatic growth and psychological distress among rheumatoid arthritis patients: An evaluation within the Conservation of Resources Theory.* (Unpublished doctoral thesis). Middle East Technical University, Ankara, Turkey.

Dirik, G., & Karanci, N. (2008). Variables related to posttraumatic in Turkish rheumatoid arthritis patients. *Journal of Clinical Medical Settings, 15,* 193-203.

Dong, C., Gong, S., Jiang, L., Deng, G., & Liu, X. (2015). Posttraumatic growth within the first three months after accidental injury in China: The role of self-disclosure, cognitive processing, and psychosocial resources. *Journal of Psychology, Health, and Medicine, 20*(2), 154-164.

Dörfel, D., Rabe, S., & Karl, A. (2008). Coping strategies in daily life as protective and risk factors for post traumatic stress in motor vehicle accident survivors. *Journal of Loss and Trauma, 13*(5), 422-440.

Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behavior Research and Therapy, 38,* 319-345.

Ehlers, A., Mayou, R. A., & Bryant, B. (1998). Psychological predictors of chronic posttraumatic stress disorder after motor vehicle accidents. *Journal of Abnormal Psychology, 107*(3), 508-519.

Ehring, T., Frank, S., & Ehlers, A. (2008). The role of rumination and reduced concreteness in the maintenance of posttraumatic stress disorder and depression following trauma. *Journal of Cognitive Theory and Research, 32,* 488-506.

Eker, D., & Arkar, H. (1995). Çok boyutlu algılanan sosyal destek ölçeği'nin faktör yapısı, geçerlik ve güvenirliği. *Türk Psikoloji Dergisi, 10*(34), 45-55.

Eker, D., Arkar, H. & Yaldız, H. (2001). Çok Boyutlu Algılanan Sosyal Destek Ölçeği'nin Gözden Geçirilmiş Formunun faktör yapısı, geçerlik ve güvenirliği. *Türk Psikiyatri Dergisi, 12* (1), 17-25.

Evers, A. W. M., Kraaimaat, F. W., Van Lankveld, W., Jongen, P. J. H., Jacobs, J. W. G., & Bijlsma, J. W. J. (2001). Beyond unfavorable thinking: The illness cognition questionnaire or chronic diseases. *Journal of Consultation and Clinical Psychology*, *69 (6),* 1026–1036.

Feder, A., Southwick, S. M., Goetz, R. R., Wang, Y., Alonso, A., Smith, B. W., Buchholz, K.R., Waldeck, T., Ameli, R., Moore, J., Hain, R., Charney, D. S., & Vythilingam, M. (2008). Posttraumatic growth in former Vietnam prisoners of war. *Psychiatry, 71*(4), 359-370.

Folkman S. & Lazarus, R. S. (1980). An analysis of coping in a Middle-aged community sample. *Journal of Health and Social Behavior, 21,* 219-239.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of college examination. *Journal of Personality & Social Psychology, 48*, 150–170.

Freedy, J. R., & Hobfoll, S. E. (1995). *Traumatic Stress. From Theory to Practice.* Plenum Press: New York and London.

Frommberger, U. H., Stieglitz, R., Nyberg, E., Schlickewei, W., Kuner, E., & Berge, M. (1998). Prediction of posttraumatic stress disorder by immediate reactions to trauma : a prospective study in road traffic accident victims. *European Archieves of Psychiatry and Clinical Neuroscience,* 316-321.

Fullerton, C. S., Ursano, R. J., Epstein, R. S., Crowley, B., Vance, K., Kao, T. C., Dougall, A., & Baum, A. (2001). Gender differences in posttraumatic stress disorder after motor vehicle accidents. *American Journal of Psychiatry, 158*(9), 1486-1491.

Garnefski, N., Kraaij, V., & Schroevers, M. (2008). Post-traumatic growth after a myocardial infarction: a matter of personality, psychological health, or cognitive coping. *Journal of Clinical Psychology in Medical Settings, 15,* 270-277.

Gençöz, T., & Öncül, Ö. (2012). Examination of personality characteristics in a Turkish sample: Development of Basic Personality Traits Inventory. *The Journal of General Psychology, 139*(3), 194-216.

Ginzburg, K., Solomon, Z., & Bleich, A. (2002). Repressive coping style, acute stress disorder, and posttraumatic stress disorder after myocardial infarction. *Psychosomatic Medicine, 64*(5), 748-757.

Grieger, T. A., Cozza, S. J., & Ursano, R. J., Hoge, C., Martinez, P. E., Engel, C. C., & Wain, H. J. (2006). Posttraumatic stress disorder and depression in battle-injured soldiers. *American Journal of Psychiatry, 163*, 1777-1783.

Gül, E. (2014). *Prevalence rates of traumatic events, probable PTSD and predictors of posttraumatic stress and growth in a community sample from Izmir.* (Unpublished doctoral thesis). Middle East Technical University, Ankara, Turkey.

Harms, L., & Talbot, M. (2007). The aftermath of road trauma: Survivors' perceptions of trauma and growth. *Journal of Health and Social Work, 32*(2), 129-137.

Harvey, A. G., & Bryant, R. A. (1999). Predictors of acute stress following motor vehicle accidents. *Journal of Traumatic Stress, 12*(3), 519-525.

Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach.* New York: The Guilford Press.

Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology, 74*(5), 797-816.

Herman, J. (1992). *Trauma and recovery.* New York: Basic Books.

Heron-Delaney, M., Kenardy, J., Charlton, E., & Marsuoka, Y. (2013). A systematic review of predictors of posttraumatic stress disorder (PTSD) for adult road traffic crash survivors. *Injury, International Journal of The Care of The Injured, 44,* 1413-1422.

Hobfoll, S. E. (1989). Conservation of Resources. A new attempt at conceptualizing stress. *American Psychologist, 44(3)*, 513-524.

Hobfoll, S.E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review, 50*(3), 337-421.

Hobfoll, S. E., Hall, B. J., Canetti-Nisim, D., Galea, S., Johnson, R. J., & Palmieri, P. A. (2007). Refining our understanding of traumatic growth in the face of terrorism: Moving from meaning cognitions to doing what is meaningful. *Applied Psychology, 56*(3), 345-356.

Hobfoll, S. E., Canetti-Nisim, D., Johnson, R. J., Palmieri, P. A., Varley, J. D., & Galea, S. (2008). The association of exposure, risk, and resiliency factors with PTSD among Jews and Arabs exposed to repeated acts of terrorism in Israel. *Journal of Traumatic Stress, 21*(1), 9-21.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of event scale: a measure of subjective stress. Journal of *Psychosomatic Medicine, 41*, 209-218.

Işıklı, S. (2006). Travma Sonrası Stres Belirtileri Olan Bireylerde Olaya İlişkin Dikkat Yanlılığı, Ayrışma Düzeyi ve Çalışma Belleği Uzamı Arasındaki İlişkiler. (Yayınlanmamış doktora tezi). Hacettepe Üniversitesi Psikoloji Bölümü, Ankara, Türkiye.

Iteke, O., Bakare, M. O., Agomoh, A. O., Uwakwe, R., & Onwukwe, J. U. (2011). Road traffic accidents and posttraumatic stress disorder in an orthopedic setting in south-eastern Nigeria: a controlled study. *Scandinavian Journal of Trauma, Resuscitation, and Emergency Medicine. 19*(39), 1-6.

Jakšić, N., Brajković, L., Ivezić, E., Topić, R., & Jakovljević, M. (2012). The role of personality traits in posttraumatic stress disorder (PTSD). *Psychiatria Danubina, 24*(3), 256-266.

Jang, L-J. (2006). *The 921 earthquake: A study of the effects of Taiwanese cultural factors on resilience*. Unpublished Doctorate Thesis: University of Denver.

Janoff-Bulman, R. (1992). *Shattered assumptions*. New York: The Free Press.

Jensen, T. K., Thoresen, S., & Dyb, G. (2015). Coping responses in the midst of terror: the July 22 terror attack at Utoya Island in Norvay. *Scandinavian Journal of Psychology, 56*(1), 45-52.

Johnson, R. J., Hobfoll, S. E., Hall, B. J., Canetti-Nisim, D., Galea, S., & Palmieri, P. A. (2007). Response posttraumatic growth: Action and reaction. *Applied Psychology: An International Review, 56*(3), 428-436.

Joseph, S., & Linley, P. A. (Eds.) (2008). *Trauma, Recovery, and Growth: Positive Psychological Perspectives on Posttraumatic Stress*. Hoboken, NJ: John Wiley.

Karanci, A. N., Aker, A. T., Işıklı, S. (2009). Yetişkinlerde travmatik olay yaşama yaygınlığı, travma sonrası stres bozukluğu ve travma sonrası gelişimin değerlendirmesi: Ankara Örneklemi, 15. Ulusal Psikoloji Kongresi, İstanbul.

Karanci, A. N., Aker, A. T., Işıklı, S., Erkan, B. B., Gül, E., & Yavuz, H. (2012). *Türkiye'de Travmatik Yaşam Olayları ve Ruhsal Etkileri.* Ankara: Matus Basımevi.

Karanci, A. N., Alkan, N., Aksit, B., Sucuoglu, H., & Balta, E. (1999). Gender differences in psychological distress, coping, social support and related variables following the 1995 Dinar (Turkey) earthquake. *North American Journal of Psychology, 1*(2), 189-204.

Karanci, A. N., Işıklı, S., Aker, A. T., Gül, E. I., Erkan, B. B., Özkol, H. & Güzel, H. Y. (2012). Personality, posttraumatic stress and trauma type: factors contributing to posttraumatic growth and its domains in a Turkish community sample. *European Journal of Psychotraumatology, 3*.

Kesimci (2003). *Perceived social support, coping strategies and stress-related growth as predictors of depression and hopelessness in breast cancer patient. (Unpublished doctoral thesis)*. Middle East Technical University, Ankara, Turkey.

Kesimci, A., Göral, F. S., & Gençöz, T. (2005). Determinants of stress-related growth: gender, stressfulness of the event, and coping strategies. *Current Psychology: Developmental • Learning • Personality • Social, 24*(1), 68-75.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry, 52*(12), 1048-1060.

Kılıç, C. (2005). *"Post-traumatic growth and its predictors*", Paper presented at The IV$^{th}$ International Psychological Trauma Meeting, Istanbul, Turkey.

Lazarus, R. S. & Folkman, S. (1984). *Stress, Appraisal and Coping.* New York: Springer.

Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17*(1), 11-21.

Lucas, J. L. (2003). Drivers' psychological and physical reactions after motor vehicle accidents. *Transportation Research Part F, 6*, 135-145.

Malt, U. F., Hoivik, B., & Blikra, G. (1993). Psychosocial consequences of road accidents. *Europeen Psychiatry, 8,* 227-228.

Maercker, A., & Zoellner, T. (2004). The Janus face of self-perceived growth: Toward a two-component model of posttraumatic growth. *Psychological Inquiry, 15*, 41-48.

Mayou, R., Bryant, B., & Duthie, R. (1993). Psychiatric consequences of road traffic accidents. *British Medical Journal, 307*, 647–651.

Mayou, R. A., Ehlers, A., & Bryant, B. (2002). Posttraumatic stress disorder after motor vehicle accidents: 3-year follow-up of a prospective longitudinal study. *Journal of Behaviour Research and Therapy, 40,* 665-675.

McFarlane, A. C., Atchison, M., & Yehuda, R. (1997). The acute stress response following motor vehicle accidents and its relation to PTSD. *Annals of the New York Academy of Sciences,* 437-441.

McMillen, J.C., & Fisher, R.H. (1998). The Perceived Benefit Scales: Measuring perceived positive life changes after negative events. *Social Work Research, 22,* 173-187.

Merecz, D., Waszkowska, M., & Wezyk, A. (2012). Psychological consequences of trauma in MVA perpetrators- relationship between posttraumatic growth, PTSD symptoms and individual characteristics. *Journal of Transportation Research Part F, 15,* 565-574.

Merriem Webster Dictionary "rumination" Retrieved June, 2, 2015, from http://www.merriam-webster.com/dictionary/ruminate

Michael, T., Halligan, S. L., Clark, D. M., & Ehlers, A. (2007). Rumination in posttraumatic stress disorder. *Journal of Depression and Anxiety, 24,* 307-317.

Morris, B. A.. & Shakespeare-Finch, J. (2011). Cancer diagnostic group differences in posttraumatic growth: Accounting for age, gender, trauma severity, and distress. *Journal of Loss and Trauma, 16,* 229-242.

Murray, J., Ehlers, A., & Mayou, R. A. (2002). Dissociation and post-traumatic stress disorder: two prospective studies of road traffic accident survivors. *British Journal of Psychiatry, 180,* 363-368.

Nezu, A. M., & Carnevale, G. J. (1987). Interpersonal problem solving and coping reactions of Vietnam veterans with posttraumatic stress disorder. *Journal of Abnormal Psychology, 96*(2), 155-157.

Nolen-Hoeksema, S., McBride, A., & Larson, J. (1997). Rumination and psychological distress among bereaved partners. *Journal of Personality and Social Psychology, 72,* 855-862.

Norris, F. H. (1992). Epidemiology of trauma: frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting Clinical Psychology, 60*(3), 409-418.

Norris, F. H., Murphy, A. D., Baker, C. K., Perilla, J. L., Rodriguez, F. G., & Rodriguez, J. J. (2003). Epidemiology of trauma and posttraumatic stress disorder in Mexico. *Journal of Abnormal Psychology, 112,* 646-656.

Oltmanns, T. F., & Emery, R. E. (2007). *Abnormal Psychology*. New Jersey: Prentice Hall.

Online Etymology Dictionary, "trauma" Retrieved October, 2, 2015, from http://www.etymonline.com/index.php?term=trauma.

Özkan, T. (2006). *The regional differences between countries in traffic safety: A cross-cultural study and Turkish Case*. (Doctoral thesis). University of Helsinki, Helsinki, Finland. Retrieved from http://ethesis.helsinki.fi/julkaisut/kay/psyko/vk/ozkan/theregio.pdf on 03/10/2015.

Özkan, T., & Lajunen, T. (2005). A new addition to DBQ: Positive Driver Behaviours Scale. *Transportation Part F, 8,* 355-368.Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress- related growth. *Journal of Personality, 64*(1), 71-105.

Pat-Horenczyk, R., & Brom, D. (2007). The multiple faces of post-traumatic growth. *Apllied Psychology: An International Review, 56*(3), 379-385.

Perkonigg, A., Kessler, R. C., Storz, S., & Wittchen, H. U. (2000). Traumatic events and post-traumatic stress disorder in the community: prevalence, risk factors and comorbidity. *Journal of Acta Psychiatrica Scandinavica, 101*, 46-59.

Pietrzak, R. H., Goldstein, M. B., Malley, J. C., Rivers, A. J., & Southwick, S. M. (2010). Structure of posttraumatic stress disorder symptoms and psychosocial functioning in Veterans of Operations Enduring Freedom and Iraqi Freedom. *Journal of Psychiatry Research, 178*(2), 323-329.

Polatinsky, S., & Esprey, Y. (2000). An assessment of gender differences in the perception of benefit resulting from the loss of a child. *Journal of Traumatic Stress, 13*(4), 709-718.

Prati, G., & Pietrantoni, L. (2009). Optimism, social support, and coping strategies as factors contributing to posttraumatic growth: A meta-analysis. *Journal of Loss and Trauma, 14*, 364-388.

Reason, J., Manstead, A., Stradling, S., Baxter, J. & Campbell, K. (1990). Errors and violations on the roads: a real distinction. *Ergonomics, 33*(10), 1315-1332.

Schaefer, J. A., & Moos, R. H. (1992). In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *Posttraumatic Growth: Positive Changes in the Aftermath of Crisis.* (99-124). New Jersey: Lawrence Erlbaum Associates, Inc.

Schnyder, U., Moergeli, H., Klaghofer, R., & Buddeberg, C. (2001). Incidence and prediction of posttraumatic stress disorder symptoms in severely injured accident victims. *The American Journal of Psychiatry*, *158*(4), 594–599.

Sheikh, A. I. (2008). Posttraumatic growth in trauma survivors: Implications for practice. *Counselling Psychology Quarterly, 21*(1), 85-97.

Siva, A. N. (1991). *Infertilite'de stresle baş etme, öğrenilmiş giiçlüliik ve depresyonun incelenmesi (Coping with stress, learned powerfulness, and depression among infertile people).* (Unpublished doctoral thesis). Hacettepe University, Ankara, Turkey.

Solomon, Z., & Dekel, R. (2007). Posttraumatic stress disorder and posttraumatic growth among Israeli ex-POWs. *Journal of Traumatic Stress, 20*(3), 303-312.

Soo, H., & Sherman, K. A. (2015). Rumination, psychological distress and post-traumatic growth in women diagnosed with breast cancer. *Journal of Psycho-Oncology, 24,* 70-79.

Southwick, S. M., Morgan, C. A., & Darnell, A. (1995). Trauma-related symptoms in veterans of Operation Desert Storm: a 2-year follow-up. *American Journal of Psychiatry, 152,* 1150-1155.

Stockton, H., Hunt, N., & Joseph, S. (2011). Cognitive processing, rumination, and posttraumatic growth. *Journal of Traumatic Stress, 24*(1), 85-92.

Şenol-Durak, E. (2007). *Environmental and individual resources, perception of the event, cognitive processing and coping as factors leading to posttraumatic growth among the survivors of myocardial infarction patients and their spouses.* (Unpublished doctorate thesis). Middle East Technical University, Ankara, Turkey.

Şenol-Durak, E., Ayvasik, B. (2010). Factors associated with posttraumatic growth among myocardial infarction patients: Perceived social support, perception of the event and coping. *Journal of Clinical Psychology Medical Settings, 17,* 150-158.

Taku,K., Cann, A., Tedeschi, R. G., & Calhoun, L. G. (2009). Intrusive versus deliberate rumination in posttraumatic growth across US and Japanese samples. *Journal of Anxiety, Stress and Coping, 22*(2), 129-136.

Taylor, S. E., (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist, 38,* 1161-1173.

Taylor, S. E., & Armor, D. A. (1996). Positive illusions and coping with adversity. *Journal of Personality, 64,* 873-898.

Trafik Güvenliği Dairesi Başkanlığı (2015). *Trafik Kazaları Özeti 2014.* Trafik Güvenliği Dairesi Başkanlığı: Ankara.

Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: Growing in the aftermath of suffering.* California: Sage.

Tedeschi, R. G. & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9,* 455–471.

Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic Growth: Conceptual foundations and empirical evindence. *Journal of Psychological Inquiry, 15*(1), 1-18.

Tedeschi, R. G., Park, C., & Calhoun, L. G. (1998). *Posttraumatic growth: Positive changes in the aftermath of crisis.* New Jersey: Lawrence Erlbaum Associates.

Tolin, D. F., & Foa, E. B. (2006). Sex differences in trauma and posttraumatic stress disorder: a quantitative review of 25 years of research. *Psychological Bulletin, 132*(6), 959-992.

Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Journal of Cognitive Therapy and Research, 27,* 247-259.

Turan, M. T., Eşel, E., & Keleş, S. (2002). Motorlu araç kazası geçiren kişilerde akut stres bozukluğu semptomlarının değerlendirilmesi. 6. Gazi Psikiyatri Günleri'nde sunulmuş poster, Belek, Antalya.

Ursano, R. J., Fullerton, C. S., Epstein, R. S., Crowley, B., Kao, T. C., Vance, K., Craig, K. J., Dougall, A. L., & Baum, A. (1999). Acute and chronic posttraumatic stress disorder in motor vehicle accident victims. *The American Journal of Psychiatry, 156*(4), 589-595.

Val, E. B., Linley, P. A. (2006). Posttraumatic growth, positive changes, and negative changes in Madrid residents following the March 11, 2004, Madrid train bombings. *Journal of Loss and Trauma, 11,* 409-424.

Wang, Y, Wang, H., Wang, J., Wu, J., & Liu, X. (2013). Prevalence and predictors of posttraumatic growth in accidentally injured patients. *Journal of Clinical Psychology in Medical Settings, 20,* 3-12.

Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, *134*(2), 163-206.

Weiss, T. (2004). Correlates of posttraumatic growth in married breast cancer survivors. *Journal of Social and Clinical Psychology, 23*(5), 733-744.

Weiss, D.S., & Marmar, C.R. (1997). The Impact of Event Scale-Revised. In J. P., Wilson & T. M., Keane (Eds.), *Assessing Psychological Trauma and PTSD: A Practitioner's Handbook* (399-411). New York: Guilford Press.

Wolfe J, Keane T. M, Kaloupek D. G. (1993). Patterns of positive readjustment in Vietnam combat veterans. *Journal of Traumatic Stress*, *6*, 179-193.

World Health Organization. The 10 leading causes of death in the world, 2000 and 2012. Retrieved July, 15, 2015, from http://www.who.int/mediacentre/factsheets/fs310/en/.

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment, 52*(1), 30-41.

Zoellner, T., & Maercker, A. (2006). Posttraumatic growth in clinical psychology: A critical review and introduction of a two component model. *Clinical Psychology Review, 26,* 626-653.

Zoellner, T., Rabe, S., Karl, A., & Maercker, A. (2008). Posttraumatic growth in accident survivors: Openness and optimism as predictors of its constructive or illusory sides. *Journal of Clinical Psychology, 64*(3), 245-263.

# APPENDICES

## Appendix A: Socio-demographic Information Form

Yaşınız: Cinsiyetiniz: □ Erkek □ Kadın

Medeni Durumunuz:
□ Bekar □ Nişanlı □ Evli □ Boşanmış □ Dul

Eğitim Düzeyiniz:
□ Yok □ İlköğretim □ Lise □ Lisans □ Yüksek Lisans □ Doktora

Mesleğiniz: _____
Çalışıyor musunuz? □ Evet □ Hayır

Cevabınız hayır ise;
Ne zamandır? .... yıl .... ay

Cevabınız evet ise;
Ne zamandır? .... yıl .... ay Yaptığınız iş?

Size göre gelir seviyeniz nedir?
□ Çok Düşük □ Düşük □ Orta □ Ortanın Üstü □ Yüksek

**KAZA İLE İLGİLİ BİLGİLER**

Son 10 yıl içerisinde kaç trafik kazası geçirdiniz?

Birden fazla kaza yaşadıysanız, sizi en çok etkileyen kazanın tarihi nedir?

***(Lütfen bundan sonraki soruları bu kazayı düşünerek cevaplandırınız)***

Kazayı ne şekilde yaşadınız? ☐ Sürücü ☐ Yolcu

Kazayı geçirdiğiniz araç tipi neydi?
☐ Özel otomobil ☐Taksi ☐ Otobüs ☐ Minibüs ☐ Kamyon
☐ Diğer ***(belirtiniz)***

Kazada sizin bulunduğunuz araçtaki maddi hasar derecesi ne kadardı?
☐ Hiç ☐ Çok hafif ☐ Hafif ☐ Orta derecede ☐ Ağır ☐ Çok ağır

Kazada diğer araç/araçlardaki maddi hasar derecesi ne kadardı?
☐ Hiç ☐ Çok hafif ☐ Hafif ☐ Orta derecede ☐ Ağır ☐ Çok ağır

Kazada sizin yaralanma dereceniz ne kadardı?
☐ Hiç ☐ Çok hafif ☐ Hafif ☐ Orta derecede ☐ Ağır ☐ Çok ağır

Kazada başkaları yaralandı mı? ☐ Evet ☐ Hayır
Evet ise, kaç kişi?

Bu kişilerin yaralanma derecesi neydi? ***(Birden fazla ise, en ciddi yaralanan kişi için doldurunuz)***
☐ Hiç ☐ Çok hafif ☐ Hafif ☐ Orta derecede ☐ Ağır ☐ Çok ağır

Kazada ölen oldu mu? ☐ Evet ☐ Hayır

Cevabınız evet ise;

Ölen kişi sayısı kaçtı?

Ölenler arasında akrabanız/ arkadaşınız/ yakınınız var mıydı? ☐ Evet ☐ Hayır

Kaza sırasında sizin veya başkasının öleceği aklınıza ne kadar geldi?
☐ Hiç ☐ Çok az ☐ Oldukça ☐ Fazla ☐ Çok fazla

Kaza sırasında ne kadar korktunuz ya da dehşet duygusuna kapıldınız?
☐ Hiç ☐ Çok az ☐ Oldukça ☐ Fazla ☐ Çok fazla

Kaza sırasında hissettiğiniz çaresizlik ne kadardı?
☐ Hiç ☐ Çok az ☐ Oldukça ☐ Fazla ☐ Çok fazla

Kazadan sonra fiziksel bir tedavi gördünüz mü? ☐ Evet ☐ Hayır

Kazadan sonra psikolojik tedavi gördünüz mü? ☐ Evet ☐ Hayır

İyileşme süreciniz ne kadar sürdü? ….. sene ….. ay …..gün

Kazanın sizde bırakmış olduğu rahatsızlık ne kadardı?
☐ Hiç ☐ Çok hafif ☐ Hafif ☐ Orta derecede ☐ Ağır ☐ Çok ağır

## Appendix B: Basic Personality Traits Inventory (BPTI)

Aşağıda size uyan ya da uymayan pek çok kişilik özelliği bulunmaktadır. Bu özelliklerden her birinin sizin için ne kadar uygun olduğunu ilgili rakamı daire içine alarak belirtiniz.

**Örneğin;**

**Kendimi ..... biri olarak görüyorum.**

| Hiç uygun değil | Uygun değil | Kararsızım | Uygun | Çok uygun |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

| | | Hiç uygun değil | Uygun değil | Kararsızım | Uygun | Çok uygun |
|---|---|---|---|---|---|---|
| 1 | Aceleci | 1 | 2 | 3 | 4 | 5 |
| 2 | Yapmacık | 1 | 2 | 3 | 4 | 5 |
| 3 | Duyarlı | 1 | 2 | 3 | 4 | 5 |
| 4 | Konuşkan | 1 | 2 | 3 | 4 | 5 |
| 5 | Kendine güvenen | 1 | 2 | 3 | 4 | 5 |
| 6 | Soğuk | 1 | 2 | 3 | 4 | 5 |
| 7 | Utangaç | 1 | 2 | 3 | 4 | 5 |
| 8 | Paylaşımcı | 1 | 2 | 3 | 4 | 5 |
| 9 | Geniş / rahat | 1 | 2 | 3 | 4 | 5 |
| 10 | Cesur | 1 | 2 | 3 | 4 | 5 |
| 11 | Agresif(Saldırgan) | 1 | 2 | 3 | 4 | 5 |
| 12 | Çalışkan | 1 | 2 | 3 | 4 | 5 |
| 13 | İçten pazarlıklı | 1 | 2 | 3 | 4 | 5 |
| 14 | Girişken | 1 | 2 | 3 | 4 | 5 |
| 15 | İyi niyetli | 1 | 2 | 3 | 4 | 5 |
| 16 | İçten | 1 | 2 | 3 | 4 | 5 |
| 17 | Kendinden emin | 1 | 2 | 3 | 4 | 5 |
| 18 | Huysuz | 1 | 2 | 3 | 4 | 5 |
| 19 | Yardımsever | 1 | 2 | 3 | 4 | 5 |
| 20 | Kabiliyetli | 1 | 2 | 3 | 4 | 5 |
| 21 | Üşengeç | 1 | 2 | 3 | 4 | 5 |
| 22 | Sorumsuz | 1 | 2 | 3 | 4 | 5 |
| 23 | Sevecen | 1 | 2 | 3 | 4 | 5 |
| 24 | Pasif | 1 | 2 | 3 | 4 | 5 |
| 25 | Disiplinli | 1 | 2 | 3 | 4 | 5 |
| 26 | Açgözlü | 1 | 2 | 3 | 4 | 5 |
| 27 | Sinirli | 1 | 2 | 3 | 4 | 5 |
| 28 | Canayakın | 1 | 2 | 3 | 4 | 5 |
| 29 | Kızgın | 1 | 2 | 3 | 4 | 5 |
| 30 | Sabit fikirli | 1 | 2 | 3 | 4 | 5 |
| 31 | Görgüsüz | 1 | 2 | 3 | 4 | 5 |
| 32 | Durgun | 1 | 2 | 3 | 4 | 5 |
| 33 | Kaygılı | 1 | 2 | 3 | 4 | 5 |
| 34 | Terbiyesiz | 1 | 2 | 3 | 4 | 5 |
| 35 | Sabırsız | 1 | 2 | 3 | 4 | 5 |
| 36 | Yaratıcı (Üretken) | 1 | 2 | 3 | 4 | 5 |
| 37 | Kaprisli | 1 | 2 | 3 | 4 | 5 |
| 38 | İçine kapanık | 1 | 2 | 3 | 4 | 5 |
| 39 | Çekingen | 1 | 2 | 3 | 4 | 5 |
| 40 | Alıngan | 1 | 2 | 3 | 4 | 5 |
| 41 | Hoşgörülü | 1 | 2 | 3 | 4 | 5 |
| 42 | Düzenli | 1 | 2 | 3 | 4 | 5 |
| 43 | Titiz | 1 | 2 | 3 | 4 | 5 |
| 44 | Tedbirli | 1 | 2 | 3 | 4 | 5 |
| 45 | Azimli | 1 | 2 | 3 | 4 | 5 |

## Appendix C: Event-related Rumination Inventory (ERRI)

Yaşadığınız kazaya benzer bir yaşantıdan sonra, her zaman olmasa da, bazen insanlar, **bu deneyim hakkında düşünmeye çalışmamalarına rağmen** kendilerini onunla ilgili düşünceler içinde bulurlar. Aşağıda yer alan maddeleri **olayın hemen ardındaki haftalarda** ne sıklıkla yaşadığınızı belirtin.

| 0 | 1 | 2 | 3 |
|---|---|---|---|
| **Hiç olmadı / Hiç /Asla** | **Nadiren** | **Bazen** | **Sık sık / Sıklıkla** |

| | | | | |
|---|---|---|---|---|
| 1. İstemediğim halde olayı düşündüm. | **0** | **1** | **2** | **3** |
| 2. Olayla ilgili düşünceler aklıma geldi ve onlar hakkında düşünmeden duramadım. | **0** | **1** | **2** | **3** |
| 3. Olayla ilgili düşünceler dikkatimi dağıttı ya da beni konsantre olmaktan alıkoydu. | **0** | **1** | **2** | **3** |
| 4. Olayla ilgili görüntü ya da düşüncelerin zihnime girmesine engel olamadım. | **0** | **1** | **2** | **3** |
| 5. Olaya ait düşünceler, anılar ya da görüntüler istemesem de aklıma geldi. | **0** | **1** | **2** | **3** |
| 6. Olayla ilgili düşünceler deneyimimi yeniden yaşamama neden oldu. | **0** | **1** | **2** | **3** |
| 7. Olayı hatırlatan şeyler, yaşadığım deneyimimle ilgili düşünceleri geri getirdi. | **0** | **1** | **2** | **3** |
| 8. Kendimi otomatik olarak ne olmuş olduğu ile ilgili düşünürken buldum. | **0** | **1** | **2** | **3** |
| 9. Diğer şeyler beni, yaşadığım deneyimle ilgili düşünmeye yönlendirip durdu. | **0** | **1** | **2** | **3** |
| 10. Olayla ilgili düşünmemeye çalıştım ama düşünceleri aklımdan çıkaramadım. | **0** | **1** | **2** | **3** |

Yaşadığınız kazaya benzer bir yaşantıdan sonra, her zaman olmasa da, bazen insanlar, **özellikle ve kasıtlı olarak bu deneyim hakkında düşünerek vakit geçirirler**. Aşağıda yer alan maddeler için, **olayın hemen ardındaki haftalarda** eğer olduysa ne sıklıkla, belirtilen konular ile ilgili olarak düşünmek için özellikle vakit geçirdiğinizi belirtin.

| **0** | **1** | **2** | **3** |
|---|---|---|---|
| **Hiç olmadı / Hiç /Asla** | **Nadiren** | **Bazen** | **Sık sık / Sıklıkla** |

| | | | | |
|---|---|---|---|---|
| 1. Yaşadığım deneyimden anlam bulup bulamayacağımla ilgili düşündüm. | **0** | **1** | **2** | **3** |
| 2. Yaşamımdaki değişikliklerin deneyimimle uğraşmaktan kaynaklanıp kaynaklanmadığını düşündüm. | **0** | **1** | **2** | **3** |
| 3. Kendimi, yaşadığım deneyimle ilgili duygularım hakkında düşünmeye zorladım. | **0** | **1** | **2** | **3** |
| 4. Yaşadığım deneyimin sonucunda bir şey öğrenip öğrenmediğimle ilgili düşündüm. | **0** | **1** | **2** | **3** |
| 5. Bu deneyimin dünya ile ilgili inançlarımı değiştirip değiştirmediği hakkında düşündüm. | **0** | **1** | **2** | **3** |
| 6. Bu deneyimin geleceğim için ne anlama gelebileceği hakkında düşündüm. | **0** | **1** | **2** | **3** |
| 7. Diğerleri ile olan ilişkilerimin, yaşadığım deneyimin ardından değişip değişmediği hakkında düşündüm. | **0** | **1** | **2** | **3** |
| 8. Kendimi olayla ilgili duygularımla baş etmeye zorladım. | **0** | **1** | **2** | **3** |
| 9. Olayın beni nasıl etkilemiş olduğu hakkında özellikle düşündüm. | **0** | **1** | **2** | **3** |
| 10. Olay hakkında düşündüm ve ne olduğunu anlamaya çalıştım. | **0** | **1** | **2** | **3** |

## Appendix D: Ways of Coping Inventory (WCI)

Aşağıda, önemli olabilecek olaylar karşısında kişilerin davranış, düşünce ve tutumlarını belirten bazı cümleler verilmiştir. Lütfen her cümleyi dikkatle okuyunuz. Yaşadığınız **kazanın etkileri ile başa çıkmak için**, bu cümlelerde anlatılanları ne sıklıkla kullandığınızı size uygun gelen kutuyu daire içine alarak belirtiniz. Hiçbir cümleyi cevapsız bırakmamaya çalışınız. Her cümleyle ilgili yalnız bir cevap kategorisini işaretleyiniz.

| | **Hiçbir Zaman** | **Nadiren** | **Bazen** | **Her Zaman** |
|---|---|---|---|---|
| 1. Aklımı kurcalayan şeylerden kurtulmak için değişik işlerle uğraştım. | 0 | 1 | 2 | 3 |
| 2. Bir mucize olmasını bekledim. | 0 | 1 | 2 | 3 |
| 3. İyimser olmaya çalıştım. | 0 | 1 | 2 | 3 |
| 4. Çevremdeki insanlardan sorunlarımı çözmemde bana yardımcı olmalarını bekledim. | 0 | 1 | 2 | 3 |
| 5. Bazı şeyleri büyütmeyip üzerinde durmamaya çalıştım. | 0 | 1 | 2 | 3 |
| 6. Sakin kafayla düşünmeye ve öfkelenmemeye çalıştım. | 0 | 1 | 2 | 3 |
| 7. Durumun değerlendirmesini yaparak en iyi kararı vermeye çalıştım. | 0 | 1 | 2 | 3 |
| 8. Ne olursa olsun direnme ve mücadele etme gücünü kendimde hissettim. | 0 | 1 | 2 | 3 |
| 9. Olanları unutmaya çalıştım. | 0 | 1 | 2 | 3 |
| 10. "Başa gelen çekilir" diye düşündüm. | 0 | 1 | 2 | 3 |
| 11. Durumun ciddiyetini anlamaya çalıştım. | 0 | 1 | 2 | 3 |
| 12. Kendimi kapana sıkışmış hissettim. | 0 | 1 | 2 | 3 |
| 13. Duygularımı paylaştığım kişilerin bana hak vermesini istedim. | 0 | 1 | 2 | 3 |
| 14. "Her işte bir hayır var" diye düşündüm. | 0 | 1 | 2 | 3 |
| 15. Dua ederek Allah'tan yardım diledim. | 0 | 1 | 2 | 3 |
| 16. Elimde olanlarla yetinmeye çalıştım. | 0 | 1 | 2 | 3 |
| 17. Olanları kafama takıp sürekli düşünmekten kendimi alamadım. | 0 | 1 | 2 | 3 |
| 18. Sıkıntılarımı içimde tutmaktansa paylaşmayı tercih ettim. | 0 | 1 | 2 | 3 |
| 19. Mutlaka bir çözüm yolu bulabileceğime inanıp bu yolda uğraştım. | 0 | 1 | 2 | 3 |

| | Hiçbir Zaman | Nadiren | Bazen | Her Zaman |
|---|---|---|---|---|
| 20. “İş olacağına varır” diye düşündüm. | 0 | 1 | 2 | 3 |
| 21. Ne yapacağıma karar vermeden önce arkadaşlarımın fikrini aldım. | 0 | 1 | 2 | 3 |
| 22. Kendimde her şeye yeniden başlayacak gücü buldum. | 0 | 1 | 2 | 3 |
| 23. Olanlardan olumlu bir şeyler çıkarmaya çalıştım. | 0 | 1 | 2 | 3 |
| 24. Bunun alın yazısı oldupunu ve değişmeyeceğini düşündüm. | 0 | 1 | 2 | 3 |
| 25. Sorunlarıma farklı çözüm yolları aradım. | 0 | 1 | 2 | 3 |
| 26. “Olanları keşke değiştirebilseydim” diye düşündüm. | 0 | 1 | 2 | 3 |
| 27. Hayatla ilgili yeni bir bakış açısı geliştirmeye çalıştım. | 0 | 1 | 2 | 3 |
| 28. Sorunlarımı adım adım çözmeye çalıştım. | 0 | 1 | 2 | 3 |
| 29. Her şeyin istediğim gibi olmayacağını düşündüm. | 0 | 1 | 2 | 3 |
| 30. Dertlerimden kurtulayım diye fakir fukaraya sadaka verdim. | 0 | 1 | 2 | 3 |
| 31. Ne yapacağımı planlayıp ona göre davrandım. | 0 | 1 | 2 | 3 |
| 32. Mücadele etmekten vazgeçtim. | 0 | 1 | 2 | 3 |
| 33. Sıkıntılarımın kendimden kaynaklandığını düşündüm. | 0 | 1 | 2 | 3 |
| 34. Olanlar karşısında “kaderim buymuş” dedim. | 0 | 1 | 2 | 3 |
| 35. “Keşke daha güçlü bir insan olsaydım” diye düşündüm. | 0 | 1 | 2 | 3 |
| 36. “Benim suçum ne” diye düşündüm. | 0 | 1 | 2 | 3 |
| 37. “Allah’ın takdiri buymuş” deyip kendi kendimi teselli etmeye çalıştım. | 0 | 1 | 2 | 3 |
| 38. Temkinli olmaya ve yanlış yapmamaya çalıştım. | 0 | 1 | 2 | 3 |
| 39. Çözüm için kendim bir şeyler yapmak istedim. | 0 | 1 | 2 | 3 |
| 40. Hep benim yüzümden oldu diye düşündüm. | 0 | 1 | 2 | 3 |
| 41. Hakkımı savunmaya çalıştım. | 0 | 1 | 2 | 3 |
| 42. Bir kişi olarak olgunlaştığımı ve iyi yönde geliştiğimi hissettim. | 0 | 1 | 2 | 3 |

## Appendix E: Posttraumatic Growth Inventory (PTGI)

Aşağıda yaşadığınız **kazadan dolayı** yaşamınızda olabilecek bazı değişiklikler verilmektedir. Her cümleyi dikkatle okuyunuz ve belirtilen değişikliğin sizin için ne derece gerçekleştiğini aşağıdaki ölçeği kullanarak belirtiniz.

0 = Kazadan dolayı böyle bir değişiklik yaşamadım
1 = Kazadan dolayı bu değişikliği çok az derecede yaşadım
2 = Kazadan dolayı bu değişikliği az derecede yaşadım
3 = Kazadan dolayı bu değişikliği orta derecede yaşadım
4 = Kazadan dolayı bu değişikliği oldukça fazla derecede yaşadım
5 = Kazadan dolayı bu değişikliği aşırı derecede yaşadım

| | **Hiç** | **Çok az** | **Az derecede** | **Orta derecede** | **Oldukça fazla** | **Aşırı derecede** |
|---|---|---|---|---|---|---|
| 1. Hayatıma verdiğim değer arttı. | 0 | 1 | 2 | 3 | 4 | 5 |
| 2. Hayatımın kıymetini anladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 3. Yeni ilgi alanları geliştirdim. | 0 | 1 | 2 | 3 | 4 | 5 |
| 4. Kendime güvenim arttı. | 0 | 1 | 2 | 3 | 4 | 5 |
| 5. Manevi konuları daha iyi anladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 6. Zor zamanlarda başkalarına güvenebileceğimi anladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 7. Hayatıma yeni bir yön verdim. | 0 | 1 | 2 | 3 | 4 | 5 |
| 8. Kendimi diğer insanlara daha yakın hissetmeye başladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 9. Duygularımı ifade etme isteğim arttı. | 0 | 1 | 2 | 3 | 4 | 5 |
| 10. Zorluklarla başa çıkabileceğimi anladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 11. Hayatımı daha iyi şeyler yaparak geçirebileğimi anladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 12. Olayları olduğu gibi kabullenmeyi öğrendim. | 0 | 1 | 2 | 3 | 4 | 5 |
| 13. Yaşadığım her günün değerini anladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 14. Yaşadığım kazadan sonra benim için yeni fırsatlar doğdu. | 0 | 1 | 2 | 3 | 4 | 5 |
| 15. Başkalarına karşı şefkat hislerim arttı. | 0 | 1 | 2 | 3 | 4 | 5 |
| 16. İnsanlarla ilişkilerimde daha fazla gayret göstermeye başladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 17. Değişmesi gereken şeyleri değiştirmek için daha fazla gayret göstermeye başladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 18. Dini inancım daha güçlendi. | 0 | 1 | 2 | 3 | 4 | 5 |
| 19. Düşündüğümden daha güçlü olduğumu anladım. | 0 | 1 | 2 | 3 | 4 | 5 |
| 20. İnsanların ne kadar iyi olduğu konusunda çok şey öğrendim. | 0 | 1 | 2 | 3 | 4 | 5 |
| 21. Başkalarına ihtiyacım olabileceğini kabul etmeyi öğrendim. | 0 | 1 | 2 | 3 | 4 | 5 |

## Appendix F: Impact of Event Scale – Revised (IES-R)

Aşağıda, stresli bir yaşam olayından sonra insanların yaşayabileceği bazı zorlukların bir listesi sunulmuştur. Her cümleyi dikkatlice okuyunuz. Yaşadığınız **kazayı** düşünerek **geçtiğimiz yedi gün içerisinde,** yaşadığınız bu zorlukların sizi ne kadar rahatsız ettiğini cümlelerin sağındaki beş kutucuktan yalnızca birini işaretleyerek belirtiniz.

| | **Hiç** | **Biraz** | **Orta Düzeyde** | **Fazla** | **Çok Fazla** |
|---|---|---|---|---|---|
| 1. Kazayı hatırlatan her türlü şey, kazayla ilgili duygularımı yeniden ortaya çıkardı. | 0 | 1 | 2 | 3 | 4 |
| 2. Uykuyu sürdürmekte güçlük çektim. | 0 | 1 | 2 | 3 | 4 |
| 3. Başka şeyler benim kaza hakkında düşünmeyi sürdürmeme neden oldu. | 0 | 1 | 2 | 3 | 4 |
| 4. Alıngan ve kızgın hissettim. | 0 | 1 | 2 | 3 | 4 |
| 5. Kazayı düşündüğümde ya da hatırladığımda bu konunun beni üzmesine izin vermedim. | 0 | 1 | 2 | 3 | 4 |
| 6. Düşünmek istemediğim halde kazayı düşündüm. | 0 | 1 | 2 | 3 | 4 |
| 7. Kaza hiç olmamış ya da gerçek değilmiş gibi hissettim. | 0 | 1 | 2 | 3 | 4 |
| 8. Kazayı hatırlatan şeylerden uzak durdum. | 0 | 1 | 2 | 3 | 4 |
| 9. Kazayla ilgili görüntüler aniden zihnimde canlandı. | 0 | 1 | 2 | 3 | 4 |
| 10. Ürkek ve diken üstünde hissettim. | 0 | 1 | 2 | 3 | 4 |
| 11. Kaza hakkında düşünmemeye çalıştım. | 0 | 1 | 2 | 3 | 4 |
| 12. Kazayla ilgili olarak hala pek çok duygum vardı, ancak bunlarla hiç ilgilenmedim. | 0 | 1 | 2 | 3 | 4 |
| 13. Kazayla ilgili hissizleşmiş gibiydim. | 0 | 1 | 2 | 3 | 4 |
| 14. Kendimi kazanın olduğu andaki gibi davranırken veya hissederken bulduğum oldu. | 0 | 1 | 2 | 3 | 4 |
| 15. Uykuya dalmakta güçlük çektim. | 0 | 1 | 2 | 3 | 4 |
| 16. Kazayla ilgili çok yoğun duygu değişiklikleri yaşadım. | 0 | 1 | 2 | 3 | 4 |
| 17. Kazayı hafızamdan (belleğimden) silmeye çalıştım. | 0 | 1 | 2 | 3 | 4 |
| 18. Dikkatimi toplamakta zorlandım. | 0 | 1 | 2 | 3 | 4 |
| 19. Kazayı hatırlatan şeyler fiziksel tepkiler göstermeme neden oldu (örneğin terleme, nefes almada güçlük, baş dönmesi, kalp çarpıntısı gibi). | 0 | 1 | 2 | 3 | 4 |
| 20. Kazayla ilgili rüyalar gördüm. | 0 | 1 | 2 | 3 | 4 |
| 21. Kendimi tetikte ve savunma durumunda hissettim. | 0 | 1 | 2 | 3 | 4 |
| 22. Kaza hakkında konuşmamaya çalıştım. | 0 | 1 | 2 | 3 | 4 |

## Appendix G: Multidimensional Scale of Perceived Social Support (MSPSS)

Aşağıda 12 cümle ve her birinde de cevaplarınızı işaretlemeniz için 1'den 7'ye kadar rakamlar verilmiştir. Her cümlede söyleneni sizin için ne kadar çok doğru olduğunu veya olmadığını belirtmek için o cümle altındaki rakamlardan yalnız bir tanesini daire içine alarak işaretleyiniz. Bu şekilde 12 cümlenin her birinde bir işaret koyarak cevaplarınızı veriniz.

**1. İhtiyacım olduğunda yanımda olan özel bir insan var.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**2. Sevinç ve kederimi paylaşabileceğim özel bir insan var.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**3. Ailem bana gerçekten yardımcı olmaya çalışır.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**4. İhtiyacım olan duygusal yardımı ve desteği ailemden alırım.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**5. Beni gerçekten rahatlatan bir insan var.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**6. Arkadaşlarım bana gerçekten yardımcı olmaya çalışırlar.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**7. İşler kötü gittiğinde arkadaşlarıma güvenebilirim.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**8. Sorunlarımı ailemle konuşabilirim.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**9. Sevinç ve kederlerimi paylaşabileceğim arkadaşlarım var.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**10. Yaşamımda duygularıma önem veren özel bir insan var.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**11. Kararlarımı vermede ailem bana yardımcı olmaya isteklidir.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

**12. Sorunlarımı arkadaşlarımla konuşabilirim.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Kesinlikle hayır | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Kesinlikle evet |

## Appendix H: Positive Driver Behavior Scale

**Araç kullanıyorsanız lütfen aşağıdaki soruları cevaplayınız. Araç kullanmıyorsanız anketi sonlandırabilirsiniz.**

Aşağıda sürücü davranışlarıyla ilgili bir takım durumlar verilmiştir. Verilen her bir durumun **sıklığında**, yaşadığınız **kazadan dolayı bir artış olup olmadığını** aşağıdaki ölçeği kullanarak belirtiniz.

1= Kazadan dolayı, sıklığında hiç artış olmadı.
2= Kazadan dolayı, sıklığında çok az artış oldu.
3= Kazadan dolayı, sıklığında biraz artış oldu.
4= Kazadan dolayı, sıklığında orta derecede artış oldu.
5= Kazadan dolayı, sıklığında oldukça fazla artış oldu.
6= Kazadan dolayı, sıklığında aşırı derecede artış oldu.

| | Hiç | Çok Az | Biraz | Orta Derecede | Oldukça Fazla | Aşırı Derecede |
|---|---|---|---|---|---|---|
| 1. Trafikte, diğer sürücülere engel teşkil etmemeye gayret göstermek | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. Geçiş hakkı sizde dahi olsa diğer sürücülere yol vermek | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. Karşıdan gelen araç sürücüsünün görüş mesafesini koruyabilmesi için uzunları mümkün olduğunca az kullanmak | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. Gereksiz yere gürültü yapmamak için kornayı kullanmaktan kaçınmak | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. Arkanızdaki aracın ileriyi iyi göremediği durumlarda sinyal vb. ile işaret vererek sollamanın uygun olduğunu belirtmek | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. Otobanda trafik akışını sağlayabilmek için en sol şeridi gereksiz yere kullanmaktan kaçınmak | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. Önünüzdeki aracın sürücüsünü, onu rahatsız etmeyecek bir mesafede takip etmek | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. Sollama yapan sürücüye kolaylık olması için hızınızı onun geçiş hızına göre ayarlamak | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. Arkadan hızla gelen aracın yolunu kesmemek için sollamadan vazgeçip eski yerinize dönmek | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. Trafikte, herhangi bir sürücü size yol verdiğinde veya anlayış gösterdiğinde, elinizi sallayarak, korna çalarak vb. şekilde teşekkür etmek | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. Yayaların karşıdan karşıya geçebilmeleri için geçiş hakkı sizde dahi olsa durarak yol vermek | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. Aracınızı park ederken diğer yol kullanıcılarının (yayalar, sürücüler vb.) hareketlerini sınırlamamaya özen göstermek | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. Yeşil ışık yandığı halde hareket etmekte geciken öndeki araç sürücüsünü korna çalarak rahatsız etmemek | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. Aracınızı kullanırken yol kenarında birikmiş suyu ve benzeri maddeleri yayaların üzerine sıçratmamaya dikkat etmek | 1 | 2 | 3 | 4 | 5 | 6 |

## Appendix I: Informed Consent Form

### Gönüllü Katılım Formu

Bu çalışma Orta Doğu Teknik Üniversitesi Klinik Psikoloji Doktora Programı öğrencisi Pınar Çağlayan tarafından yürütülen bir tez çalışmasıdır. Çalışmanın amacı **son 10 yıl içerisinde ölümlü, yaralanmalı veya maddi hasarlı bir trafik kazasında yolcu veya sürücü olan kişilerin** hayatlarında bu olayın nasıl izler bıraktığını anlamaktır. Çalışmaya katılım tamamıyla gönüllülük temelinde olmalıdır. Ankette, sizden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplarınız tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir; elde edilecek bilgiler bilimsel yayınlarda kullanılacaktır. Katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakmakta serbestsiniz. Böyle bir durumda anketi uygulayan kişiye, anketi tamamlamadığınızı söylemek yeterli olacaktır. Anket sonunda, bu çalışmayla ilgili sorularınız cevaplanacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için araştırmanın yürütücüsü ve Orta Doğu Teknik Üniversitesi Klinik Psikoloji doktora öğrencisi Pınar Çağlayan (Tel: 507 171 66 16; e-posta: pinarozb@gmail.com) ve tez danışmanı Prof. Dr. Nuray Karancı (Tel: 312 210 31 27; e-posta: karanci@metu.edu.tr) ile iletişim kurabilirsiniz.

***Bu çalışmaya tamamen gönüllü olarak katılıyorum ve çalışmayı yarıda kesebileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayınlarda kullanılmasını kabul ediyorum***.

İsim Soyad Tarih İmza

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## Appendix J: Turkish Summary

# 1. GİRİŞ

Travmatik olaylar ve bu olayların bireyler üzerindeki çeşitli psikolojik etkileri alanda sıklıkla çalışılmaktadır. Travmatik olayın yaşanması, kişide travma öncesi ve sonrası faktörleri içeren bir süreç başlatır. Böylelikle, bu süreç genellikle Travma Sonrası Stres (TSS) ve/veya Travma Sonrası Gelişim (TSG)'e neden olur. Trafik kazaları da dünyada ve Türkiye'de bu potansiyel travmatik olaylar içerisinde yer almaktadır. Trafik kazası geçirmenin birey üzerinde yarattığı psikolojik etkileri ve bu etkilerle ilişkili diğer aktörleri incelemek, Türkiye'deki yüksek kaza oranları düşünüldüğünde çok önemli bir yer tutmaktadır.

Bu çalışmada, travma ve trafik kazalarının ve bu olayların psikolojik etkilerinin ve TSG ve TSS gelişimi üzerinde etkileri ile ilgili çalışmaların kapsamlı bir literatür taraması sunulmaktadır. Çalışmanın yöntem kısmında sırasıyla örneklem, veri toplama araçları, işlem ve veri analizi hakkında ayrıntılı bilgiler verilmiştir.

## 1.1 Travma ve Travmatik Yaşam Olayları

Travma kelimesi 1690'lara kadar uzanmakta, Eski Yunanca'da 'trauma' kelimesinden türemekte ve fiziksel yaralanma ve hasar anlamına gelmektedir. 1864'te travma konusunda psikolojik odağın artmasıyla beraber bu kelime de 'anormal strese sebep olan fiziksel yaralanma' şeklinde tanımlanmaya başlamıştır (Online Etymology Dictionary).

Travmanın psikolojik yönlerine daha fazla odaklanılması I. Ve II. Dünya Savaşları sonrasında önem kazanmıştır. Bunun yanında II. Dünya Savaşı'nda soykırım mağdurları hakkında yapılan çalışmalar da bu değişime önemli katkılar sağlamıştır.

### 1.1.1 Dünyada ve Türkiye'de Trafik Kazaları

Sanayileşmiş dünyada trafik kazaları çok yaygındır. Trafik kazası hareket halindeki bir aracın diğer bir araca veya yolda mevcut herhangi bir objeye çarpması olarak tanımlanmıştır. DSM-5'te (2013) de ciddi otomobil kazaları direkt olarak yaşanan travmatik olay kategorisinde bulunmaktadır.

Dünya Sağlık Örgütü'nün (2012) raporuna göre, trafik kazaları yaralanmaya yol açarak ölüme sebep verme açısından birinci sırada, tüm ölümlerin sebepleri arasında ise onuncu sıradadır. Dünya Sağlık Örgütü'ne göre her gün otoyollarında meydana gelen kazalarda 3000 kişi yaşamını yitirmektedir.

Türkiye'de trafik kazalarının sıklığı çok yüksektir. Trafik Güvenliği Dairesi Başkanlığı'nın 2015'te yayınladığı raporuna göre, 2014 yılında Türkiye'deki toplam trafik kazası sayısı 1.199.010'dur. Türkiye Avrupa ülkeleri arasında trafik kazalarının meydana geliş sıklığı açısından üçüncü sıradadır.

Literatürde yapılan çalışma sonuçları trafik kazası probleminin önemini vurgular niteliktedir. Blanchard ve Hickling'in (1998) belirttiği gibi Norveç, Hollanda, Birleşik Krallık, Avustralya ve Kanada'da trafik kazaları konusunda aktif araştırma ekipleri bulunmaktadır. Fakat Türkiye'de yüksek trafik kazası oranları ve ölümlü yaralanmaların çok fazla olması sebebiyle daha fazla çalışma yürütülmesi gerekmektedir. Trafik kazalarının psikolojik sonuçları ve bu sonuçlara yol açan faktörlerin incelenmesi, trafik kazası geçiren kişilere yardımcı olacak programların geliştirilebilmesi açısından büyük ihtiyaçtır.

## 1.2 Travmatik Olayların Mağdurlar Üzerindeki Etkileri

Psikoloji literatüründe travmatik yaşam olayları daha çok kişiler üzerinde yarattıkları travma sonrası stres ve travma sonrası stres bozukluğu gibi olumsuz etkileri açısından araştırılmıştır. Fakat yapılan bir çok araştırma bulgusu, travmatik yaşam olaylarının olumsuz etkilerinin yanında olumlu etkilerinin de olduğunu ortaya koymuştur. Bu olumlu etkiler literatürde Travma sonrası gelişim olarak adlandırılmıştır.

Bu çalışmada, bir sonraki bölümde travmatik yaşam olaylarının olumsuz ve olumlu psikolojik etkileri ve bu etkilerle ilişkili faktörler incelenecektir.

## 1.3 Bilimsel Bulgular: TSS ve TSG ile İlişkili Faktörler

### 1.3.1 Sosyo-demografik ve Kişilik Özellikleri

Travmatik yaşam olayının öncesinde var olan sosyo-demografik ve kişilik özellikleri bireylerin travmaya verdikleri tepkiler üzerinde etkilidir.

Literatürde yapılan çalışmaların sonuçları yaş, cinsiyet, gelir seviyesi ve algılanan sosyal destek gibi sosyo-demografik özelikler TSS'nin meydana gelmesinde etkili olduğunu ortaya koymuştur.

Yaş ve TSS arasındaki ilişkiyi inceleyen araştırma bulguları birbirleriyle çelişen sonuçlar ortaya koymuştur. DSM-5 (2013) genç yaşta travma yaşamanın TSSB geliştirme riskini arttırdığını belirtmektedir. Diğer bir yandan, yapılan diğer çalışmaların bulguları bireyler yaşlandıkça TSSB geliştirme riskinin arttığını ortaya koymaktadır (Davidson, Hughes, Blazer, & George, 1991; Norris, 1992; Perkonigg, Kessler, Storz, & Wittchen, 2000).

Cinsiyet ve TSS ilişkisini inceleyen bir çok çalışma ise kadın olmanın TSS geliştirme riskini yordadığını ortaya koymaktadır (Tolin & Foa, 2006; Ehlers, Mayou & Bryant, 1998). Karanci vd. (2012) kadın olmanın, travmatik yaşam olayının ardından geliştirilen stres belirtilerinin ciddiyeti ile olumlu bir ilişkisinin olduğunu bulmuşlardır. Trafik kazaları üzerine yapılan çalışmaların bulguları da bu çalışmaların bulgularını doğrular niteliktedir (Ursano, Fullerton, Epstein, Crowley, Kao, Vance, Craig, Dougall, & Baum, 1999; Fullerton, Ursano, Epstein, Crowley, Vance, Kao, Dougall, & Baum, 2001; Lucas, 2003; Iteke, Bakare, Agomoh, Uwakwe, & Onwukwe, 2011).

Algılanan sosyal desteğin TSS oluşumuna karşı koruyucu bir factor olduğu yapılan bir çok çalışma tarafından ortaya konmuştur (Hobfoll, Hall, Canetti-Nisim, Galea, Johnson, & Palmieri, 2007; Hobfoll, Canetti-Nisim, Johnson, Palmieri, Varley, & Galea, 2008; DSM-5, 2013). Trafik kazası mağdurlarıyla yürütülen diğer bir çalışmanın bulguları ise düşük sosyal destek

puanının TSSB'yi yordadığını ortaya koymuştur (Heron-Delaney, Kenardy, Charlton, & Matsuoka, 2013).

Travma mağdurlarının gelir seviyesinin TSS belirtileri ile ilişkili olduğunu bulan bir çok çalışma vardır. Karanci vd. (2012) çeşitli travmalara maruz kalmış katılımcılarla yürüttükleri çalışmanın bulguları sonucunda gelir seviyesi arttıkça TSSB'nin şiddetinin azaldığını belirtmişlerdir. Buna benzer şekilde, düşük gelir seviyesinin TSSB'yi yordadığını ortaya koyan bir çok çalışma bulgusu vardır (Perkonigg vd., 2000; Norrıs, Murphy, Backer, Perilla, Rodriguez, & Rodriguez, 2003). Fakat trafik kazası geçiren katılımcılarla yürütülen bir diğer çalışma da gelir seviyesi ile TSSB'nin bir ilişkisi olmadığı belirtmiştir (Ursano vd., 1999).

Kişilik özellikleri ve TSS arasındaki ilişkiyi inceleyen çalışmalar önemli bulgular ortaya koymuştur. Karanci vd. (2012) farklı travma mağdurlarıyla yaptıkları çalışma sonucunda, duygusal tutarsızlık, uyumluluk ve dışadönüklüğün TSS ile anlamlı bir ilişki içinde olduğunu bulmuşlardır. Söz konusu çalışmada, duygusal tutarsızlık ve uyumluluğun TSS ile pozitif bir ilişkisi varken, dışadönüklük arttıkça TSS azalmaktadır. Başka bir çalışmada, yüksek duygusal tutarsızlık ve düşük uyumluluk ve sorumluluk travmatik olay sonrasında gelişen stresi arttırıcı faktörlerdir (Caska & Renshaw, 2013).

Trafik kazası mağdurlarıyla yürütülen çalışma bulguları ise duygusal tutarsızlığın akut stres bozukluğu ve akut stresin şiddeti ile pozitif ilişki içerisinde olduğunu ortaya koymuştur (Harvey & Bryant, 1999). Ayrıca Dörfel, Rabe ve Karl (2008) yaptıkları araştırma sonucunda, dışadönüklük ve duygusal tutarsızlığın TSS şiddetini yordadığını belirtmişlerdir.

### 1.3.2 Olaya İlişkin Faktörler: Olayın Zamanı ve Algılanan Ciddiyeti

Travmatik olayın ciddiyetinin TSSB'nin gelişimi ile ilişkili olduğu sonucu yapılan bir çok araştırmada ortaya koyulmuştur (Malt, Hoivik, & Blikra, 1993; Ehlers vd., 1998; Dörfel vd., 2008). Trafik kazası geçiren kişilerle yapılan çalışmalar sonucunda, yaralanma ciddiyetinin kaza mağdurlarındaki TSSB belirtilerini pozitif yönde yordadığı bulunmuştur. Dörfel, Rabe ve Karl'ın (2008) 44 kaza mağduruyla yürüttükleri çalışma bulguları algılanan kaza ciddiyetinin

TSSB şiddetini yordadığını ortaya koymuştur. Benzer şekilde, Türkiye'deki kaza mağdurlarıyla yapılan bir çalışma da bu bulgularla tutarlı sonuçlar ortaya koymuştur (Turan, Eşel, & Keleş, 2002).

Kazanın meydana gelmesinin üzerinden geçen süre de kazanın algılanan ciddiyeti kadar önemlidir (Southwick, Morgan, & Darnell, 1995; McFarlane, Atchison, & Yehuda, 1997; Grieger vd., 2006). Uzunlamasına araştırmalar, geçen zamanın TSSB gelişimi ile pozitif ilişki içerisinde olduğunu göstermiştir (McFarlane vd., 1997). Ayrıca, savaşta yaralanan askerlerle yapılan çalışma sonuçları da aynı bulguları ortaya koymuştur (Grieger vd., 2006).

### 1.3.3 Travma Sonrası Faktörler: Baş Etme ve Ruminasyon

Baş etme, stres yaratan olayın yaşanmasının ardından içsel ve dışsal gereksinimleri bilişsel ve duygusal olarak idare etme çabası olarak tanımlanmıştır (Folkman & Lazarus, 1980). Adaptasyon sürecinde önemli şey, olayın kendisinden ziyade kişinin bu olayla nasıl baş ettiğidir (Tedeschi & Calhoun, 2004).

Bastırarak baş etme stratejisinin akut stres bozukluğu ve TSSB ile negatif bir ilişkisi vardır (Ginzburg vd., 2002). Diğer bir yandan, Bryant ve Harvey (1995) kaçınmacı baş etme stratejisinin TSS belirtilerinin ortaya çıkmasının kolaylaştırdığını bulmuşlardır. Ayrıca, Compas vd. (2001) problem çözme odaklı baş etme stratejisinin daha sağlıklı adaptasyonu yordadığını belirtmektedirler.

Baş etme mekanizmalarının yanında bilişsel yapılandırma da TSS ile ilişkilidir. Ruminasyonlar da bilişsel yapılandırma olarak tanımlanır ve iki ana başlıkta gruplanmaktadır: intrusif ve istemli ruminasyonlar (Cann vd., 2011).
Yapılan araştırma bulguları, tekrar eden ve istemsiz olarak gelişen ruminasyonun TSSB'yi yordadığını ortaya koymuştur (Clohessy & Ehlers, 1999, Ehlers vd., 1998). Trafik kazası mağdurlarıyla yapılan çalışmalar da bu bulgularla uyum içerisindedir (Ehlers vd., 1998; Mayou vd., 2002).

## 1.4 TSG ile İlişkili Faktörler

### 1.4.1 Sosyo-demografik ve Kişilik Özellikleri

Yaş ve TSG ilişkisini inceleyen araştırmalar bu iki değişken arasında negatif yönlü bir ilişki olduğunu göstermektedir (Polatinsky & Esprey, 2000; Evers vd., 2001). Genç yaşta olma, bir çok araştırmada, TSG ile ilişkili bulunmuştur. Ayrıca, trafik kazası mağdurlarında da aynı sonuçlar bulunmuştur (Merecz vd., 2012).

Park vd. (1996) kadınların erkeklerden daha fazla TSG yaşadıklarını ortaya koymuştur. Türkiye'de kadınlara oranla daha fazla erkek sürücü vardır, böylece erkekler daha fazla trafik kazasına maruz kalmaktadırlar (Emniyet Genel Müdürlüğü, 2014; Frommberger vd., 1998). Harms ve Talbot (2007) da erkeklerin kadınlardan daha az TSG rapor ettiklerini bulmuşlardır. Böylece, erkekler daha fazla trafik kazasına maruz kalsalar da kadınlar TSG'ye daha yatkındır.

Literatür bulgularına göre, sosyal destek TSG'yi kolaylaştırıcı bir faktördür (Park vd., 1996; Weiss, 2004). Yapılan diğer çalışmalar da bu bulguyu destekler niteliktedir (Dirik & Karanci, 2008; Dong vd., 2015).

Kişilik özelliklerinin TSG ile olan ilişkisinin incelendiği araştırmalar nöemli sonuçlar ortaya koymuştur. Bir çok araştırma dışadönüklük, gelişime açıklık, uyumluluk ve sorumluluğun TSG ile pozitif yönlü ve duygusal tutarsızlık ve olumsuz değerliğin TSG ile negatif yönlü bir ilişkisinin olduğunu ortaya koymuştur (Tedeschi & Calhoun, 1996; Karanci vd., 2012; Wang vd., 2013).

TSG'nin alt kategorilerine bakıldığında, dışadönüklük tüm alt kategorilerle ilişkili bulunmuştur (Tedeschi & Calhoun, 1996). Gelişime açıklık yeni olanakların algılanması ve bireysel güçlülükle ilişkilidir. Kişiler arası ilişkilerle uyumluluk ilişkiliyken, sorumluluk bireysel güçlülük ile pozitif yönde ilişkilidir.

### 1.4.2 Olaya İlişkin Faktörler: Olayın Zamanı ve Algılanan Ciddiyeti

Tedeschi ve Calhoun (2004) olayın algılanan ciddiyeti arttıkça TSG'nin de artacağını belirtmişlerdir. Literatürde yapılan bir çok araştırma bulgusu bunu

desteklemektedir (Kesimci vd., 2005; Solomon & Dekel, 2007; Feder vd., 2008). Trafik kazası mağdurlarıyla yapılan çalışmaların bulguları da bu sonuçlarla uyumludur.

Olayın üzerinden geçen zaman ile TSG arasındaki ilişki de önemlidir (Schaefer & Moos, 1992). Fakat bu konuda yapılan araştırma bulguları birbirleriyle tutarlı değildir.

### 1.4.3 Travma Sonrası Faktörler: Baş Etme ve Ruminasyon

Şenol-Durak (2007) problem çözme odaklı baş etme kullanan bireylerde daha fazla TSG gözlendiğini bulmuştur. Buna ek olarak, problem çözme odaklı baş etme yönteminin daha uzun süreli ve kalıcı olan olumlu değişime yol açtığını ortaya çıkarılmıştır (Butler vd., 2005; Dekel vd., 2011).

Kaderci baş etme mekanizmasının TSG ile pozitif ilişkisini ortaya koyan çalışmalar da vardır (Prati & Pietrantoni, 2009; Bosson vd., 2012).

Wang'ın (2013) trafik kazası çalışmasında olumlu baş etmenin (duygusal stresi yönetmek için olumlu bilişsel ve davranışsal stratejilerin kullanılması) TSG ile ilişkili olduğu bulunmuştur.

Ayrıca ruminasyonlar ve TSG arasındaki ilişkinin incelenmesi de travma sonrasında meydana gelen olumlu değişimleri anlayabilmek açısından önemli bir yere sahiptir.

Taku vd. (2009) farklı tipte travmatik olay yaşamış kişilerle yürüttükleri çalışmada olaydan hemen sonra başvurulan intrusif ruminasyonun TSG ile pozitif ilişki içinde olduğunu fakat olayın daha sonrasında yapılan istemli ruminasyonun TSG ile daha güçlü bir ilişki içinde olduğunu ortaya koymuşlardır. Ayrıca, Stockton vd. (2011)'nin bulguları da istemli ruminasyonun TSG'yi pozitif ynde yordadığını fakat intrusif ruminasyonun TSG ile ilişkili olmadığını ortaya çıkarmıştır.

### Çalışmanın Amacı

Bu çalışmanın amacı kişilik özelliklerinin (dışadönüklük, sorumluluk, uyumluluk, gelişime açıklık, olumsuz değerlik ve duygusal tutarsızlık), olaya ilişkin faktörlerin (kazanın algılanan ciddiyeti ve zamanı), baş etme (problem çözme, çaresiz, kaderci ve destek arayıcı) ve ruminasyon (intrusif ve istemli) süreçlerinin TSS ve TSG oluşmasındaki yordayıcı rolünün, sırasıyla Multivariate Risk Factor Modeli (Freedy vd., 1993) ve Life Crises and Personal Growth Modeli (Schaefer & Moos, 1992) temelinde incelenmesidir.

Ayrıca, çalışmanın bir diğer amacı ise Life Crises and Personal Growth Modeli ve Kaynakların Korunması Modeli (Hobfoll, 1989) bir araya getirilerek trafik kazası geçiren sürücü katılımcıların olumlu sürücü davranışlarındaki değişimin TSG'ye olan etkisinin incelenmesidir.

Bu çalışmada, temel kişilik özellikleri, cinsiyet ve algılanan sosyal destek kişisel kaynaklar, gelir seviyesi çevresel kaynak olarak alınmıştır. Fakat, temel kişilik özellikleri dışındaki tüm bu değişkenler kontrol değişkenleri olarak alınmıştır. Buna ek olarak, olayın meydana geldiği zaman, olayın algılanan ciddiyeti ve kaza sırasında sürücü veya yolcu olma durumu olaya ilişkin faktörler olarak alınmıştır. Kaza ile baş etme stratejileri ve ruminasyonlar da kaza sonrası değişkenler olarak değerlendirilmiştir. On olarak TSS ve TSG bağımlı değişkenler olarak incelenmiştir.

## 2. YÖNTEM

### 2.1 Örneklem

Bu çalışmanın örneklemi geçtiğimiz 10 yıl içerisinde Türkiye'de trafik kazası geçiren 225 yetişkin kaza mağdurundan oluşmaktadır. Katılımcılar içerisinde 105 (%46.7) erkek ve 120 (%53.3) kadın bulunmaktadır. Katılımcıların ortalama yaşı 30.48 (*SS* = 7.32)'dir.

Örneklemin büyük çoğunluğu (%56) bekardır ve eğitim seviyesi oldukça yüksektir. Katılımcıların büyük çoğunluğu (%52) lisans mezunudur. Bunu yüksek

lisans mezunları (%29.3), doktora mezunları (%10.2) ve lise mezunları (%8.4) takip etmektedir. Ayrıca katılımcıların büyük çoğunluğu (%45.3) orta gelir seviyesinden olduklarını belirtmişlerdir.

Bu çalışmanın örneklemi aynı zamanda kazaya ilişkin özellikler açısından da incelenmiştir. Elde edilen bilgilere göre 137 (%60.9) katılımcı son 10 yılda yalnızca bir trafik kazası geçirdiğini belirtmiştir. Kazanın üzerinden geçen süre 6 ay ile 10 yıl arasında değişmektedir. Örneklemin yaklaşık %50'si kazanın üzerinden geçen süreyi 34 ay daha az olarak belirtirken, diğer %50'si ise 34 ay ile 120 ay (10 yıl) arasında vakit geçtiğini rapor etmişlerdir.

Bu çalışmada kaza sırasında yalnızca sürücü veya yolcu olan kişilerle yürütülmüş, yayalar çalışmaya dahil edilmemiştir. Kaza sırasında katılımcıların 138'i (%61.3) sürücü, 87'si (%38.7) yolcudur.

Ayrıca katılımcıların oldukça büyük bir çoğunluğu (%85.8) kazayı özel otomobilde yapmıştır. Örneklemin geri kalanı olan 32 kişi ise kazayı taksi, otobüs ve minibüs gibi ticari araçlarda yaşamıştır.

## 2.2 Veri Toplama Araçları

Bu çalışmada kullanılan ölçüm araçları Demografik Bilgi Formu, Olaya İlişkin Ruminasyon Envanteri, Travma Sonrası Gelişim, Genel Kişilik Özellikleri Ölçeği, Baş Etme Yolları Ölçeği Türkçe Formu, Çok Boyutlu Algılanan Sosyal Destek Ölçeği, Olumlu Sürücü Davranışları Ölçeği, Olayın Etkisi Ölçeği Gözden Geçirilmiş Formu'nu içermektedir. Bu bölümde veri toplama araçları ile ilgili ayrıntılı bilgiler verilmiştir.

### Demografik Bilgi Formu

Demografik Bilgi Formu yaş, cinsiyet, medeni durum, eğitim seviyesi, meslek, çalışma durumu ve gelir seviyesi hakkında bilgi toplama amacıyla oluşturulmuştur. Bu formda ayrıca kazaya ilişkin sorular da sorulmuştur. Bu sorular, son 10 yılda kaç kaza geçirildiği, en ciddi kazanın tarihi, katılımcının kaza sırasında sürücü mü yoksa yolcu mu olduğu ve kaza yapılan aracın tipi

hakkında bilgi toplamayı amaçlamaktadır.

Tüm bunlara ek olarak, kaza sonucunda oluşan her türlü hasarı saptama amacıyla da sorular geliştirilmiştir. Kaza sonucunda araçta ve diğer araçlarda oluşan maddi hasar, katılımcının kendisinin ve diğer araçlardaki mağdurların yaralanma ciddiyeti, kazada ölüm olup olmadığı hakkında bilgi toplama amacıyla sorular geliştirilmiştir.

Ayrıca, Demografik Bilgi Formu'nda kazanın algılanan ciddiyetini ölçmek amacıyla kazayı yaşayan kişide ölüm düşüncesinin, şiddetli korkunun ve çaresizliğin ne kadar hissedildiği sorulmuştur. Bu sorular 5 kategorili cevaplandırma sistemiyle cevaplanmış ve tüm cevaplardan tek bir algılanan ciddiyet puanı oluşturulmuştur.

**Temel Kişilik Özellikleri Ölçeği (BPTI)**

Temel Kişilik Özellikleri Ölçeği Gençöz ve Öncül (2012) tarafından Türk kültüründe temel kişilik özelliklerinin tanımlanması amacıyla geliştirilmiştir. Ölçek 45 madde içermektedir ve bu maddeler, 1 (Hiç uygun değil) ve 5 (Çok uygun) aralığında, 5 kategoride puanlanmıştır. Yapılan faktör analizi sonuçları ölçeğin 6 faktörden oluştuğunu ortaya koymuştur.

Bu çalışmada, Temel Kişilik Özellikleri Ölçeği trafik kazası mağdurlarının kişilik özelliklerini belirleme amacıyla kullanılmıştır. 6 faktörün Cronbach alfa değerleri dışadönüklük, uyumluluk, sorumluluk, gelişime açıklık, duygusal tutarsızlık ve olumsuz değerlik için sırasıyla, .87, .87, .81, .71, .69, ve .63'tür.

**Olaya İlişkin Ruminasyon Envanteri (ERRI)**

Olaya İlişkin Ruminasyon Envanteri Cann, Calhoun, Tedeschi, Triplett, Vishnevsky ve Lindstrom (2011) tarafından travma sonrasında bilişsel işlemleme sırasında aktifleşen ruminasyonları ölçme amacıyla geliştirilmiş 20 maddelik bir ölçektir. İlk 10 madde intrusif, sonraki 10 madde ise istemli ruminasyonları ölçmek amacıyla geliştirilmiştir.

Ölçeğin Türkçe'ye adaptasyonu Çalışır vd. (devam etmekte) tarafından yapılmıştır. İntrusif ve istemli ruminasyon alt ölçekleri için Cronbach alfa değerleri sırasıyla .93 ve .87 olarak bulunmuştur (Gül, 2014).

Bu çalışmada, Olaya İlişkin Ruminasyon Envanteri trafik kazasının bilişsel olarak işlemlendirilmesi sırasında kaza mağdurlarındaki ruminasyonları ölçmek amacıyla kullanılmıştır.

**Baş Etme Yolları Ölçeği Türkçe Formu (WCI)**

Baş Etme Yolları Ölçeği Folkman ve Lazarus (1985) tarafından stres yaratan durumların ardından baş etme yöntemlerini ölçme amacıyla geliştirilmiştir. Ölçeğin Türkçe'ye adaptasyonunu Siva (1991) yapmıştır.

Bu çalışmada, Baş Etme Yolları Ölçeği'nin 42 maddelik kısaltılmış ve 4 faktör içeren şekli kullanılmıştır. Bu faktörler çaresiz, destek arayıcı, kaderci ve problem çözmedir. Ölçeğin iç tutarlılık katsayısı bu çalışmada .95 olarak bulunmuştur. Ayrıca alt ölçeklerin Cronbach alfa değerleri kaderci, destek arayıcı, problem çözme ve çaresizlik alt ölçekleri için sırasıyla .90, .88, .92, ve .85'tir.

**Travma Sonrası Gelişim Envanteri (PTGI)**

Travma Sonrası Gelişim Ölçeği 1996 yılında Tedeschi ve Calhoun tarafından travma etkisi yaratan olaylar sonrasında ortaya çıkan olumlu değişimleri ölçme amacıyla geliştirilmiştir. Ölçek 21 maddeden ve 5 alt ölçekten oluşmaktadır. Bu alt ölçekler, yeni olanakların algılanması, kişiler arası ilişkiler, bireysel güçlülük, manevi değişim ve yaşamın kıymetini algılama şeklindedir.

Travma Sonrası Gelişim Ölçeği Kılıç (2005) tarafından Türkçe'ye uyarlanmıştır. Ayrıca, Dirik (2006) bu ölçeği Kılıç (2005)'ın çevirisini kılavuz olarak kullanarak Türkçe'ye çevirmiştir.

Bu çalışmada, Dirik (2006)'in Türkçe uyarlaması ve Karanci vd. (2012)'nin 5 faktörlü ölçek yapısı kullanılmıştır. Yeni olanakların algılanması, manevi değişim, kişiler arası ilişkiler, bireysel güçlülük ve yaşamın kıymetini algılama alt ölçeklerinin Cronbach alfa değerleri sırasıyla .92, .85, .86, .84, ve .93

olarak bulunmuştur. Ayrıca tüm ölçeği iç tutarlılık katsayısı da oldukça yüksektir ($\alpha$ = .96).

**Olayın Etkisi Ölçeği Gözden Geçirilmiş Formu (IES-R)**

Olayın Etkisi Ölçeği Horowitz, Wilner ve Alvarez (1979) tarafından son bir haftada yaşanan travma sonrası stres belirtilerinin ölçülmesi amacıyla geliştirilmiştir. Bu ölçek 15 madde ve 2 alt ölçek içermektedir. Fakat Weiss ve Marmar (1997) ölçeği gözden geçirmiş ve ölçeğe 7 madde eklemişlerdir. Ölçeğin ismi Olayın Etkisi Ölçeği Gözden Geçirilmiş Formu şeklinde değiştirilmiştir. Ölçeğin Türkçe uyarlamasını Işıklı (2006) yapmıştır. Yeniden yaşama, kaçınma ve aşırı uyarılma alt ölçeklerinin Cronbach alfa değerleri sırasıyla .87, .84 ve .79'dur.

Bu çalışmada Olayın Etkisi Ölçeği Gözden Geçirilmiş Formu, trafik kazası sonrasında kaza mağdurlarının travma sonrası stres belirtilerini ölçme amacıyla kullanılmıştır. Yeniden yaşama, kaçınma ve aşırı uyarılma alt ölçeklerinin iç tutarlılık katsayıları sırasıyla .92, .81 ve .89 olarak bulunmuştur. Tüm ölçeğin iç tutarlılık katsayısı ise oldukça yüksektir ($\alpha$ = .94).

**Çok Boyutlu Algılanan Sosyal Destek Ölçeği (MSPSS)**

Çok Boyutlu Algılanan Sosyal Destek Ölçeği Zimet, Dahlem, Zimet ve Farley (1988) tarafından geliştirilmiştir. Ölçek aile, arkadaşlar ve özel insanlardan algılanan sosyal desteği ölçme amacıyla yazılmış 12 madde içerir. Ölçeğin Türkçe'ye uyarlamasını Eker ve Arkar (1995) ve Eker, Arkar ve Yaldız (2001) gerçekleştirmiştir.

Bu çalışmada, Çok Boyutlu Algılanan Sosyal Destek Ölçeği trafik kazası mağdurlarının algıladıkları sosyal desteği ölçmek amacıyla yalnızca genel sosyal destek puanı şeklinde kullanılmıştır ve Cronbach alfa değeri .95 olarak bulunmuştur.

**Olumlu Sürücü Davranışları Ölçeği**

Olumlu Sürücü Davranışları Ölçeği Özkan ve Lajunen (2005) tarafından Sürücü Davranışları Ölçeği'ne olumlu davranış boyutunun eklenmesi amacıyla geliştirilmiştir.

Bu çalışmada Olumlu Sürücü Davranışları Ölçeği trafik kazası sonrasında sürücü olan katılımcıların olumlu sürücü davranışlarında bir artış olmadığının ölçülmesi amacıyla kullanılmıştır. Söz konusu artışı ölçme amacıyla ölçeğin yönergesi değiştirilmiştir. Katılımcılara, kaza sonrasında bu olumlu davranışlarında bir artış olup olmadığı sorulmuştur ve cevaplar 1 (*'Kaza sonucunda bu değişimi yaşamadım'*) ve 6 (*'Kaza sonucunda bu değişimi çok büyük ölçüde yaşadım'*) aralığında değerlendirilmiştir. Tüm ölçeğin yalnızca sürücü olan 187 katılımcı için ölçülmüş iç tutarlılık katsayısı .97 olarak bulunmuştur.

**2.3 İşlem**

Bu çalışmanın verilerinin toplanması için Orta Doğu Teknik Üniversitesi Sosyal Bilimler Enstitüsü Etik Kurulu'ndan izin alınmıştır.

Veriler bir çevrimiçi veri toplama aracı olan Survey Monkey programı yardımıyla toplanmıştır. Ayrıca Facebook, Linkedin, Twitter ve e-posta grupları gibi sosyal medya kanalları da kullanılmıştır.

Bilgilendirilmiş Onam Formu da çalışmanın başında katılımcılara sunulmuş ve bu formu onaylamaları durumunda ölçekleri doldurmaları sağlanmıştır.

Bu çalışmanın 6. hipotezinin test edilebilmesi amacıyla örneklem içerisinde yalnızca aktif sürücü olan 187 katılımcı seçilmiş ve bu hipotezi test etmeyi amaçlayan tüm analizlerde bu örneklem kullanılmıştır.

## 2.4 Veri Analizi

Bu çalışmadaki istatiksel analizler SPSS 22 Mac versiyonuyla yapılmıştır. Veriler Survey Monkey ile toplandığından örneklemde eksik veri bulunmamaktadır. Çalışmada yürütülen aracı değişken analizleri ise IBM SPSS için Hayes (2013) tarafından IBM SPSS için geliştirilmiş PROCESS Macro ile yapılmıştır.

Bu çalışmada, Travma Sonrası Stres, Travma Sonrası Gelişim ve tüm alt ölçeklerinin bağımlı değişken olarak alındığı Hiyerarşik Regresyon Analizleri yapılmıştır. Ayrıca, kaza sonrasında sürücülerdeki olumlu sürücü davranışlarının incelenmesi amacıyla olumlu sürücü davranışlarının bağımsız değişken olarak alındığı regresyon analizi de yapılmıştır.

# 3. BULGULAR

## 3.1. Hiyerarşik Çoklu Regresyon Analizleri

Hiyerarşik Çoklu Regresyon Analizleri çalışmanın her iki bağımlı değişkenleri ve onların tüm alt kategorileri için ayrı ayrı yapılmıştır. Bu analizlerin amacı, cinsiyet, gelir seviyesi, algılanan sosyal destek ve kaza sırasında sürücü veya yolcu olma değişkenleri kontrol edildikten sonra, kişilik özellikleri, kazaya ilişkin faktörler, baş etme ve ruminasyonların TSS, TSG ve bunların tüm alt kategorileri ile olan ilişkilerini incelemektir.

### 3.1.1 TSS'nin Yordayıcıları

Bu bölümde, TSS ve TSS'nin alt kategorileri olan yeniden yaşama, kaçınma ve aşırı uyarılma değişkenleri için ayrı ayrı yapılan hiyerarşik çoklu regresyon analizlerinin sonuçları verilecektir.

Yapılan regresyon sonuçları duygusal tutarsızlık, olayın algılanan ciddiyeti, çaresiz baş etme, intrusif ruminasyon ve kaderci baş etmenin TSS ile pozitif, olumsuz değerliğin ise negatif bir ilişki içerisinde olduğunu ortaya koymuştur.

Tüm değişkenler regresyon analizine sokulduğunda, olayın algılanan ciddiyeti, çaresiz baş etme, intrusif ruminasyon ve kaderci baş etmenin TSS'yi yordadığı görülmüştür.

Yeniden yaşama alt kategorisini, uyumluluk, duygusal tutarsızlık, olayın algılanan ciddiyeti, çaresiz baş etme ve intrusif ruminasyonun pozitif, olumsuz değerliğin ise negatif yönde yordamaktadır. Tüm değişkenler regresyon analizine sokulduğunda, olumsuz değerlik, olayın algılanan ciddiyeti, çaresiz baş etme ve intrusif ruminasyonun anlamlı olduğu görülmüştür.

Kaçınma alt kategorisinin yordayıcıları ise olayın algılanan ciddiyeti, çaresiz baş etme ve kaderci baş etmedir.

Son olarak aşırı uyarılma alt kategorisinin yordayıcılarının incelenmesi için yapılan regresyon analizi sonuçlarına göre, duygusal tutarsızlık, olayın algılanan ciddiyeti, çaresiz baş etme ve intrusif ruminasyon ile aşırı uyarılma arasında pozitif, olumsuz değerlik ve aşırı uyarılma arasında ise negatif bir ilişki olduğu sonucu ortaya çıkmıştır.

### 3.1.2 TSG'nin Yordayıcıları

Bu bölümde, TSG ve TSG'nin alt kategorileri olan yeni olanakların algılanması, manevi değişim, kişiler arası ilişkiler, bireysel güçlülük ve yaşamın kıymetini anlama değişkenleri için ayrı ayrı yapılan hiyerarşik çoklu regresyon analizlerinin sonuçları verilecektir.

Yapılan regresyon analizi sonuçları uyumluluk, olayın algılanan ciddiyeti, problem çözme odaklı baş etme ve istemli ruminasyonun TSG'yi pozitif yönde yordadığını göstermektedir. Tüm değişkenler regresyon denklemindeyken uyumluluk anlamlılığını yitirmiştir.

Erkek olmak, uyumluluk, olayın algılanan ciddiyeti, istemli ruminasyon ve problem çözme odaklı baş etme değişkenleri TSG'nin yeni olanakların algılanması alt kategorisini yordamaktadır.

Manevi değişimi yordayan değişkenler ise olayın algılanan ciddiyeti, kaderci baş etme ve istemli ruminasyondur.

Kişiler arası ilişkiler alt kategorisi ile anlamlı ilişki içerisinde olan faktörler, uyumluluk, olayın algılanan ciddiyeti, problem çözme odaklı baş etme ve istemli ruminasyondur. Tüm değişkenler analize sokulduğunda uyumluluk kişilik özelliği anlamlılığını yitirmiştir.

Bireysel güçlülük alt kategorisine bakıldığında, uyumluluğun, olayın algılanan ciddiyetinin, problem çözme odaklı, kaderci ve çaresiz baş etmenin, ve istemli ruminasyonun bireysel güçlülüğü yordadığı sonucuna varılmıştır. Çaresiz baş etmenin bireysel güçlülük ile ilişkisi negatif yöndedir. Tüm değişkenler regresyon analizindeyken, uyumluluk yordayıcılığını kaybetmiştir.

Son olarak yaşamın kıymetini anlama alt kategorisini ise uyumluluk, olayın algılanan ciddiyeti, istemli ruminasyon ve problem çözme odaklı baş etme pozitif yönde yordamıştır.

### 3.2 Aracı Değişken Analizleri

Kişilik özellikleri ve bağımlı değişkenler arasındaki ilişkinin doğasının daha ayrıntılı şekilde anlaşılması amacıyla TSS ve TSG için aracı değişken analizleri yapılmıştır. Bu analizler, Hayes (2013)'in aracı değişken analizi için geliştirdiği PROCESS Macro programı kullanılarak yürütülmüştür.

Bu analizlerin sonucunda, çaresiz baş etme stratejisinin TSS ve duygusal tutarsızlık arasında aracı değişken olduğu sonucu bulunmuştur. Ayrıca, problem odaklı baş etme ve istemli ruminasyon TSG ve uyumluluk arasındaki ilişkide aracı değişken rolünü üstlenmiştir.

### 3.3 Olumlu Sürücü Davranışlarındaki Değişim ve TSG İlişkisi: Regresyon Analizleri

Kaza sonrasında sürücülerin olumlu sürücü davranışlarındaki değişimlerinin TSG gelişimde rolünün anlaşılması, diğer bir deyişle, TSG gelişiminde bilişsel değişimlerin yanı sıra kaza mağdurunun gelişime destek olabilecek herhangi bir eyleme geçmesinin TSG üzerindeki etkisinin anlaşılması amacıyla olumlu sürücü davranışlarındaki değişim değişkeni de regresyon

analizinin son basamağına sokulmuştur. Bu değişkenin yalnızca sürücü olan kaza mağdurları için kullanılması sebebiyle, örneklemde yalnızca aktif sürücü olan katılımcılar seçilmiş ve bu değişkenin olduğu tüm analizler bu seçilen 187 kişilik örneklem üzerinde yürütülmüştür.

Yapılan regresyon analizi sonuçları, uyumluluk, olayın algılanan ciddiyeti, problem çözme odaklı ve kaderci baş etme, istemli ruminasyon ve son olarak olumlu sürücü davranışlarında değişimin TSG'yi pozitif yönde yordadığını ortaya koymuştur.

Ayrıca bulunan regresyon sonuçlarına ek olarak, kişilik ve TSG arasındaki ilişkide olumlu sürücü davranışlarındaki değişimin rolünü incelemek amacıyla aracı değişken analizi yapılmıştır. Bu analizin sonuçları, olumlu sürücü davranışlarındaki değişimin TSG ve uyumluluk arasındaki ilişkide aracı değişken olduğunu göstermiştir.

# 4. TARTIŞMA

Bu bölümün ilk kısmında bu çalışmanın bulguları öne sürülen hipotezlere ve literatür bulgularına dayanılarak tartışılacaktır. İkinci kısımda çalışmanın güçlü yönleri ve klinik çıkarımlar üzerinde durulacak ve son kısımda ise bu çalışmanın kısıtlılıkları ve sonraki çalışmalar için öneriler ortaya koyulacaktır.

## 4.1 TSS, TSG ve Olumlu Sürücü Davranışlarındaki Değişimle TSG İlişkisi

### 4.1.1 TSS ve TSS'nin Üç Alt Kategorisi

Bu çalışmanın bulguları duygusal tutarsızlık, olayın algılanan ciddiyeti, çaresiz ve kaderci baş etme stratejileri ve intrusif ruminasyonun TSS ile pozitif ilişki içerisinde olduğunu göstermektedir. Ayrıca olumsuz değerlik de TSS ile negatif bir ilişki içindedir.

Kişilik özelliklerine bakıldığında, duygusal tutarsızlık TSS ile ilişkili bulunmuştur. Bu bulgu kaza mağdurlarında yapılan çalışmaların sonuçları ile uyum içerisindedir (Harvey & Bryant, 1999; Dörfel et al., 2008; Karanci et al.,

2012; Jaksic et al., 2012). Duygusal tutarsızlık stres, kaygı, çaresizlik hisleri ve endişeye yatkınlıkla tanımlanmaktadır (Gençöz & Öncül, 2012). Bu çalışmada, duygusal açıdan tutarsızlık yaşayan bireyler kaza geçirdiklerinde olumsuz duyguları ve kaygılarıyla baş etmekte güçlük yaşamış ve böylece kaza sonrasında TSS sergilemiş olabilirler. Olumsuz değerlik kişilik özelliğiyse duruma boyun eğici, çaba sarf etmekten kaçınan ve düşük özgüvenle karakterize olmuştur (Gencoz & Oncul, 2012). Bireyler bu çalışmada kazadan sonra stres belirtileri göstermek yerine olumsuz kendilik algılarının arttırış ve bu nedenle kaygı ve stres yerine depresyon belirtileri göstermiş olabilirler. Olaya ilişkin faktörlere bakıldığında olayın algılanan ciddiyeti TSS ve tüm alt kategorileriyle ilişkili bulunmuştur. Olayın ciddiyetini algılamak kişinin bütünlüğüne tehdit algılamasından temellenmektedir. Bu algı bireylerin dünya görüşünü ve şemalarını sarsabilir ve onları olayı değerlendirmeleri için motive eder. Kişi böylece olayı değerlendirme sırasında stres belirtileri de gösterebilir. Baş etme stratejilerine bakıldığında, bu çalışmada çaresiz ve kaderci baş etme TSS ile ilişkilidir. Bu çalışmada katılımcılar kaza sonrasındaki olumsuz etkilerle baş etme amacıyla duygusal odaklı baş etme yöntemlerini kullanmışlardır. Bu yöntemler kısa vadede olayı kabullenmeyle beraber stresi azaltabilir fakat uzun vadede, aktif baş etme yetilerini barındırmadıkları ve böylece bireyin olayı gözden geçirmesine yardımcı olmadıkları için sağlıklı bir travma sonrası adaptasyona yardımcı olmazlar. Tersine TSS'nin ortaya çıkmasına zemin hazırlarlar. Ruminasyonlarla ilgili bulgular ise intrusif ruminasyonun TSS'yi yordadığı görülmektedir. İntrusif ruminasyon nevrotik ve kaygı ile beslenen bir ruminasyon tipidir, dolayısıyla olayın değerlendirilmesinden ziyade bastırılmasına veya stresi arttıran olumsuz sonuçlara yol açmasına olanak tanır.

Aracı değişken analizlerinin bulgularına göre çaresiz baş etme stratejisi duygusal tutarsızlık ve TSS ilişkisinde aracı değişken rolüne sahiptir. Duygusal tutarsızlık olayın kontrol edilemez olduğu inancını da içinde barındırır. Olayın kontrol edilemez olduğuna dair inanç bireyin daha da çaresiz hissetmesine sebep olur ve bireyin olay ve etkileri karşısında iyice pasif bir tutum sergilemesine sebep olur. Bu durum, kişiye zara veren ve gerçekçi olmayan zarar verici inançları barındırdığından bireyin daha fazla sıkıntı ve kaygı hissetmesine yol açar.

Böylece de TSS'nin gelişmesine zemin oluşturur.

TSS'nin üç ana kategorisine bakıldığında, duygusal tutarsızlığın, yeniden yaşama ve aşırı uyarılmayı yordadığı görülmektedir. Fakat her iki analizde de duygusal tutarsızlık çaresiz baş etmenin dahil edilmesiyle anlamlılığını yitirmiştir. Duygusal açıdan tutarsız bireyler olayla baş etmek için çaresizce baş etmeye çalışmışlardır fakat bu yöntem çok da sağlıklı görünmemektedir çünkü kişilerin travmayla baş etmelerine yardımcı olmamakla beraber TSS gelişimini kolaylaştırmaktadır. Kaçınma alt kategorisini ise hiçbir kişilik özelliği yordamamıştır. Kontrol edilebilirlik algısı azaldıkça kaçınma belirtileri de artmaktadır (Goral, Kesimci, & Gencoz, 2006). Benzer şekilde, trafik kazaları da kontrol edilemez bir olay olarak görülmekte ve kişide yüksek oranda rahatsızlığa sebep olmaktadır. Olumsuz değerliğe bakıldığında, bu kişilik özelliği olayın sorgulanmadan kabul edilmesi, olumsuz etkilerle baş etmek için çaba sarf edilmemesi ve olumsuzlukların kendilik değerine zarar verici olarak nitelendirildiği durumlarla karakterizedir.

TSS'nin üç alt kategorisine bakıldığında, kaçınma alt kategorisinin katılımcılar tarafından farklı algılandığı ve kaçınmanın olayla baş etme stratejisi şeklinde görülmüş olabileceği söylenebilir.

Ayrıca, çaresiz baş etme stratejisi TSS'nin tüm kategorilerini yordamıştır. Bu bulgu aracı değişken analizi sonuçlarıyla beraber tartışılacaktır. Kaderci baş etme ise kaçınma kategorisiyle ilişkili bulunmuştur. Olayı Tanrı gibi dışsal ve kontrol edilemez bir kaynağa atfetmek kaderci baş etmenin özelliklerindendir. Kısa vadede pasif şekilde olayı kabul etme sıkıntı seviyesini düşürse de uzun vadede adaptasyonu getirmez. Bu çalışmanın katılımcılarının kaçınma kategorisini baş etme biçimi olarak kullandıklarını kabul edersek, kaderci baş etme de trafik kazası deneyimini ve olumsuz etkilerini yok saymalarına ve durumdan kaçınmalarına zemin hazırlar.

Ruminasyonlara bakıldığında ise, intrusif ruminasyon yeniden yaşama ve aşırı uyarılma ile ilişkili bulunmuş fakat kaçınmayla ilişkisi görülmemiştir. Kazayı yok saymaya meyilli kişiler olaya bir anlam yükleme ihtiyacı içinde olmayabilirler bu nedenle de ruminasyonlara başvurmazlar.

### 4.1.2 TSG ve Beş Alt Kategorisi

TSG ve alt kategorilerini yordayan faktörlerin incelenmesi amacıyla yapılan regresyon sonuçlarına göre uyumluluk ve TSG arasında pozitif yönlü bir ilişki vardır. Fakat problem çözme odaklı baş etme değişkeni regresyona girince uyumluluk anlamlılığını yitirmektedir. Bu ilişkinin doğasını anlamak amacıyla aracı değişken analizi yapılmış ve problem çözme odaklı baş etmenin uyumluluk ve TSG arasındaki ilişkide aracı değişken olduğu ortaya çıkmıştır. Uyumluluk kişilik özelliği olarak gelişmiş uyum becerileri, engellenme toleransı ve yüksek kendilik kontrolü ile karakterizedir (Gençöz & Öncül, 2012). Ayrıca kontrol algısı problem çözme odaklı baş etme ile, problem çözme odaklı baş etme de TSG ile ilişkili bulunmuştur (Tedeschi & Calhoun, 1996; Sheikh, 2008). Benzer şekilde, bu çalışmada uyumlu kişiler kazayı kontrol edilebiliri bir durum olarak algılamış ve kontrol algısı onların olayla aktif şekilde baş etmelerine yardım etmiş olabilir. Problemle aktif şekilde baş etmeleri de kazayı istemli şekilde değerlendirmelerini ve özgüvenlerini ve öz yeterliklerini arttırmış ve gelecekte başlarına gelebilecek her türlü problemle baş edebilecekleri inancını güçlendirmiş olabilir (Sheikh, 2008). Tüm bunlar uzun ömürlü bir TSG oluşumuna katkıda bulunmaktadır.

Bu çalışmanın bulguları istemli ruminasyonun TSG ve tüm alt kategorilerini yordadığını göstermektedir. Trafik kazası kişilerin şemalarını sarsmış ve kendileri ve dünya hakkındaki görüş ve inançlarını yerle bir etmiş olabilir. Bu sarsılma her zaman acı vericidir ve kişi durumu değerlendirerek bu acıdan bir an önce kurtulmak ve yeni bir denge kurmak ister. Bunun yaparken de olayın olumlu yanlarını görme ve temel inançlarını yeniden şekillendirme şansını yakalar.

Olaya ilişkin faktörlere bakıldığında TSS sonuçlarıyla benzer şekilde olayın algılanan ciddiyeti TSG ve tüm alt kategorileriyle ilişkili bulunmuştur. Olayın algılanan ciddiyeti arttıkça kişinin fiziksel ve psikolojik bütünlüğünün tehlikede olduğu algısı da artar. Bu durum, olayın ciddiyeti arttıkça olayı değerlendirme ve bu olaya bir anlam yükleme ihtiyacının arttığı görüşünü desteklemektedir (Tedeschi & Calhoun, 2004).

TSG'nin beş alt kategorisini yordayan faktörlere bakıldığında, uyumluluğun yeni olanakların algılanması ve hayatın anlamını anlama kategorileriyle ilişkili bulunmuştur. Uyumlu kişiler engellenmeyi tolere etme yetisine, yüksek kontrol algısına ve güven duygusuna sahiptirler ve böylece yaşadıkları kazayı de baş edebilecekleri bir olay olarak algılayabilir ve bu durumla baş edebilmeleri için çeşitli kaynakların arayışına girebilirler.

Baş etme stratejileri ve TSG'nin alt kategorilerine bakıldığında, problem çözme odaklı baş etme stratejisi yeni olanakların algılanması, kişiler arası ilişkiler, bireysel güçlülük ve hayatın kıymetini anlama alt kategorileriyle ilişkili bulunmuştur. Ayrıca, kaderci baş etme manevi değişim ve bireysel güçlülükle pozitif yönde ilişkilidir. Daha önce de belirtildiği gibi kaderci baş etme pasif ve duygu odaklı bir baş etme yöntemidir ve bu da uzun vadede TSS gelişimini kolaylaştırmaktadır fakat aynı zamanda olay karşısındaki bu pasif duruş dışsal kontrol odağıyla ilişkilidir. Dışsal kontrol odağı TSS ile ilişkili olsa da Türk kültüründe dini inanç ve Tanrı'ya güven, bir diğer deyişle olayı dışsal ve kontrol edilemez bir güce atfetme olaylarla baş etme stratejilerini kolaylaştırıcı faktörlerdir. Ayrıca Türk kültüründe Tanrı'nın yardımını hak etmek için kişinin gereken girişimleri yapmış olması gerektiğine inanılır. Bu nedenle bu çalışmada kaderci baş etme stratejisinin kullanılması olayın kabul edilmesini kolaylaştırır. Bu kabul de kişide olumlu manevi değişimi ve başa gelecek olası olaylarla baş etme gücünü arttırmaktadır.

### 4.1.3 Olumlu Sürücü Davranışlarındaki Değişimin TSG Üzerindeki Etkisi

Kaynakların Korunması Teorisi'nin (COR) savunduğu gibi bireyin travmatik olay sonrasında daha gerçek, olumlu ve daha yapıcı bir adaptasyon süreci yaşayabilmesi için kişinin travma sonrasında yaşadığı bilişsel gelişimini eyleme dönüştürmesi gerekmektedir. Bu çalışmada, eyleme geçme örneği olarak olumlu sürücü davranışlarındaki değişimin TSG üzerindeki rolünün anlaşılması için regresyon analizi yapılmıştır. Bu regresyon analizi yalnızca aktif sürücü olan 187 katılımcıyla yürütülmüştür. Yapılan regresyon analizi bulgularına göre, algılanan sosyal destek, uyumluluk, olayın algılanan ciddiyeti, problem odaklı baş

etme, istemli ruminasyon, kaderci baş etme ve olumlu sürücü davranışlarındaki değişim TSG'yi pozitif yönde yordamaktadır. Bu bulgu, eylemin travma sonrası gelişimde oynadığı önemli rolü doğrular niteliktedir. Sürücü olan trafik kazası mağdurları, yaşadıkları olumsuz deneyimle beraber sürücü davranışlarını olumlu yönde değiştirmek için çaba göstermişlerdir. İstemli ruminasyon ve problem çözme odaklı baş etme stratejisinin olumlu sürücü davranışlarına eşlik etmesi, kaza mağdurlarının gerçek ve olumlu adaptasyon süreci yaşadıklarını göstermektedir. Bilişsel gelişimin, gelişim eylemlerine dönüşmesi gerçek bir TSG geliştirilmesi için gereklidir ve kişinin kontrol algısının artmasına yardımcı olur. Travma yaşantısı bireyin kendilik, dünya ve diğer insanlarla ilgili algısını sarsmıştır ve eyleme geçme durumu kişinin travmanın olumsuz etkileriyle baş edebileceği inancını güçlendirmiştir. Bu çalışmanın bulguları, trafik kazası mağdurlarına destek amaçlı gerçekleştiren programlarda mağdurları eyleme geçmeleri ve aynı zamanda istemli ruminasyonla olayı anlamlandırmaları konusunda desteklemek açısından oldukça yol göstericidir.

### 4.2 Çalışmanın Güçlü Yanları ve Klinik Göstergeler

Bu çalışmada özellikle TSG'yi yordayan faktörlerin ortaya çıktığı bulgular Türkiye'de trafik kazası geçiren bireylere destek programları için yol gösterici olmuştur. Tüm bu veriler, kaza mağdurlarının kaza sonrasında daha iyi bir adaptasyon süreci yaşamaları amacıyla problemi çözme odaklı kazaya öncü baş etme stratejilerinin onlara öğretilmesi açısından çok faydalı olacaktır. Ayrıca istemli ruminasyonun da kişilere öğretilmesi yararlıdır.

Psikoterapi sürecinde ise psikoterapistin kaza mağduru için olayın anlamını anlaması önemlidir. Ayrıca, mağdurların kendi hızlarında gelişim farkındalıklarını kazanmaları çok önemlidir, psikoterapistin kişiyi gelişimi fark etmesi için zorlamaması esastır. Psikoterapist, gelişimin daha kolay farkına varmaları amacıyla kaza öncesi ve sonrasındaki baş etme stratejilerini, duygusal durumlarını veya dünya görüşlerini karşılaştırmalarına yardımcı olarak TSG'yi kolaylaştırabilir.

## 4.3 Çalışmanın Kısıtlılıkları ve Öneriler

Çalışmanın kısıtlılıkları göz önüne alındığında, verilerin toplanması sırasında kişiler sorulara kendileri cevap vermişlerdir. Bu veri toplama metodu verilen cevapların güvenilirliğini sorgulanabilir kılmaktadır.

Bir diğer kısıtlılık, verilerin çevrimiçi bir bilgisayar programıyla toplanmış olmasıdır. Bu programın sadece internet bağlantısı olan bireyler tarafından ulaşılabilir olması yalnızca eğitim seviyesi yüksek kişilerin katılımcı olabilmesine sebep olmuştur. Böylece mevcut çalışmadaki bulguların genellenebilirliği ve temsil edilebilirliği kısıtlanmıştır. Gelecek çalışmalarda her türlü sosyoekonomik kesimden katılımcılara ulaşılması bu problemi ortadan kaldırabilir.

Çalışmadaki bir diğer kısıtlılık ise verilerin tek bir zamanda toplanmış olmasıdır. TSS ve TSG'nin zamanla gelişen bir süreç olduğu da düşünülürse, gelecek çalışmalarda uzunlamasına araştırmalar yapmanın faydalı olabileceği düşünülmektedir.

## Appendix K: Curriculum Vitae

### PERSONAL INFORMATION

Surname, Name: Çağlayan, Pınar
Nationality: Turkish (TC)
Date and Place of Birth: 12, January 1985, İstanbul
Marital Status: Married
Phone: +90 507 171 66 16
Email: pinarozb@gmail.com

### EDUCATION

| Degree | Institution | Year of Graduation |
|---|---|---|
| BS | METU Psychology | 2009 |
| High School | Galatasaray Lisesi | 2004 |

### WORK EXPERIENCE

| Year | Place | Enrollment |
|---|---|---|
| 2014- present | Mavi Psikolojik Danışmanlık Merkezi | Psychoterapist |
| 2011-2014 | AYNA Klinik Psikoloji Destek Ünitesi | Psychoterapist |

### FOREIGN LANGUAGES

Advanced English, advanced French

### PUBLICATIONS

1. Özbağrıaçık- Çağlayan, P. (2014). Childhood Sexual Abuse and Emotional Suppression: Adult Psychotherapy Process and Effects on Psychotherapist. *AYNA Klinik Psikoloji Dergisi, 1*(1), 13-25.

2. Bozo, Ö., Gurol, İ., Ozbagriacik, P., Ozekin, F. (2007). The relationship between religiosity and death Anxiety: A cross-sectional study. Oral Presentation at 10th European Congress of Psychology, Prague.

### HOBBIES

Puzzles, Movies, Reading, Music, Colouring.

## Appendix L: Tez Fotokopi İzin Formu

**ENSTİTÜ**

| | |
|---|---|
| Fen Bilimleri Enstitüsü | ☐ |
| Sosyal Bilimler Enstitüsü | X |
| Uygulamalı Matematik Enstitüsü | ☐ |
| Enformatik Enstitüsü | ☐ |
| Deniz Bilimleri Enstitüsü | ☐ |

**YAZARIN**

Soyadı : ÇAĞLAYAN
Adı : PINAR
Bölümü: PSİKOLOJİ

**TEZİN ADI** (İngilizce): The Determinants of Posttraumatic Growth and Posttraumatic Stress Among Motor Vehicle Accident Survivors: Personality, Coping Mechanisms, and Ruminations.

**TEZİN TÜRÜ**: Yüksek Lisans ☐ Doktora X

| | |
|---|---|
| 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 (1) yıl süreyle fotokopi alınamaz. | X |

**TEZİN KÜTÜPHANEYE TESLİM TARİHİ**: