THE PATH FROM TRAFFIC ACCIDENT TO POSTTRAUMATIC STRESS, POSTTRAUMATIC GROWTH, AND DRIVER BEHAVIOR CHANGE: AN EXAMINATION WITH RUMINATION AND TRANSTHEORETICAL MODEL

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_____

Prof. Dr. Tülin Gençöz
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

_____

Prof. Dr. H. Canan Sümer
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science.

_____	_____
Prof. Dr. Tülin Gençöz Co-Supervisor	Assoc. Prof. Dr. Türker Özkan Supervisor

Examining Committee Members

Prof. Dr. Yeşim Yasak	(Çankırı Karatekin Uni, PSY)	_____
Assoc. Prof. Dr. Türker Özkan	(METU, PSY)	_____
Assist. Prof. Dr. Bahar Öz	(METU, PSY)	_____

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Name, Last name : Bilgesu Kaçan

Signature :

ABSTRACT

THE PATH FROM TRAFFIC ACCIDENT TO POSTTRAUMATIC STRESS, POSTTRAUMATIC GROWTH, AND DRIVER BEHAVIOR CHANGE: AN EXAMINATION WITH RUMINATION AND TRANSTHEORETICAL MODEL

Kaçan, Bilgesu
M.S., Department of Psychology
Supervisor : Assoc. Prof. Dr. Türker Özkan
Co-Supervisor: Prof. Dr. Tülin Gençöz
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The traffic accident is one of the traumatic events with their high occurrence rates, deathful results and psychological consequences. While post-traumatic stress (PTS) is one of the negative psychological causes of traffic accidents, positive psychological experiences such as post-traumatic growth also can be experienced. These experiences with their vital effects have an impact on driver behavior change. In this thesis, the path from traffic accident to PTS, PTG, and driver behavior change was examined with rumination type and stages of Transtheoretical Model (TTM) mediation. To examine stages of TTM, two scales were translated and adapted to Turkish. The data of 409 adult traffic accident survivors was used for adaptation analysis; the data of 234 adult traffic accident survivors was used for other analysis. While factor analysis showed difference for one scale, other scale showed perfect fit with original version. Pre-contemplation stage, contemplation stage, and action-maintenance stage caused partial metiation in the relationship between perceived severity of event and PTS; and between severity of event and PTG; and between PTS and PTG; when rumination type was included analysis as mediator variable full

mediation was found. In terms of relationship between PTS/PTG and positive driver behavior change, action-maintenance stage was found as a significant mediator variable. The detailed results were presented and discussed; the limitations, strengths, clinical implications of study; suggestions for future studies were presented.

Keywords: Post-traumatic Stress, Post-traumatic Growth, Driver Behavior Change, Rumination, Transtheoretical Model

ÖZ

TRAFİK KAZASINDAN TRAVMA SONRASI STRES, TRAVMA SONRASI GELİŞİM VE SÜRÜCÜ DAVRANIŞ DEĞİŞİMİNE GİDEN YOL: RUMİNASYON VE TRANSTEORİK MODEL İLE İNCELEME

Kaçan, Bilgesu
Yüksek Lisans, Psikoloji Bölümü
Tez Yöneticisi : Doç. Dr. Türker Özkan
Ortak Tez Yöneticisi: Prof. Dr. Tülin Gençöz

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Trafik kazaları yüksek meydana geliş sayılırı, yüksek ölüm oranları ve psikolojik etkileriyle önde gelen travmatik olaylarındandır. Travma sonrası stress (TSS) trafik kazalardan sonra deneyimlenen negative bir sonuçken travma sonrası gelişim (TSG) gibi kimi pozitif deneyimler de yaşanabilmektedir. Bu deneyimler maddi ve manevi yanlarıyla sürücülerin sürücü davranışlarını da etkileyebilmektedir. Bu çalışmada trafik kazasından TSS'e, TSG'ye ve sürücü davranışına giden yol Transteorik Model'in basamaklarının ve ruminasyon tarzlarının aracığı değişkenliğiyle aydınlatılmaya çalışılmıştır. Bu amaçla iki ölçek Türkçe'ye çevrilmiş ve trafik kazası geçirmiş 409 yetişkinden toplanan veri ile factor analizleri yapılmıştır. Bu aşamadan sonra papılan aracı değişken analizlerinde 234 trafik kazası geçirmiş yetişkinin verileri kullanılmıştır. Factör analizleri sonucunda bir ölçek original ölçekten farklı bir factor yapısı gösterirken, digger ölçek bir maddesi hariç tam bir uyum göstermiştir.Bu ölçek içe sunulan aracı değişken analizi sonuçları TTM'nin tüm basamaklarının analizlerde değişik ölçülerde aracı değişken rolünü üstlendiğini

göstermiştir. En yüksek indirekt etkiyi sağlayan ya da en iyi varyansı sağlayan aracı değişkene teoriye uygun olarak, TSS için intrusif ruminasyon ve TSG için istemli ruminasyon, eklendiğinde tam aracı değişkenlik sağlanmıştır. Çalışmanın sonuçları detaylı bir şekilde sunulmuş olup, literature ile karşılaştırmalı olarak tartışılmıştır. Çalışmanın sınırlılıkları, güçlü yanları, klinik olarak uygulanabilirliği ve gelecek çalışmalar için öneriler de çalışmanın sonunda sunulmuştur.

Anahtar Kelimeler: Travma Sonrası Stres, Travma Sonrası Gelişim, Sürücü Davranış Değişimi, Ruminasyon, Transteorik Model

To my parents,
my brother
and
boyfriend

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I am so lucky to have such special people in my life…

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LIST OF ABBREVIATIONS

APA	American Psychological Association
DBQ	Driver Behaviors Questionnaire
DSM	Diagnostic and Statistical Manual of Mental Disorders
ERRI	Event Related Rumination Inventory
EU	European Union
PTG	Post-Traumatic Growth
PTGI	Post-Traumatic Growt Inventory
PTS	Post-Traumatic Stress
PTSD	Post-Traumatic Stress Disorder
RESMATI	Readiness to Engage in Self-Management after Acute Traumatic Injury Questionnaire
SITS	Stress Indications Aftermath of Trauma Scale
SOC	Stages of Change
TTM	Transtheoretical Model
TÜİK	Turkish Statistical Institute
URICA	University of Rhode Island Change Assessment
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

The accidents, which are defined as “An unfortunate incident that happens unexpectedly and unintentionally, typically resulting in damage or injury.”(Accident, 2017), are ongoing problems from the past to present time. The accidents include unintentional injuries, workplace accidents, accidents at home, leisure time accidents, and traffic accidents.

According to European Union (EU) statistics (2016) based on 27 EU Member States, Norway, and Turkey, these accidents resulted in 151 thousand deaths and this is equal to 3.0 % of all deaths. Traffic accidents are leading accidents because of their results; such as high death rates, psychological and physical negative consequences, economically losses for individual and country. According to Global Status Report on Road Safety of World Health Organization (WHO, 2015); the traffic accidents are the ninth leading cause of death, and each year more than 1.2 million people die on the roads in the whole world; ninety-percent of these death rates belongs to low and middle-income countries.

As a middle-income country, Turkey also has high traffic accident rates; in 2015 more than 1 million traffic accidents occurred; 183 thousand of them involved death or injury (TÜİK, 2015). In addition to the considerable death rates, traffic accident can also cause psychological problems, such as stress and trauma; and psychological growth. Because of high prevalence rates of accidents in Turkey, examining psychological consequences of accidents and examining the path from the traffic accident to psychological consequences gets importance.

The first aim of the study is to examine negative and positive consequences of traffic accidents; posttraumatic stress (PTS) as a negative consequence and a posttraumatic growth (PTG) as a positive consequence were examined. Secondly, in the path from

the traffic accident to PTS and PTG, effects of stage of traffic accident survivor according to Transtheoretical Model (TTM) and rumination type of traffic accident survivor were examined. Finally, the driver behavior change based on the interaction of survivors' stage, and the experiences aftermath of the accident were examined.

In this thesis, firstly comprehensive literature review with relation to purposes of the thesis and hypothesis of the thesis will be presented. After that, in the method section, sample characteristics, measurement tools, and procedure of the study will be presented. The results of the study will be explained in the result section. In the discussion section, the result of the study will be discussed; strong and weak sides of study, clinical implications of findings and suggestion for future studies will be presented. The references and appendices will be shown at the end of the study.

1.1 Trauma and Traumatic Life Events

According to American Psychological Association (APA, n.d.), trauma is defined as an emotional response to the awful events such as the natural disaster, rape, and accident. The psychological side of trauma begins to gain importance after World War I and II because of problems about workforce of soldiers after the combat (Micale & Lerner, 2001); because of awareness about psychological sides of trauma on combat survivors and their effects on clinical and social areas, stress-related mental disorders are still an area of interest (Linden, Hess, & Jones, 2012). Thus, other than the battle as a traumatic event, trauma has been studied with a lot of traumatic life events from the past to present. It was observed that there is without a number of event studied related to trauma. While some events are described as just an unfortunate event, these studied events are described as traumatic events. The distinction between traumatic event and non-trumatic event is not clear; it was stated that the important thing is experiencing person's subjective evaluation of the event (Weinberg & Gil, 2016); this subjective evaluation was impressed by some factors; such as proximity to the event, and level of the event was experienced. Other study found evaluations about an event are shaped by factors such as race, age, gender, socioeconomic status (SES), social support, and culture (Bonanno, Brewin, Kaniasty,

& La Greca, 2010). Even if these factors are changed, individuals who practiced the event as traumatic event have a probability of experience different psychological reactions such as post-traumatic stress.

1.2 Post-Traumatic Stress (PTS)

Individuals who faced with a traumatic event may not successfully process the event, and they may experience some psychological difficulties such as distress; and they may develop posttraumatic stress disorder (PTSD; Park, 2010). According to Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013), PTSD takes places under the Trauma- and Stressor-Related Disorders category, and for PTSD diagnosis there are some criteria;

> Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways; directly experiencing the traumatic event(s), witnessing, in person, the event(s) as it occurred to others, learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental; experiencing repeated or extreme exposure to aversive details of the traumatic event(s). (p. 271)

In addition to this A Criterion, there are four symptom clusters that involve twenty symptoms. The intrusion symptoms related with the traumatic event, avoidance symptoms in face of traumatic event stimulies, distorted cognitions and mood related to the traumatic event, and ascending arousal and reactivity after the traumatic event constitute these four symptom clusters. For the diagnosis, these symptoms should continue more than one month after the traumatic event (APA, 2013).

Some individuals developed PTSD, someone did not in the end of the same event; in literature, age (Davidson, Hughes, Blazer, & George, 1991; Norris, 1992; Perkonigg, Kessler, Storz, & Wittchen, 2000), sex (Tolin & Foa, 2006; Ehlers, Mayou, & Bryant, 1998; Karanci et. al. 2012), income level (Perkkoningg et al., 2000; Norris, Murphy, Backer, Perilla, Rodriguez, & Rodriguez, 2003, Karanci et al., 2012),

perceived severity of event (Malt, Hoivik, & Blikra, 1993; Ehlers et al. 1998; Dörfel et al., 2008) was found as factors related to PTSD. As stated before, PTSD was studied and found as related to several traumatic events; such as natural disasters (Chan & Rhodes, 2014; Dai, Chen, Lai, Li, Wang, & Liu, 2016; Furr, Comer, Edmunds, & Kendall, 2010), human made disasters (Bromet et al., 2017), war (Stappenbeck, Hellmuth, Simpson, & Jakupcak, 2014; Zerach, Greene, Ginzburg, & Solomon, 2014), violence (Hébert, Langevin, & Daigneault, 2016; Park, Mills, & Edmondson, 2012; Simon, Feiring, & Cleland, 2016); accidents (Maeda, Kato, & Maruoka, 2009; Üzümcüoğlu, Özkan, Lajunen, Morandi, Orsi, Papadakaki, & Chliaoutakis, 2016).

One of these accidents as traumatic events is traffic accident (Norris, 1992). Prevalence of PTSD after traffic accident reported as ranging from 1% to 46% (Blanchard & Hickling, 2004); 5% to 20% of traffic accident survivors needed medical attention and experience significant distress level within 6 months after the traffic accident (Wu & Cheung, 2006). In a review of 35 studies, it was stated that prevalence rates differ across studies, ranging from 6% to 45% (Heron-Delaney, Kenardy, Charlton, & Matsuoka, 2013). A study investigated the World Mental Health surveys to reach prevalence rates and predictors of PTSD, it was found that prevalence rate for traffic accident which was perceived as life-threating is 2.5% and this rate is constant across countries; and predictors are low education level, occurrence of death, occurrence of serious injury, prior traffic accidents but not prior other traumas, and prior anxiety disorders (Stein et al., 2016). In other studies, predictors of PTSD after traffic accident found as female gender, psypathology before the accident, perceived threat for life, and injury severity (Blanchard & Hickling, 2004; Ehlers, Mayou, & Bryant, 1998), any relationship between PTSD and role of the individual in the accident (driver or passenger) cannot be found (Chossegros et al., 2011).

1.3 Post- Traumatic Growth (PTG)

Besides negative effects of a traumatic event such as post-traumatic stress, positive effects may also occur; and there is ascending tendency to examine these positive effects from mid-1980 (Joseph, 2009). A traumatic event can activate the process including elements which are pre and post trauma factors and it can be ended up with both post-traumatic stress and growth aftermath of trauma. In other words, traumatic events can result with some positive psychological changes in trauma survivors; and this is called as post-traumatic growth (PTG; Joseph & Linley, 2008; Tedeschi & Calhoun, 1995). In literature, aside from post-traumatic growth, there are different descriptions of positive effects of traumatic event; positive psychological changes (Yalom & Lieberman, 1991), stress-related growth (Park, Cohen, & Much, 1996), thriving (Abraido-Lanza, Guier, & Colon, 1998), perceived benefits (McMillen & Fisher, 1998), and adversarial growth (Linley & Joseph 2004). In this study, positive effects of trauma conceptualized as the definition of posttraumatic growth according to Tedeschi and Calhoun (1995); "positive psychological change experienced as a result of the struggle with highly challenging life circumstances".

Post-traumatic growth can be experienced in five different domains; greater appreciation of life and the changed sense of priorities, improved relationship with others, feeling more personal strength, awareness about new possibilities and spiritual improvement (Tedeschi & Calhoun, 1996). According to Tedeschi and Calhoun (2004) PTG can be a result of the traumatic event and/or it can be processed after the traumatic event, and in their Functional Descriptive Model of PTG the process through the traumatic event to PTG is explained (See Figure 1). To experience PTG, severity, and challenges of the event, personality characteristics, management of emotions, social support, cognitively engaging with event are determining factors (Calhoun & Tedeschi, 1998). In other words, individuals have general beliefs about the world which was named as "assumptive world" by Parkes (1971) and traumatic experience challenges this assumptive world and creates distress; the struggle with this new reality and distress is crucial for the development

of PTG. With cognitive rebuilding, the new reality about life cognitively processed and all of this process experienced as PTG (Calhoun & Tedeschi, 1998).

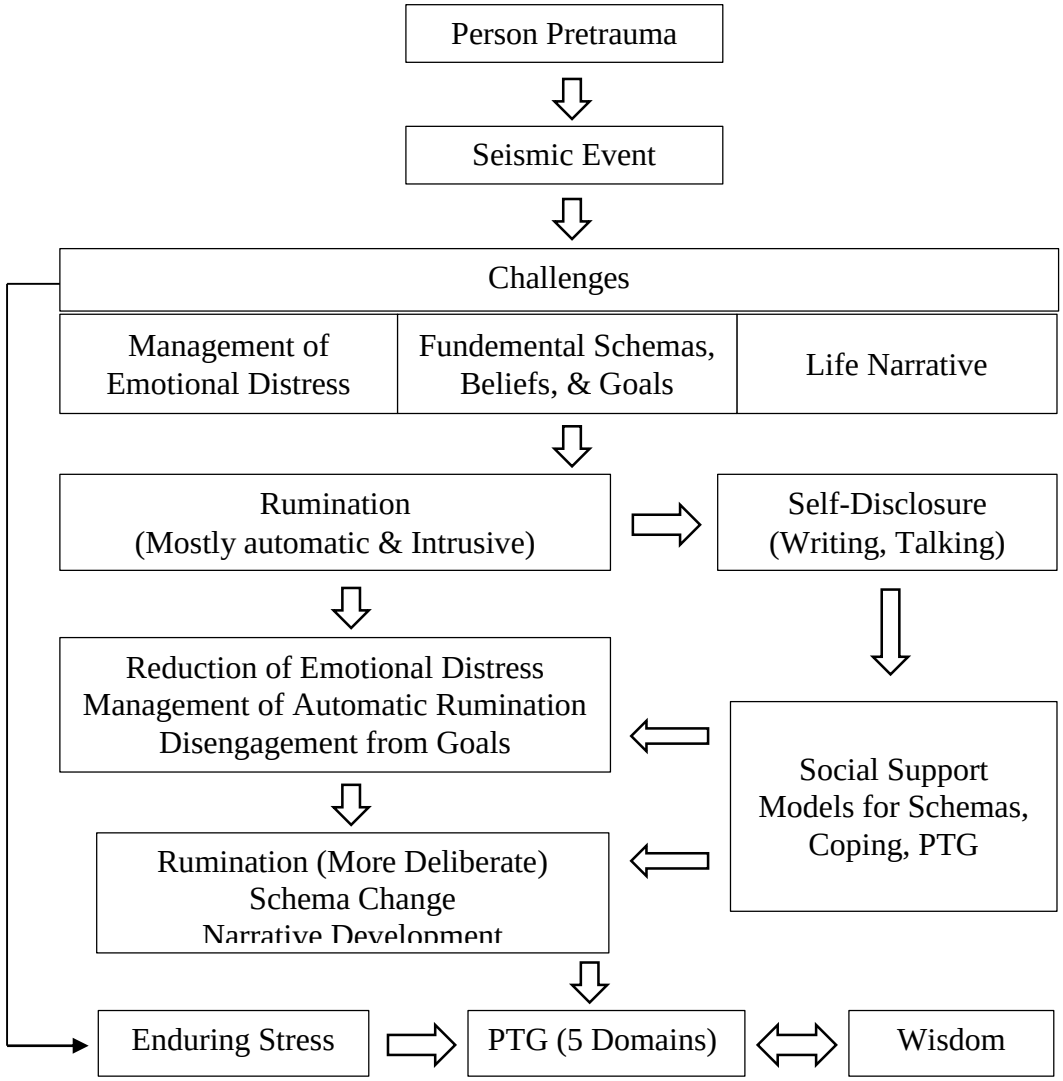


Figure 1. The Functional Descriptive Model of PTG (Calhoun & Tedeschi, 1998).

Posttraumatic growth was investigated with several trauma survivor groups; such as war veterans (Park et al., 2017; Tsai, Sippel, Mota, Southwick, & Pietrzak, 2016), cancer survivors (Hill & Watkins, 2017; Wilson et al., 2016), survivors of natural disaster (Cryder, Kilmer, Tedeschi, & Calhoun, 2006; Hafstad, Kilmer, & GilRivas, 2011; Nalipay, Bernardo, & Mordeno, 2017; Zhou, Wu, & Zhen, 2017), and survivors of sexual abuse (Hartley, Johnco, Hofmeyr, & Berry, 2016; Kaye-Tzadok

& Davidson-Arad, 2016; Ullman, 2014). It was found that some levels of posttraumatic growth experienced across different trauma survivor groups.

The predictors of PTG aftermath of accidental injuriy especially aftermath of traffic accident stated as high maritlal status, education level, openness, positive coping, and PTSD symptoms (Wang, Wang, Wang, Wu, & Liu, 2013). In one thesis, it was indicated that gender, time since accident, and interaction between them are significant predictors for traffic accident survivors who experienced traumatic brain injury (Gildar, 2016). A study with 236 traffic accident survivors also confirmed personality and PTSD symptoms as significant predictor; in addition to this, it was stated that gender and injury are significant predictors of PTG (Merecz, Waszkowska, & Wezyk, 2012).

1.4 Perceived Severity of Event

According to Cognitive Theory, cognitions or perceptions of people about situations and events have an impact on their emotions and behaviors. In other words, the situation itself does not determine the psychological and behavioral results of the event; rather the important thing is how people evaluate the event (Beck, 1964; Beck, 2011; Ellis, 1962). The maladaptive or dysfunctional evaluations about event results with psychological problems; and these problems which arise from thought processes or perceptions keep going to the symptoms of emotional disorders (Beck, 1976). In the same direction with Cognitive Theory, Attribution Theory also states that attributions about event mediate the relationship between event and illnesses (Amirkhan, 1990). In two research, some events were coded as traumatic events and non-traumatic events and it was found that rather than the nature of event, survivors' emotional responses to the event predict PTSD symptoms (Boals & Schuettler, 2009; Rubin, Boals, & Berntsen, 2008).

In the literature, the perceived severity of event and developing PTSD found to be related; people who perceive the event as most severe showed more posttraumatic stress symptoms (Bisson, 2007; Blanchard et al., 1995; Ogle, Rubin, & Siegler,

2016; Dörfel, Rabe, & Carl, 2008; Ehlers, Mayou, & Bryant, 1998; Lauterbach, & Vrana, 2001; Malt, Hoivik, & Blikra, 1993; Ozer, Best, Lipsey, & Weiss, 2003). The research conducted in Turkey also showed that the perceived severity of event is positively related to PTSD (Elal & Slade, 2005; İkizer, Karancı, & Doğulu, 2016).

In the literature, the perceived severity of event and developing PTG also found to be related; in the same direction with PTSD, people who perceive the event as most severe showed more posttraumatic growth (Aldwin, Sutton, & Lachman, 1996; Arikan, Carnelley, Stopa, & Karl, 2010; Marshall, 2010; Martin, Byrnes, McGarry, Rea, & Wood, 2017); in one study the direct relationship between severity of event and PTG cannot be found (Morris & Shakespeare-Finch, 2011).

The relationship between the severity of the traffic accident as traumatic event and PTS and PTG were examined in the literature. The literature about injury severity and PTSD relatedness is contradictory. A study was conducted with 98 trauma survivor participants found that both injury severity and perceived life threat separately has a positive effect on both PTSD development and PTS symptom severity (Blanchard et al., 1995). In a longitudinal study was conducted with 967 traffic accident survivors; it was found that both objective measures of trauma severity and perceived threat are related to the PTSD (Ehlers et al, 1998). Bae, Hyun, and Ra (2015) claimed that severity of injury affects the perceived threat and they indirectly affect PTSD symptom severity of traffic accident survivors. They confirmed their results, and beyond their hypothesis, it was found that both the severity of injury and the perceived threat, directly and indirectly, related to symptom severity. A 3 year follow-up study revealed that there is a relationship between reports of nurses about traffic accident survivors' injury severity and development and severity of PTSD (Mayou, Ehlers, & Bryant, 2002).

A study investigated relationship between subjective life threat and objective severity of traffic accident; it was found that the subjective life threat significantly correlated with PTSD symptoms; but relationship between injury severity and acute PTSD symptoms are mediated by cortisol level, there is no direct relationship; the

interesting result is that subjective life threat and objective injury severity found as negatively correlated (Delahanty, Raimonde, Spoonster, & Cullado, 2003). Some studies also cannot find a relationship between objective traffic accident injury severity and PTSD severity (Brand et al., 2014; Fujita & Nishida, 2008; Mayou, Bryant, & Duthie, 1993; Schnyder, Moergeli, Klaghofer, & Buddeberg, 2001). In Turkey, Turan, Eşel and Keleş (2003) examined survivor of traffic accidents; they made clinical interviews with traffic accident survivors and found that physical severity of accident and perceived life threat is positively related to PTSD. Çağlayan (2016) conducted a study with 225 traffic accident survivors; it was found that the survivors who perceive the event as more severe have more PTS scores.

In terms of growth after the traffic accident, while the objective severity of injury was not found a consistent predictor for PTG, perceived severity of event was found as predictor of two domains of PTG (Wu, Leung, Cho, & Law, 2016). In other study conducted with 102 survivors who experience traffic accident at least 6 months prior to research, it was found that both objective and subjective accident severity positively related with overall PTG; but they associated with different subdomains of PTG (Zoellner, Rabe, Karl, & Maercker, 2008). In Turkey, Çağlayan (2016) found that similar to PTS findings, the perceived severity of accident positively related with PTG and its five domains.

1.5 Post-traumatic Stress and Post-traumatic Growth as Two Different Consequences of Traumatic Event

Posttraumatic stress and Post-traumatic growth are two consequences of traumatic events. According to Tedeschi and Calhoun (2004), the distress is needed for shaking beliefs about the world and this struggle is needed for PTG; thus PTG and negative sides of trauma such as distress can coexist; but, PTG is distinct from post-traumatic stress (Tedeschi & Calhoun, 2004). It was observed that the relationship between PTSD and PTG is unclear in the literature.

There are few studies which cannot be found any relationship between PTS and PTG; in other words there are indicated that PTS and PTG are independent constructs; in a study which was investigated common predictors and relationship of PTG and PTS, it was found that there is no relationship between PTS and PTG; and different variables predicted PTS and PTG (Cordova, Giese-Davis, Golant, Kronenwetter, Chang, & Spiegel, 2007); other studies reached same results (Salsman, Segerstrom, Brechting, Carlson, & Andrykowski, 2009; Smith, Samsa, Ganz, & Zimmerman, 2014; Zhou, Wu, & Zhen, 2017). In most studies, it was found that there is a relationship between PTS and PTG; some of them indicated positive relationship between them; in other words, PTS and PTG are coexisting constructs (Hall et al., 2010; Tiamiyu et al., 2016; Wilson et al., 2016; Wu, Xu, & Sui, 2016; Zhou & Wu, 2016), and some of them indicated negative relationship between them; in other words, it was stated that PTS and PTG are opposite ends of the same continuum (Ai, Cascio, Santangelo, & Evans-Campbell, 2005; Hall et al., 2008; Johnson et al., 2007).

In addition to these cross-sectional studies, longitudinal studies investigated the relationship between PTSD and PTG. Dekel, Ein-Dor, and Solomon (2012) measure trauma survivors' PTS and PTG level at three-time point and found that PTS and PTG are stable constructs and initial level of PTSD positively predicted later PTG level. Other longitudinal study found that individuals who have more severe PTS symptoms also experienced more growth (Hall, Saltzman, Canetti, & Hobfoll, 2015); and more recent trauma exposure or newly diagnosed PTSD more strongly and positively predicted PTG (Tsai, Sippel, Mota, Southwick, & Pietrzak, 2016). According to results of Chen, Zhou, Zeng, and Wu (2015), initial higher PTG levels predicted reductions in later PTS levels.

A metanalysis with forty-two studies (N = 11,469) found that PTS and PTG has linear relationship, and strength of relationships differed according to trauma type and age (Shakespeare-Finch, & Lurie-Beck, 2014); and small significant positive relationship was found between PTS and PTG (Shand, Cowlishaw, Brooker, Burney, & Ricciardelli, 2015). Other meta-analysis confirmed a positive association between

PTS and PTG; moreover, it was found that stronger association between 18-24 months than at near or far post-trauma time (Wang, Liu, Li, & Gong, 2016).

Cognitive process about the traumatic event may have a crucial role the development of both PTG and PTS. According to Functional Descriptive Model of PTG, rumination as a cognitive process has an effect on PTG (Tedeschi & Calhoun, 2004); and it also has an effect on the development of PTS (Beck, 1964).

1.6 Rumination

Rumination, which is the cognitive process, is defined as repetitive thoughts about reasons and results of an event, situation, or data. The rumination conceptualized in different forms in the literature; it was mostly focused on negative content of rumination and it was found closly related to negative effects of traumatic experience (e.g., Ehring, Frank, & Ehlers, 2008; Michael, Halligan, Clark, & Ehlers, 2007; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Szabo, Warnecke, Newton, & Valentine, 2017). Recently, the positive content of rumination was taken into consideration; and rumination went into the division as intrusive and deliberate rumination (Cann et al., 2011). Intrusive rumination which is similar to the focused negative content of rumination includes involuntary, and unwitting repetitive thoughts about the traumatic event, thoughts about the event comes to mind unavoidably. Other rumination type is deliberate rumination which is voluntary and intentional thoughts to understand the traumatic event, to find a meaning of the event and to solve the problem.

While intrusive rumination related with maintenance or increase in distress (Blackburn & Owens, 2016; Hill & Watkins, 2017; Kamijo & Yukawa, 2016; Morris & Shakespeare-Finch, 2011), deliberate rumination is related with well-being, growth, and coping (Blackburn & Owens, 2016; Hill & Watkins, 2017; Kamijo & Yukawa, 2016; Su & Chen, 2015; Taku, Calhoun, Cann, & Tedeschi, 2008; Zhou & Wu, 2015). The timing of rumination is also important; while intrusive rumination immediately after the traumatic event is associated with PTG because of their trigger

effect on cognitive processing; recent deliberate rumination is related with more recent PTG (Taku, Cann, Tedeschi, & Calhoun, 2009). Rumination as a cognitive process also studied to investigate its mediating effect between severity of event and PTS and PTG. Intrusive rumination mediated the relationship between the severity of traumatic event and PTSD in earthquake survivors (Zhou, Wu, Yuan, Chen, & Chen, 2015). While the perceived severity predicted intrusive rumination, and intrusive rumination predicted distress; it cannot be found a relationship between the trauma severity, deliberate rumination and PTG (Morris & Shakespeare-Finch, 2011). On the other hand, in another study, it was stated that association between perceived severity of event and PTS mediated by intrusive rumination; and this relationship for PTG was mediated by deliberate rumination (García, Cova, Rincón, & Vázquez, 2015).

Rumination also plays a role for traffic accident survivors, and the results are consistent with findings from other trauma survivor groups in the literature. Rumination was found as positively associated with both development and perceived severity of PTSD; it is valid for at 3 months and 1 year following the event (Ehlers, Mayou, & Bryant, 1998). More recent studies confirmed these result; rumination is associated with PTSD (Ehring & Ehlers, 2014; Ehring, Frank, & Ehlers, 2008). In a review about predictors of PTSD for adult traffic accident survivors, rumination was found as a significant predictor (Heron-Delaney, Kenardy, Charlton, & Matsuoka, 2013). In a thesis, while intrusive rumination predicted PTS, deliberate rumination predicted PTG of traffic accident survivors (Çağlayan, 2016).

1.7 Transtheoretical Model (TTM)

To understand the path from traumatic event towards post-traumatic stress and post-traumatic growth critical dimension can be the change. When change is taken into consideration; The Transtheoretical Model (TTM), also known as the stages of change (SOC) model (Prochaska & DiClemente, 1983) is one of the prominent change models. According to TTM, there are five stages which show people's readiness for change, and readiness for change is a continuum from the first stage

which people do not think about the change to the last stage which people try to maintain successful changes (Prochaska, DiClemente, & Norcross, 1992).

The stages of TTM are pre-contemplation, contemplation, preparation, action, and maintenance (Prochaska & DiClemente, 1983). In pre-contemplation stage, there are no change thoughts; individual did not think about her/his problems, in other words, this stage is the stage of denial or minimization of the problem. When the individual thinks about the possibility of change but does not show any attempts to change, contemplation stage is on the stage. Tha main feature of the contemplation stage is thoughts about problems and making the change. After the contemplation stage, preparation stage which individual tries to find strategies or ways for change takes place. When the individual can find strategies or ways for change, s/he starts to act, makes some behavioral modifications to change her/his problem, this stage is named as action stage. As a final stage, in the maintenance stage the individual tries to save changes which s/he already made, in another word, they try to prevent relapse (Prochaska & DiClemente, 1983).

As a behavioral change model, TTM while firstly developed and used for smoking cessation programs, its scope was rapidly expand (Prochaska & Velicer, 1997); such as self management of pain (Kerns, Rosenberg, Jamison, Caudill, & Haythornthwaite, 1997), exercise behaviors and physical activity (Romain, Bernard, Hokayem, Gernigon, & Avignon, 2016) to improve interprofessional collaborative practice (Keshmiri et al., 2017), to quit or reduce gambling (Kushnir, Godinho, Hodgins, Hendershot, & Cunningham, 2016), dietary interventions for diabetes (Salmela, Poskiparta, Kasila, Vähäsarja, & Vanhala, 2008). In Turkey, TTM was investigated with exercise behaviors (Miçooğulları, Cengiz, & Aşçı, 2010), nicotine addiction (Eray, 2016), alcohol dependence (Evren, Saatçioğlu, Dalbudak, Danışmant, Çakmak, & Ryan, 2006), and nurse services for female victims of domestic violence (Efe, 2009).

In the clinical setting, TTM also used to assess patients' readiness for treatment, to individualize interventions according to the stage and needs of each client (Abel &

O'Brien, 2014). One of the clinical groups is individuals who suffer from effects of traumatic events were also studied with TTM even if the number of these studies very limited. A study investigated 67 individuals who have PTSD diagnosis and substance usage in terms of relationship their stage according to TTM and treatment results; it was found that there is no association between stages and pathology, but individuals who were classified as at pre-contemplation or contemplation stage showed two times more relapse rates in comparison to individuals who were classified as at action or maintenance stage (Gewirtz, 1997). To test assumptions of the TTM in a PTSD veteran population, a treatment program was conducted and some measures were taken; while TTM constructs found as consistent, predicted relationships between TTM and PTSD cannot be found (Rooney, Hunt, Humphreys, Harding, Mullen, & Kearney, 2005). In one longitudinal study, 50 war veterans received PTSD treatment programme, at four time points their stages and symptom severity, readiness to change as a continues variable were assessed; it was stated that even if some problems emerged in terms of application of TTM for PTSD, it was found that individuals who are ready to change, or actively made some things for change before the treatment, showed more reducing symptom severities than individuals who only consider about change after the treatment (Rooney, Hunt, Humphreys, Harding, Mullen, & Kearney, 2007). In a case study, a therapy program integrated with TTM was applied to a sexually abused individual; in the findings of the study, it was suggested that TTM model is applicable for individuals with a history of sexual trauma (Vos, 2005). A study investigated the relationship between traffic accident trauma and TTM cannot be found in the literature.

1.8 Driver Behavior

There are several classification systems to identify or categorize the driver behaviors. The classification system of Reason, Manstead, Stradling, Baxter, and Campbell (1990) is prominent one among other classifications. According to Reason et al. (1990), in traffic drivers acted some “bad” or “silly” behaviors which are named as aberrant driver behaviors. The aberrant driver behaviors go into the division as errors and violations. Errors described as “generic term to encompass all those occasions in

which a planned sequence of mental or physical activities fails to achieve its intended outcome, and when these failures cannot be attributed to the intervention of some chance agency" (Reason, 1990, p. 9). Errors have two sub categories which are slips and lapses, are resulted from failure to act like intended because of memory and attentional problems; and mistakes result from planning failures (Reason, 1990). Failing to see a pedestrian, underestimating the speed of other vehicle, and missing some signs are examples of errors. According to taxonomy of Rasmussen (1980), mistakes are knowledge based mistakes. On the other hand, according to Rasmussen taxonomy (1980) the violations include in rule-based mistakes and result from misapplication of rules; they are deliberate or intended deviations from the proper action (Reason et al. 1990). Speeding, drunk driving, showing hostility, and racing are examples of violations.

Reason et al. (1990) developed a scale was named as Driver Behavior Questionnaire (DBQ), and tested this taxonomy for aberrant driver behaviors; deliberate violations, dangerous errors, and "silly" errors were found as three factors. After these classifications of aberrant driver behaviors, different classifications were made; but the errors and violations remained as frequently used constant two categories (Blockey & Hartley, 1995; Classen, Shechtman, Awadzi, Yongsung, & Lanford, 2010; Özkan, Lajunen, & Summala, 2006).

While errors and violations share being an aberrant driver behavior as a common characteristic, there are some other driver behaviors which did not base on coded rules but aims to "take care of the traffic environment or other road users, to help and to be polite with or without safety concerns" (Özkan & Lajunen, 2005, p. 357). If the action and plan are sufficient a positive behavior can result with an expected positive end, in other words, the act may end up without an error ans/or violation. On the other hand, positive behaviors sometimes may contain error and violations and may end up with an accident (Özkan & Lajunen, 2005).

The errors and violations significantly related with accident involvement (Mesken, Lajunen, & Summala, 2002; Özkan & Lajunen, 2005; Verschuur & Hurts, 2008). A

meta-analysis examined 70 studies with 32 error sample and 42 violation samples; it also confirmed these results; self-report accident involvement was significantly predicted by errors and violations (de Winter & Dodou, 2010). Özkan and Lajunen (2005) found that aberrant and positive driver behaviors are negatively associated. In the lights of this information changing behaviors of drivers via decreasing aberrant behaviors and increasing positive behaviors gets importance to decrease accident involvement and provide safer traffic environment.

1.8.1 Driver Behavior Change

Transtheoretical model is a prominent model regarding changing an unhealthy behavior to healthy behavior; aberrant driver behaviors with their risky sides can be regarded as unhealthy behaviors. Understanding the current stage of majority of drivers is essential to develop effective intervention programs for change unhealthy or risky behaviors of drivers (Asgarabad, Tahami, & Khanjani, 2012). In Iran, a study investigated the relationship between 4 high-risk behaviors and drivers' stage according to TTM. Majority of drivers found at pre-actional stages; regarding not using a cell phone while driving the percentage is 80% and most of them at pre-contemplation stage; regarding, fastening the driver's seat belt, front seat belt, and rear seat belt percentages are 66%, 68%, 85%, respectively. While participants in terms of fastening driver's seat belt mostly at contemplation stage; for, front seat belt they are mostly at preparation stage and for rear seat belt they are mostly at pre-contemplation stage (Khadem-Rezaiyan, Moallem, & Vakili, 2017). In a work setting, stages of employees, work as driver, investigated regarding usage of cell phone or electronic communication devices while working; it was found that 18 percent of participants at pre-contemplation or contemplation stage; in other words, they use cell phones while working and do not think about changing this behavior or they make plans about quitting cell phone usage while working, but not yet (Sinelnikov & Wells, 2017). After and applicability of TTM to driver behavior change was preliminary supported via a pilot study (Tuokko, McGee, & Rhodes, 2006), older adults' changing behaviors about quiting or reducing driving behavior

was investigated with TTM, and it was found that the driver behavior change considerably fit the TTM framework (Kowalski, Jeznach, & Tuokko, 2014). When relationship between readiness to change, experiencing traffic accident and driver behavior change in terms of drunk driving was investigated, it was found that while at the start of treatment being ready to change about alcohol consumption or drunk driving do not related to behavior change 12 months after the accident; making an emergency department visit about accident positively related to behavior change (Baird, Yang, Strezsak, & Mello, 2017).

In addition to these, traffic accidents may cause some behavioral changes with their psychological effects. Anxiety which is one of the PTSD symptoms is associated with errors, violations and problematic traffic outcomes (Dula, Adams, Miesner, & Leonard, 2010); after age, gender, driving experience, and annual mileage were controlled, it was found that driving-specific anxiety which is avoidance symptoms of PTSD positively related with errors (Kontogiannis, 2006). A study examined behaviors of PTSD diagnosed drivers aftermath of traffic accident found a relationship between PTSD severity and hostile-aggressive behavior (Clapp, Baker, Litwack, Sloan, & Beck, 2014); while PTSD symptoms reduced with treatment, it was observed that driving performance deficits, and hostile/aggressive driving also decreased (Baker, Litwack, Clapp, Beck, & Sloan, 2014). Severity of accident and stress predicted anxious driving behavior aftermath of traffic accident (Clapp, Olsen, Danoff-Burg, Hagewood, Hickling, Hwang, & Beck, 2011).

1.9 Aim of the Study

The first aim of the present study is to find answer question of “Does the stage in which the individual experience "pre-contemplation, contemplation, action and maintenance" and /or rumination have an impact on the relation between the severity of the event on the individual and the development of the Posttraumatic Stress (PTS), and/or Posttraumatic Growth (PTG), and driver behavioral change as a result of that event?”. The second aim of study is examining the controversial relationship

between PTS and PTG; the hypothesis of the study and the models will be tested were presented below.

• Hypothesis 1: After controlling for the effect of gender, education, income, accommodation, and being driver or passenger during the accident; the relationship between severity of event and PTSD will be mediated by rumination style and/or stage of the person according to the TTM.

• Hypothesis 2: After controlling for the effect of gender, education, income, accommodation, and being driver or passenger during the accident; therelationship between severity of event and PTG will be mediated by rumination style and/or stage of the person according to the TTM.

• Hypothesis 3: After controlling for the effect of gender, education, income, accommodation, and being driver or passenger during the accident; the relationship between PTS and PTG will be mediated by rumination style and/or stage of the person according to the TTM.

• Hypothesis 4: After controlling for the effect of gender, education, income, accommodation, and being driver or passenger during the accident; the relationship between PTS and driver behavior change will be mediated by stage of the person according to the TTM.

• Hypothesis 5: After controlling for the effect of gender, education, income, accommodation, and being driver or passenger during the accident; the relationship between PTG and driver behavior change will be mediated by stage of the person according to the TTM.

CHAPTER 2

METHOD

In this method section, firstly, characteristics of the participants will be presented. After that, the detailed information about the instruments were used in the study will be provided. Finally, procedure of the study will be explained.

2.1 Participants

The sample of the present study consisted of 234 participants which are adult traffic accident survivors from Turkey. They have history of at least one traffic accident within the last five years. All analysis except factor and reliability analysis of University of Rhode Island Change Assessment and the Readiness to Engage in Self-management after Acute Traumatic Injury Questionnaire were conducted with this sample of 234 individual. Factor and reliability analysis of University of Rhode Island Change Assessment and the Readiness to Engage in Self-management after Acute Traumatic Injury Questionnaire were conducted with sample of 409 individual.

Socio-demograpraphic characteristics of the sampe with 234 participants are presented in Table 1; and socio-demograpraphic characteristics of the sampe with 409 participants are presented in Table 2.

Table 1. Demographic characteristics of the sample which is used in all analysis other than URICA and RESMATI analysis (N = 234)

Variables	*N*	*%*	*Mean*	*SD*	*Range*
Age			27.72	8.56	18 - 59
Gender					
Male	154	65.8			
Female	80	34.2			
Education Level					
Primary School	1	0.4			
High School	97	41.5			
Associate Degree	13	5.6			
Bachelor's Degree	98	41.9			
M.S. Degre	20	8.5			
PhD. Degree	5	2.1			
Income Level					
Low (0 – 1500)	84	35.9			
Middle (1501 – 4000)	98	41.9			
Upper-middle (1401 – 6000)	29	12.4			
High (6001 - above)	23	9.8			
Major Accomadation					
Metropolis	158	67.5			
City	60	25.6			
Town	11	4.7			
Village	5	2.1			

Table 2. Demographic characteristics of the sample which is used for URICA and RESMATI analysis (N = 409)

Variables	*N*	*%*	*Mean*	*SD*	*Range*
Age			28	7.96	18 - 67
Gender					
Male	268	65.5			
Female	139	34.0			
Other	2	0.5			
Education Level					
Primary School	7	1.7			
High School	138	33.7			
Associate Degree	33	8.1			
Bachelor's Degree	181	44.3			
M.S. Degre	39	9.5			
PhD. Degree	11	2.7			
Income Level					
Low (0 – 1500)	133	32,5			
Middle (1501 – 4000)	173	42.3			
Upper-middle (1401 – 6000)	64	15.6			
High (6001 - above)	39	9.5			
Major Accomadation					
Metropolis	260	63.6			
City	114	27.9			
Town	28	6.8			
Village	7	1.7			

2.2 Instruments

The instruments include a Socio-demographic Information Form, Severity of Event Form, the University of Rhode Island Change Assessment, the Readiness to Engage in Self-management after Acute Traumatic Injury Questionnaire, the Event Related

Rumination Inventory, Stress Indications Aftermath of Trauma Scale, the Posttraumatic Growth Inventory, the Driver Behavior Questionnaire, the Positive and Negative Affect Schedule. In this part, information about these measurement tools is presented in detail.

2.2.1 Socio-Demographic Information Form

The Socio-demographic Information Form will be developed in order to collect information about demographic characteristics and accident related information. Demographic questions involved questions such as age, gender, education level, income level, major accomadation, and total milage. Questions related to the accident included the number of traffic accidents during the last five years, the time of the most serious accident (if there are more than one accident), participants' role in the accident (driver or passenger), the type of vehicle (private car, taxi, bus, minibus, truck, and other), passed time from the accident, presence of physical treatment, presence of psychological treatment, presence of death.

2.2.2 Severity of Event Form

The Severity of Event Form was developed to collect information about the perceived severity of accident. In the questionnaire, some questions are taken from doctoral thesis of Çağlayan (2016) and then some questions were added by researchers of this study. The questionnaire aims to measure degree of perceived financial and physical damage severity of vehicle, perceived degree of physical injury, and perceived life threat; there are questions to measure perception of accident survivor about both self and other person. In addition to these, degree of sense of fear and the disturbance caused by accident are measured via questions.

The Severity of Event Form consists of 12 questions and it is 5-point Likert scale ranging from 1 (none) to 5 (very much). Cronbach's alpha coefficient of this scale was found as .80.

2.2.3 The University of Rhode Island Change Assessment (URICA)

The University of Rhode Island Change Assessment (URICA; McConnaughy, Prochaska, & Velicer, 1983) was developed by proponents of the Transtheoretical Model as continuous measure of readiness to change especially in therapy. It is a theoretically derived scale which consists of four subscales; Precontemplation (e.g. ‘‘I am not the problem one, it doesn’t make sense for me to be here’’), Contemplation (e.g. ‘‘I have a problem and I really think I should work on it’’), Action (e.g. ‘‘I am finally doing some work on my problem’’), and Maintenance (e.g. ‘‘It worries me that I might slip back on a problem I already have, so I am here to seek help’’). The following Cronbach's coefficient alphas were found for the four subscales: Precontemplation, .79; Contemplation, .84; Action, .84; and Maintenance, .82 (McConnaughy, DiClemente, Prochaska, & Velicer, 1989).

The URICA is a 32-item self-report measure with 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). In this study, Turkish translation and adaptation was made. First of all, two people who are one psychologist and one translator translate the tool from English into Turkish; then back-translate from Turkish into English was made. Finally, researchers of this study compared translations; and decided last version of tool to use in the study. Scale was adapted for traffic accident survivors. In the study, three factor sturucture construct was used; detailed information about factor analysis will be presented in result section. Three subscales named as precontemplation, contemplation and prepration, action and maintenance; Cronbach's coefficient alphas were found as .72, .74, and .96, respectively.

2.2.4 The Readiness to Engage in Self-management after Acute Traumatic Injury Questionnaire (RESMATI)

The Readiness to Engage in Self-management after Acute Traumatic Injury Questionnaire (RESMATI) which is a 23-item self-report measure with 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree) was developed based on

stages of change theory (Wegener et al., 2014). The factor structure was found as three factors; 2 factors were classified as “precontemplation,” 2 factors were classified as “contemplation,” and 1 factor was classified as “action/maintenance”. All 3 domains had good internal consistency reliability (.71 to .92) and moderate test–retest reliability (.56 and .73).

In this study, Turkish translation and adaptation was made. First of all, two people who are one psychologist and one translator translate the tool from English into Turkish; then back-translate from Turkish into English was made. Finally, researchers of this study compared translations; and decided last version of tool to use in the study. Scale was adapted for traffic accident survivors via changing “injury-related problems” words with “accident-related problems” words. The factor structure was found similar with original scale; three factors were confirmed; precontemplation, contemplation, action/maintenance. Detailed information about factors analysis will be presented in result section. Alpha reliabilities of these subscales found as .84, .92, and .95, respectively.

2.2.5 Event Related Rumination Inventory (ERRI)

The Event Related Rumination Inventory (ERRI) was developed by Cann, Calhoun, Tedeschi, Triplett, Vishnevsky, and Lindstrom (2011) in order to assess cognitive processing of trauma survivor as deliberate (e.g., “I thought about whether I could find meaning from my experience”) and intrusive ruminations (e.g., “I find myself automatically thinking about what had happened”). The inventory consists of 20 questions; while 10 items is related to deliberate rumination subscale; other 10 item is related to intrusive rumination. It is 4-point Likert scale ranging from 0 (not at all) to 3 (often). The internal consistency of subscales are high; Cronbach’s alpha is .94 for intrusive rumination subscale and .88 for deliberate rumination subscale (Cann et all., 2011).

The Turkish translation and adaptation of the ERRI was conducted by Haselden (2014). Two factor structure was also found in Turkish sample; Cronbach’s alpha is

.96 for intrusive subscale and .91 for deliberate subscale; the internal consistency of whole scale is .96. In present study, Cronbach's alpha found as .96 for intrusive subscale and .93 for deliberate subscale.

2.2.6 Stress Indications Aftermath of Trauma Scale (SITS)

The Stress Indications Aftermath of Trauma Scale (SITS) was developed via deriving some items from tree questionnaires which was used cross cultural research (Şahin, Batıgün, & Yılmaz, 2001). 10 items were derieved from Posttrauma Stress Disorder Checklist (PCL; Weathers, Litz, Huska, & Keane, 1994), 13 items were derived from Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez; 1979), and 13 items were derived from Dissociative Experiences Survey (DES; Carlson & Putnam, 1993). The SITS consists of 36 items with 4-point Likert type ranging from 1 (none) to 4 (too much). The original name of the scale is "Travma Sonrası Stres Belirtileri Ölçeği". The SITS has tree sub scales, namely Repetitive Thoughts, Arausal, and Avoding which has high reliability coefficients, ranging from .89 to .91 (Şahin, Batıgün, & Yılmaz, 2001). In this study, Cronbach Alpha reliabilities were found as .94 for Repetetive Thoughts, .94 for Arousal, and .95 for Avoiding.

2.2.7 The Posttraumatic Growth Inventory (PTGI)

The Posttraumatic Growth Inventory (PTGI), which aims to measure positive changes after the traumatic event, was developed by Tedeschi and Calhoun (1996). It consists of 21 items with 6-point Likert scale ranging from 0 ("I did not experience this change as a result of my crisis") to 5 ("I experienced this change to very great degree"). The PTGI has 5 subscales; new possibilities (5 items), relating to others (7 items), personal strength (4 items), spiritual changes (2 items), and appreciation of life (3 items); their Cronbach's alpha points for internal consistency are .84, .85, .72, .85, and .67, respectively. The internal consistency of whole scale is .94 (Tedeschi & Calhoun, 1996).

The Turkish translation of the scale was made by Kılıç (2005); in this translation 5-point Likert scale was used and some word changes were made. In 2008, Dirik and

Karanci made some changes on the scale using Kılıç's translation as base, and used the scale as 6-point Likert scale like original version of survey. It was found that factor structure is 3 factors and Cronbach's alpha level for whole scale is .94. Karancı et al. (2012) tested five-factor model and it was fit the data; new possibilities (α=0.81), relating to others (α=0.84), personal strength (α=0.79), spiritual change (α=0.63), and appreciation of life (α=0.83) subscales was confirmed. In this study, total score of scale was used to reach total PTG levels of sample, and Cronbach's alpha level of whole scale found as .96.

2.2.8 Driver Behavior Questionnaire (DBQ)

The Driver Behavior Questionnaire (DBQ) is a self-report measure which was developed to measure aberrant driver behaviors (Reason et al., 1990). The questionnaire which includes 28 items with Likert type ranging from 0 (never) to 5 (always) consists of 3 subscales; violations, errors, and lapses (Reason et al., 1990); in the extended version of the scale, violations go into division as aggressive violations and ordinary violations. Different factor structures were also proposed. For example; Özkan, Lajunen, and Summala (2006) found that 2 factor structure as most interpretable solution; and named these factors as violations, and errors.

The Turkish adaptation of the scale factor and norms studies was conducted with both professional (Sümer & Özkan, 2002) and non-professional drivers (Lajunen & Özkan, 2004).Reliability of error and violations subscales found as, .85 and .84, respectively (Sümer & Özkan, 2002). In addition to DBQ which only measures abberant driver behavior, to measure positive driver behaviors Özkan and Lajunen (2005) developed the Positive Driver Behavior Scale which consists of 14 items with 6 point Likert type ranging from 0 (never) to 5 (always). In their study, they found DBQ factor structure as 3 factor, violations, positive driver behaviors, and errors. Alpha reliabilities of these scales found as, 0.86, 0.84, and 0.79, respectively. In present study, alpha reliabilities of these scales found as .94, .98, and .96, respectively.

In this thesis, to asses changing behaviors of drivers aftermath of traffic accident, in the instruction of the questionnaire was stated that in which proportion behaviors of drivers changed; thus, it was used 6 point Likert type from 0 (“I did not experience this change aftermath of traffic accident”) to 5 (“I experienced this change to very great degree”). After that, direction of the change was asken in a 3 point Likert type; 0 (not change), 1(Decreased), 2 (Increased). To calculate an overall score for positive driver behavior change; scores from two columns were combined. For example, an individual who indicated that proportion of change as 3 point, and direction of these chage as 2 point, for an error item, 3 was written in positive driver behavior change, 0 was written in negative driver behavior change for this individual. If there is a discrepancy between two columns, opposed to benefit of study, 0 was written for both change score indicating no change.

2.3 Procedure

In order to conduct study, firstly permission from Middle East Technical University Graduate School of Social Science Ethics Committee was obtained. To collect data “Qualtrics” which is a online software was used, and to reach participants link of the study was distributed via social media sources such as Facebook and LinkedIn. In social media sharings, requirements to join study which are experiencing the traffic accident within last five years, being older than 18 years old, and being active driver.

The Informed Consent form was presented to the participants at the beginning of the study; the individuals who accepted joining the study voluntarly continued to take other measurement tools. All participants filled out Socio-demographic Information Form, Severity of Event Form, the University of Rhode Island Change Assessment, the Readiness to Engage in Self-management after Acute Traumatic Injury Questionnaire, the Event Related Rumination Inventory, Stress Indications Aftermath of Trauma Scale, the Posttraumatic Growth Inventory, Driver Behavior Questionnaire.

In order to investigate properties of two adapted scales, which are URICA and RESMATI, data of participants (N = 409) who did not complete all questionnaires but filled out these two scales used.

CHAPTER 3

RESULTS

In this section, firstly descriptive statistics of the variables will be given. After that results of factor analysis for URICA and RESMATI will be presented. In the third part, bivariate correlations between variables will be given.

3.1 Descriptive Statistics

Firstly, descriptive statistics about traffic accident are presented in Table 3; and descriptive statistics about traffic accident for sample for URICA and RESMATI analysis are presented in Table 4. After that, mean, standard deviation, and range of main variables as descriptive statistics are given in the Table 5.

Table 3. Descriptive statistics about traffic accident for sample which is used in all analysis other than URICA and RESMATI analysis

Variables	***N***	***%***	***Mean***	***SD***	***Range***
Role in the Accident					
Driver	169	72.2			
Passenger	65	27.8			
Type of vehicle					
Private car	207	88.5			
Taxi	4	1.7			
Public Transportation	14	6.0			
Truck	0	0			
Other	9	3.8			
Total milage (km)			202281	942480	15-1200000
Number of the accidents within last 5 years			2.38	1.64	1 - 10
Passed time from the accident (month)			22.58	17.89	1 - 60
Physical treatment					
No	207	88.5			
Yes	27	11.5			
Psychological treatment					
No	224	95.7			
Yes	10	4.3			
Presence of death					
No	225	96.2			
Yes	9	3.8			
Death of close one	3	1.3			
Death of unfamiliar one	6	2.6			

Table 4. Descriptive statistics about traffic accident for URICA and RESMATI sample

Variables	***N***	***%***	***Mean***	***SD***	***Range***
Role in the Accident					
Driver	289	70.7			
Passenger	120	29.3			
Type of vehicle					
Private car	344	84.1			
Taxi	9	2.2			
Truck	6	1.7			
Public Transportation	30	7.3			
Other	20	5.0			
Total milage (km)			211753	107075	0-1500000
Number of the accidents within last 5 years			2.16	1.73	1 - 10
Passed time from the accident (month)			24.09	18.36	1 - 60
Physical treatment					
No	347	84.8			
Yes	62	15.2			
Psychological treatment					
No	392	95.8			
Yes	17	4.2			
Presence of death					
No	395	96.6			
Yes	14	3.4			
Death of close one	4	1.0			
Death of unfamiliar one	10	2.4			

Table 5. Descriptive statistics for main variables of the study

Variables	*N*	*Mean*	*SD*	*Min - Max*
Severity of Event	234	2.31	0.63	1.17 - 4.50
Event Related Rumination				
Intrusive Rumination	234	1.81	0.80	1.00- 4.00
Deliberate Rumination	234	1.79	0.74	1.00 - 3.80
Stages of Change				
URICA Precontemplation	234	2.83	0.72	1.00 - 4.75
URICA Contemplation-Preperation	234	3.46	1.05	1.00 - 5.00
URICA Action-Maintenance	234	2.26	0.94	1.00 - 4.81
RESMATI Precontemplation	234	1.84	0.94	1.00 - 5.00
RESMATI Contemplation	234	2.12	1.07	1.00 - 4.86
RESMATI Action-Maintenance	234	2.52	1.11	1.00 - 5.00
PTS				
Repetetive Thinking	234	1.58	0.67	1.00 - 3.55
Arousal	234	1.45	0.61	1.00 - 3.67
Avoiding	234	1.47	0.64	1.00 - 3.85
Total PTS score	234	1.50	0.59	1.00 - 3.44
PTG				
New Possibilities	234	1.48	1.46	0.00 - 5.00
Spiritual Change	234	1.59	1.53	0.00 - 5.00
Relating to Others	234	1.48	1.39	0.00 - 5.00
Personal Strength	234	2.02	1.54	0.00 - 5.00
Appreciation of Life	234	2.13	1.73	0.00 - 5.00
Total PTG score	234	1.70	1.34	0.00 - 5.00
DBQ				
Errors	234	0.87	1.13	0.00 - 5.00
Violations	234	1.03	1.20	0.00 - 5.00
Positive Behaviors	234	1.74	1.64	0.00 - 5.00
Positive Change	234	0.51	0.68	0.00 - 4.86
Negative Change	234	0.23	0.36	0.00 - 2.17

3.2 Factor Analysis

In this section factor analysis of the University of Rhode Island Change Assessment (URICA) and the Readiness to Engage in Self-management after Acute Traumatic Injury Questionnaire (RESMATI) will be presented.

3.2.1 Factor Analysis of URICA

To investigate factor structure of University of Rhode Island Change Assessment (URICA; McConnaughy, Prochaska, & Velicer, 1983) questions which include items from 1 to 32, firstly principal component analysis with varimax rotation was conducted. The Kaiser-Meyer-Olkin measure of sampling adequacy was .95, which is very close to 1 and means data is factorable, and Bartlett's test of sphericity was significant (χ^2 (496) = 7745.98, $p < .001$). Results showed that when eigenvalue was taken into consideration the analysis yielded a five-factor structure when loadings less than 0.30 were excluded; but, scree plot showed three-factor structure. Because of scree plot results, three-factor structure was accepted. To examine three factor structure analyze repeated with varimax and extracted three factors; and results showed that the initial eigenvalues are 12.49, 2.86 and 1.78 for three factors; the first factor explained 39.04% of the variance, the second factor 8.94% of the variance, and third factor 5.58% of the variance with the total three factors explaining 53.57% of the variance. Item loadings for first factor are between .83 and .56; for second factor are between .67 and .48, and for third factor are between .75 and .648 (see Table 6). Factors named as precontemplation, contemplation and prepration, action and maintenance. Reliability analysis for each factor was conducted; the reliability of precontemplation factor with 8 item is .72, contemplation and prepration factor with 3 item is .74, and action and maintenance factor with 21 item is .96.

Table 6. Factor loadings, eigenvalues, proportion of variance based on a principle components analysis with varimax rotation, communality and reliability for 32 items from URICA

	Component			Communality
	1	2	3	
21. Belki profesyonel yardım almak derdime care olabilir	**.83**			.70
22. Şimdiye kadar yaptığım değişiklikleri koruyabilmem için desteğe ihtiyacım olabilir	**.82**			.68
15. Bir sorunum var ve gerçekten bunun üzerine çalışmam gerektiğini düşünüyorum.	**.79**			.68
18. Sorunumu çözdükten sonra hiç sorunum kalmaycağını düşünmüştüm, ama bazen kendimi hala sorunumla uğraşırken buluyorum	**.79**			.65
24. Umarım bu süreçte birisinin benim için iti bir tavsiyesi olur.	**.78**			.62
20. Sorunlarım üzerinde çalışmaya başladım, ama gelecek bir yardıma hayır demem.	**.77**			.63
19. Keşke sorunun nasıl çözüleceği konusunda daha fazla fikir sahibi olsam.	**.77**			.61
17. Her zaman değişmeyi başaramamış olsam sa en azından sorunum üzerinde çalışıyorum.	**.74**		.30	.65
10. Bazen sorunum zorlayıcı oluyor ama üzerinde çalışıyorum.	**.73**			.58
12. Kendimi daha iyi anlamam için tedavinin bana yardımcı olmasını umut ediyorum.	**.72**			.52

Table 6. (Continued)

	Component			Communality
	1	2	3	
28. Sinir bozucu ama çözdüğümü düşündüğüm bir sorunun tekrarlanabileceğini hissediyorum.	**.71**			.56
6. Zaten çözdüğüm bir sorunu tekrar yaşayabilme ihtimali beni endişelendiriyor, bu yüzden profesyonel yardım almaya karar verdim.	**.70**			.50
16. Üstesinden gelmeyi umduğum ve çoktan üstesinden geldiğim şeyleri arkamda bırakamamışım; problemlerimin tekrarlanmasını önelmek için profesyonel yardım almaktayım.	**.70**			.50
32. Problemlerimin üstesinden gelebilmek için bu kadar uğraştıktan sonra bile, zaman zaman karşıma çıkıyor.	**.69**			.53
30. Sorunum üzerinde bilfiil çalışıyorum.	**.69**			.57
27. Sorunumun tekrarlamasını önlemek için profesyonel yardım alıyorum.	**.67**			.48
8. Bir süredir kendimle ilgili bir şeyleri değiştirmek isteyebileceğimi düşünüyorum.	**.65**		.31	.53
14. Değişmek için gerçekten çaba sarf ediyorum.	**.60**		.44	.56
25. Herkes değişim hakkında konuşabilir; ben gerçekten bu konuda bşr şeyler yapıyorum.	**.60**			.48

Table 6 (Continued)

	Component			Communality
	1	2	3	
9. Sorunumla baş etmede başarılı oldum, ancak kendi başıma çaba sarf etmeye devam edebileceğimden emin değilim.	**.59**			.37
7. Nihayet sorunum hakkında bir şeyler yapıyorum.	**.56**		.39	.47
29. Endişelerim var, ama başkalarınında var. Neden bunları düşünmek için zaman harcayayım?		**.67**		.50
26. Psikoloji hakkında bütün konuşmalar çok sıkıcı. Neden insanlar sorunlarını unutup geçemiyorlar?		**.60**		.44
13. Sanırım kusurlarım var, ancak gerçekten değiştirmem gereken bir şey yok.		**.58**		.37
11. Tedavi olmak benim için tamamen zaman kaybı, çünkü sorun benimle ilgili değil.		**.58**		.37
23. Sorunun parçası olabilirim, ama gerçekten böyle olduğumu düşünmüyorum.	.38	**.56**		.46
5. Kendimde bir sorun görmüyorum. Tedaviye başlamak mantıklı değil.	-.36	**.55**	.31	.53
31. Kusurlarımı değiştirmeye çalışmaktansa, üstesinden gelmeyi tercih ederim.	.30	**.51**		.37
1. Bence, değişmesi gereken herhangi bir problemim yok.		**.48**		.36

Table 6 (Continued)

	Component			Communality
	1	2	3	
3. Beni rahatsız eden sorunlarla ilgili bir şeyler yapıyorum.			**.75**	.62
2. Kendimi geliştirmeye hazır olabileceğimi düşünüyorum.			**.73**	.58
4. Sorunum üzerinde çalışmak faydalı olabilir.	.38		**.64**	.56
Eigenvalues	12.49	2.86	1.78	
Proportion of variance	39.04	8.94	5.58	
Reliability	.96	.74	.72	

Note. Factor loadings < .30 are suppressed. Factor labels: First factor = Action and Maintenance, Second factor = Precontemplation, Third factor = Prepration and Contemplation.

3.2.2 Factor Analysis of RESMATI

To investigate factor structure of Readiness to Engage in Self-management after Acute Traumatic Injury Questionnaire (RESMATI; Wegener et al., 2014) questions which include items from 1 to 23, firstly principal component analysis with varimax rotation was conducted. The Kaiser-Meyer-Olkin measure of sampling adequacy was .95, which is very close to 1 and means data is factorable, and Bartlett's test of sphericity was significant (χ^2 (253) = 7359.80, p < .001). Results showed that when both eigenvalue and scree plot was taken into consideration the analysis yielded a three-factor structure when loadings less than 0.30 were excluded. Because of eigenvalue and scree plot results, three-factor structure was accepted. To examine three factor structure analyze repeated with varimax and extracted three factors; and results showed that the initial eigenvalues are 12.29, 2.11 and 1.14 for three factors; the first factor explained 53.44% of the variance, the second factor 9.17% of the variance, and third factor 4.96% of the variance with the total three factors

explaining 67.58% of the variance. Item loadings for first factor are between .82 and .54; for second factor are between .81 and .50, and for third factor are between .76 and .61 (see Table 7). Factors named as precontemplation, contemplation, action and maintenance like original version of scale. Reliability analysis for each factor was conducted; the reliability of precontemplation factor with 5 item is .83, contemplation factor with 7 item is .92, and action and maintenance factor with 11 item is .94.

Table 7. Factor loadings, eigenvalues, proportion of variance based on a principle components analysis with varimax rotation, communality and reliability for 23 items from RESMATI

	Component			Communality
	1	2	3	
18. Geçirdiğim kazanın üstesinden gelmek için kendi becerilerimi kullanarak gerekli adımları atıyorum	**.82**			.73
19. Son zamanlarda geçirdiğim kazayla daha iyi başaçıkabilmenin benim elimde olduğunu anladım.	**.81**			.72
23. Geçirdiğim kazayla başa çıkmada ve üstesinden gelmede büyük ilerleme kaydettim.	**.81**			.70
21. Geçirdiğim kaza ile günlük yaşamımda başa çıkabilmek için stratejiler geliştirdim.	**.79**			.71
17. Geçirdiğim kazaya bağlı problemleri konrol altında tutmamı sağlayacak ne öğrendiysem kullanıyorum.	**.66**	.43		.64
22. Geçirdiğim kazaya bağlı sorunlarımı kontrol altına almak için çok çalışıyorum.	**.65**	.43		.67
12. Geçirdiğim kazayla ilgili sorunlarımın hayatımı etkilemesini engellemenin bazı iyi yollarını öğrendim.	**.65**	.37		.61

Table 7 (Continued)

	Component			Communality
	1	2	3	
13. Geçirdiğim kaza sonrasında hayatımı kontrol altına almama yardımcı olacak stratejiler bulmaya başladım.	**.65**	.43		.66
20. Geçirdiğim kazaya bağlı sorunlarımın üstesinden gelmenin ilaçlar veya ameliyatlar dışındaki yollarını öğreniyorum.	**.64**	.36		.61
15. Günden güne, geçirdiğim kazaya bağlı sorunumu/sorunlarımı daha iyi ele almak için bana yadımcı olacak bazı yeni stratejiler kullanıyorum.	**.62**	.56		.72
14. Geçirdiğim kazaya bağlı sorunlarım ortaya çıktığında, kendimi otomatik olarak arkadaşlar ve ailemden yardım istemek, rahatlamak, spor yapmak veya sorunu çözmeye çalışmak gibi geçmişte işe yarayan stratejileri kullanırken buluyorum.	**.54**	.53		.62
8. Son zamanlarda geçirdiğim kaza ile başa çıkma ve üstesinden gelme yöntemimi değiştirme zamanının geldiği sonucuna vardım.		**.81**		.76
7. Geçirdiğim kaza ile başa çıkma becerileri geliştirmek için yardıma ihtiyaç duyup duymadığımı düşünmeye başlıyorum.		**.81**		.77

Table 7 (Continued)

	Component			Communality
	1	2	3	
9. Geçirdiğim kazaya bağlı sorunlarımın üstesinden daha iyi gelebilmek için yapabileceğim bir şeyler olup olmadığını merak ediyorum.	.30	**.74**		.71
6. Artık, geçirdiğim kazaya bağlı problemlerimle başa çıkmak veya bunların üstesinden gelebilmek için daha iyi bir plan geliştirmemin tam zamanı olduğunun farkındayım.	.30	**.74**		.72
16. Her ne kadar tam olarak iyileşemesemde, onunla başa çıkma şeklimi değiştirmeye hazırım.	.38	**.64**		.64
11. Geçirdiğim kazayla başa çıkabilmek için yeni yollar geliştiriyorum.	.48	**.60**		.67
10. Geçirdiğim kazayla ilgili sorunlarımın üstesinden gelmenin hekimlere bel bağlamak yerine bana bağlı olup olmadığını düşünmeye başlıyorum.	.39	**.50**	.36	.54
2. Doktorların farklı açıklamalarına rağmen, halen geçirdiğim kazaya bağlı sorunlarımı düzeltebilecek bazı cerrahi prosedür veya ilaçların olması gerektiğini düşünüyorum.		.35	**.76**	.72
3. Yapabileceğim tek şey geçirdiğim kazayla ilgili sorunlarımı tamamen çözebilecek bir doctor bulmak.		.41	**.74**	.75

Table 7 (Continued)

	Component			Communality
	1	2	3	
1. Geçirdiğim kazaya bağlı sorunlarım tıbbi sorunlardır ve yapmam gereken tek şey bununla ilgili doktorla görüşmektir.			**.74**	.61
4. Neden birileri geçirdiğim kazaya bağlı sorunlarıma yönelik bir şeyler yapamıyor?		.48	**.63**	.67
5. Nasıl başa çıkacağım ve daha iyi üstesinden gelebileceğime dair bütün bu konuşmalar zamanımın boşa harcanmasından ibaret.			**.61**	.47
Eigenvalues	12.29	2.11	1.14	
Proportion of variance	53.44	9.17	4.96	
Reliability	.94	.92	.83	

Note. Factor loadings < .30 are suppressed. Factor labels: First factor = Action and Maintenance, Second factor = Contemplation, Third factor = Precontemplation.

3.3 Bivariate Correlations between the Variables of Study

Severity of event as independent variable of the study, was found positively correlated with total milage (r = .15, p < .05), accident number experienced within 5 year (r = .26, p < .01), action-maintenance subscale of URICA (r = .21, p < .01), precontemplation subscale of RESMATI (r = .16, p < .05), contemplation subscale of RESMATI (r = .23, p < .01), action-maintenance subscale of RESMATI (r = .23, p < .01), intrusive rumination (r = .40, p < .01), deliberate rumination (r = .37, p < .01), PTS score (r = .34, p < .01), PTG score (r = .29, p < .01), change in violation behavior (r = .22, p < .01), change in error behavior (r = .19, p < .01), positive change in driver behavior (r = .22, p < .01), negative change in driver behavior (r = .16, p < .05); and negatively corraleted with being driver or passanger in the time of accident (1 = passanger, 2 = driver; r = -.13, p < .05), physical treatment after the

accident (1 = receiving treatment, 2 = not receiving treatment; r = -.37, p < .01), psychological treatment after the accident (1 = receiving treatment, 2 = not receiving treatment; r = -.34, p < .01), and presence of death (1 = yes, 2 = no; r = -.26, p < .01).

PTS was found positively corraleted with major accomadation (r = .17, p < .05), perceived severity of event (r = .34, p < .01), precontemplation stage of URICA (r = .16, p < .05), action-maintenance stage of URICA (r = .55, p < .01), precontemplation stage of RESMATI (r = .42, p < .01), contemplation stage of RESMATI (r = .57, p < .01), action-maintenance stage of RESMATI (r = .43, p < .01), intrusive rumination (r = .59, p < .01), deliberate rumination (r = .58, p < .01), PTG (r = .38, p < .01), change in positive driver behavior (r = .29, p < .01), change in violation behavior (r = .48, p < .01), change in error behavior (r = .51, p < .01), positive change of driver behavior (r = .35, p < .01), negative change of driver behavior (r = .44, p < .01); and negatively corraleted with age (r = -.19, p < .01), physical treatment after the accident (1 = receiving treatment, 2 = not receiving treatment; r = -.19, p < .01), psychological treatment after the accident (1 = receiving treatment, 2 = not receiving treatment; r = -.17, p < .01).

PTG was found positively correlated with total milage (r = .18, p < .05), perceived severity of event (r = .29, p < .01), contemplation-preparation stage of URICA (r = .22, p < .01), action-maintenance stage of URICA (r = .33, p < .01), precontemplation stage of RESMATI (r = .31, p < .01), contemplation stage of RESMATI (r = .44, p < .01), action-maintenance stage of RESMATI (r = .51, p < .01), intrusive rumination (r = .26, p < .01), deliberate rumination (r = .49, p < .01), PTS (r = .38, p < .01), change in positive driver behavior (r = .44, p < .01), change in violation behavior (r = .39, p < .01), change in error behavior (r = .46, p < .01), positive change of driver behavior (r = .36, p < .01), negative change of driver behavior (r = .28, p < .01); and negatively corraleted with educational level (r = -.13, p < .05), physical treatment after the accident (1 = receiving treatment, 2 = not receiving treatment; r = -.18, p < .01), and presence of death (1 = yes, 2 = no; r = -.17, p < .01).

Positive change of driver behavior was found positively corraleted with perceived severity of event (r = .22, p < .01), contemplation-preparation stage of URICA (r = .14, p < .05), action-maintenance stage of URICA (r = .34, p < .01), precontemplation stage of RESMATI (r = .29, p < .01), contemplation stage of RESMATI (r = .39, p < .01), action-maintenance stage of RESMATI (r = .36, p < .01), intrusive rumination (r = .30, p < .01), deliberate rumination (r = .34, p < .01), PTS (r = .35, p < .01), PTG (r = .36, p < .01), change in positive driver behavior (r = .58, p < .01), change in violation behavior (r = .57, p < .01), change in error behavior (r = .60, p < .01), negative change of driver behavior (r = .42, p < .01); and negatively correlated with physical treatment after the accident (1 = receiving treatment, 2 = not receiving treatment; r = -.13, p < .05), psychological treatment after the accident (1 = receiving treatment, 2 = not receiving treatment; r = -.19, p < .01) and presence of death (1 = yes, 2 = no; r = -.18, p < .01).

Negative change of driver behavior was found positively corraleted with perceived severity of event (r = .16, p < .05), precontemplation stage of URICA (r = .19, p < .01), action-maintenance stage of URICA (r = .26, p < .01), precontemplation stage of RESMATI (r = .29, p < .01), contemplation stage of RESMATI (r = .31, p < .01), action-maintenance stage of RESMATI (r = .29, p < .01), intrusive rumination (r = .27, p < .01), deliberate rumination (r = .32, p < .01), PTS (r = .44, p < .01), PTG (r = .28, p < .01), change in positive driver behavior (r = .41, p < .01), change in violation behavior (r = .68, p < .01), change in error behavior (r = .63, p < .01), positive change of driver behavior (r = .42, p < .01).

The all correlations between the variables of study are presented in Table 8.

Table 8. Bivariate Correlations between Variables of the Study

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Gender (1= Male, 2 = Female)	1													
2	Age	.11	1												
3	Education Level	.05	.19**	1											
4	Income Level	.11	.39**	.31**	1										
5	Major Accomadation	-.14*	-.03	-.01	-.03	1									
6	Total milage (km)	.10	.14	-.03	.14	.01	1								
7	Accident Number (within 5 years)	.11	-.03	-.06	.03	-.11	-.02	1							
8	Passed Time from the Accident (month)	.06	.18**	-.04	.07	.10	.13	.05	1						
9	Passanger(1)/ Driver(2)	.32**	.22**	.15**	.27**	-.22**	.08	.05	.04	1					
10	Type of Vehicle	.07	-.05	-.02	-.02	-.04	.27**	.00	.02	-.13*	1				
11	Physical Treatment (1 = yes, 2 = no)	.05	-.02	.06	-.06	-.02	-.18**	-.11	-.10	-.04	-.25**	1			
12	Psychological Treatment (1 = yes, 2 = no)	.03	-.00	.01	-.01	-.03	-.30**	-.21**	-.09	.01	-.03	.39**	1		
13	Presence of Death (1 = yes, 2 = no)	-.05	-.04	.00	.02	-.01	-.33**	-.08	-.08	.12	-.10	.21**	.29**	1	
14	Perceived Severity of Event	-.11	.07	-.04	.09	.07	.15*	.26**	.07	-.13*	.01	-.37**	-.34**	-.26**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 8 (continued)

		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	Gender (1= Male, 2 = Female)	.08	-.04	.01	.14*	.00	.06	-.07	.00	-.01	.04	.12	.13*	.09	.10	.10
2	Age	-.02	-.08	-.09	-.08	-.09	-.05	-.05	-.01	-.19**	-.04	.09	.04	-.01	.00	-.06
3	Education Level	-.15*	-.14*	-.09	-.02	-.02	-.02	-.11	-.07	-.12	-.13*	-.05	-.09	-.08	.02	-.07
4	Income Level	-.03	.14	.03	.07	.27**	-.02	-.06	-.06	-.11	-.01	-.05	-.05	-.04	.04	-.08
5	Major Accomadation	.12	.01	.11	.01	.11	.07	.14*	.11	.17*	.12	.08	.03	.09	.10	.09
6	Total milage (km)	.06	.00	.08	.12	.06	.06	-.03	.01	.11	.18*	-.04	.01	-.00	-.09	-.07
7	Accident Number (within 5 years)	.03	.11	.03	.01	-.00	.07	.06	.02	.06	.07	.01	.01	-.04	-.03	-.02
8	Passed Time from the Accident (month)	-.06	-.06	-.06	-.09	-.03	-.02	.02	-.02	.05	-.00	.09	-.05	-.06	-.07	-.11
9	Passanger(1)/ Driver(2)	.02	-.08	-.03	.06	.02	.10	.00	.02	-.01	.02	.11	.05	-.01	.05	.05
10	Type of Vehicle	-.03	-.08	.01	.14*	.06	.04	.00	.04	.02	.07	-.00	.01	.03	.07	.01
11	Physical Treatment (1 = yes, 2 = no)	-.02	.09	-.06	-.32**	-.17**	-.14*	-.21**	-.24**	-.19**	-.18**	-.05	-.03	-.02	-.13*	.02
12	Psychological Treatment (1 = yes, 2 = no)	.07	-.01	-.13*	-.12	-.18**	-.08	-.16*	-.14*	-.17**	-.09	-.05	-.11	-.06	-.19**	-.01
13	Presence of Death (1 = yes, 2 = no)	-.00	-.06	-.13*	-.10	-.13	-.14*	-.17**	-.18**	-.13	-.17**	-.18**	-.10	-.13*	-.18**	-.02
14	Perceived Severity of Event	.08	.03	.21**	.16*	.23**	.23**	.40**	.37**	.34**	.29**	.10	.22**	.19**	.22**	.16*

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 8 (continued)

		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
15	URICA-Precontemplation	1	.25**	.25**	.25**	.14*	.25**	.10	.02	.16*	.12	.11	.20**	.13*	.09	.19**
16	URICA-Contem. –Prepra.		1	.43**	.08	.22**	.35**	.15*	.18**	.07	.22**	.07	.07	.11	.14*	.05
17	URICA-Act.-Maint.			1	.44**	.68**	.56**	.40**	.42**	.55**	.33**	.18**	.31**	.39**	.34**	.26**
18	RESMATI-Precontempla.				1	.62**	.48**	.25**	.31**	.42**	.31**	.33**	.41**	.42**	.29**	.29**
19	RESMATI-Contemplation					1	.74**	.42**	.46**	.57**	.44**	.31**	.38**	.43**	.39**	.31**
20	RESMATI- Act.-Maint.						1	.35**	.43**	.43**	.51**	.31**	.36**	.36**	.36**	.29**
21	Intrusive Rumination							1	.76**	.59**	.26**	.26**	.31**	.28**	.30**	.27**
22	Deliberate Rumination.								1	.58**	.49**	.33**	.38**	.41**	.34**	..32**
23	PTSD									1	.38**	.29**	.48**	.51**	.35**	.44**
24	PTG										1	.44**	.39**	.46**	.36**	.28**
25	DBQ_positive											1	.57**	.56**	.58**	.41**
26	DBQ_violation												1	.89**	.57**	.68**
27	DBQ_error													1	.60**	.63**
28	Positive Driver Behavior Change														1	.42**
29	Negative Driver Behavior Change															1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

3.4 Mediation Analysis

Firstly, to investigate path from traffic accident to PTS and PTG, and PTS to PTG mediation analysis between them conducted via stages of transtheoretical model; according to results of mediation analysis, further anlaysis was conducted with the mediator variable which has highest indirect effect or with highest explained variance and one rumination type, which was chosen the same direction with the literature, was included in the analysis; the intrusive rumination was included for PTS analysis, and deliberate rumination was included for PTG analysis.

To control gender, education, income, accomadation, being driver or passanger in the time of accident, these variables added to analysis. For this analysis, education, income, and accomadation coded as two categories.

Secondly, to investigate path from PTS to driver behavior change and from PTG to driver behavior change action-maintenance stage used as mediator variable and metiation analysis were counducted.

All analysis was counducted with stages according to RESMATI and URICA. The only results of analysis with counducted with RESMATI will be presented because analysis was counducted with URICA cannot indicate significant indirect effect between variables. Only results of analysis with significant effect are presented to prevent plethora of analysis. All mediation analysis was conducted with PROCESS Macro programe (Hayes, 2013).

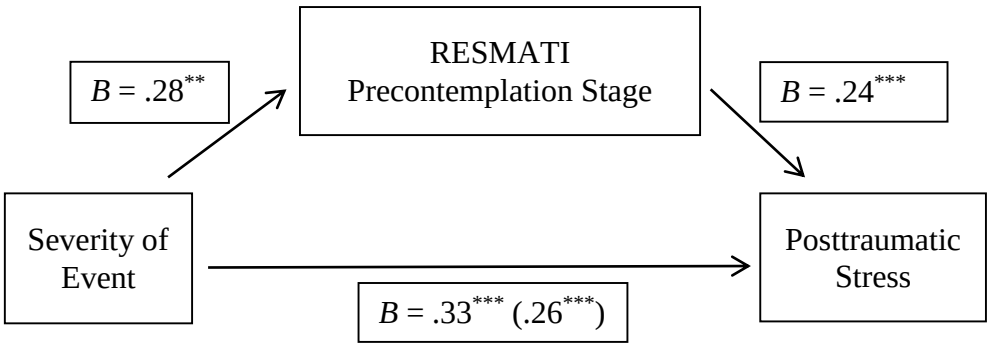
3.4.1 Mediation Analysis for Severity of Event and PTS Relation

To investigate relationship between severity of event and PTS, precontemplation stage, contemplation stage, and action-maintenance stage which are stages of TTM was separately inserted in analysis as mediator variables.

3.4.1.1 Precontemplation Stage as Mediator Variable

In first analysis, precontemplatipn stage was the mediator variable. As Figure 2 illustrates, the results showed that severity of event significantly predicted

precontemplation stage of TTM (b = 0.28, SE = 0.10, p < .01), and that precontemplation stage significantly predicted PTS (b = 0.24, SE = 0.04, p < .001). The results supported partial mediation. There is statistically significant relationship between severity of event and PTS when it was mediated by precontemplation stage (R^2 = .28, F (7, 226) = 12.58, p < .001). When the indirect effect of precontemplation stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .07, SE = .03, *95% CI* = .022 - .130) (See Table 9 for detailed resuls).



Note: B. = unstandardized coefficient, p < .05*, ** p < .01, *** p < .001

Figure 2. Severity of event and PTS relationship with Precontemplation mediation

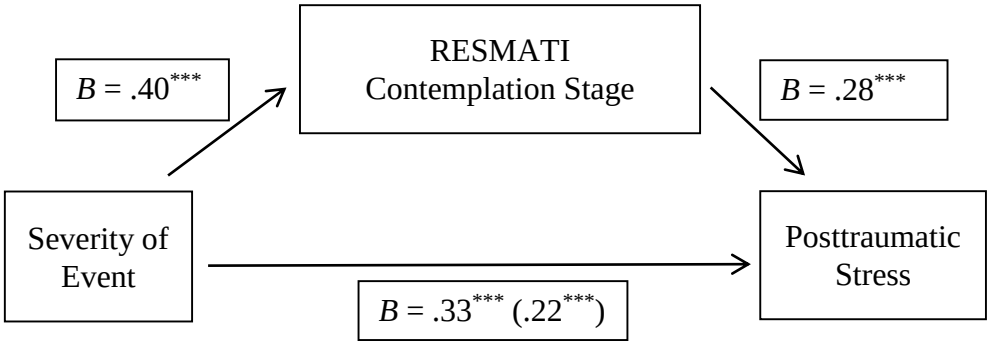
Table 9. Relationship between severity of event and PTS with Precontemplation mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (Severity of event on RESMATI precontemplation stage)	0.28	0.10	2.83	.01
Mediation path *b* (RESMATI precontemplation stage on PTS)	0.24	0.04	6.54	.001
Indirect effect bootstrapped 95% Confidence Interval [0.02 – 0.13]	.07	0.03		
Total effect, path *c* (Severity of event on PTS)	.33	0.06	6.64	.001
Direct effect path *c'* (Severity of event on PTS with mediation)	.26	0.05	4.82	.001
Covariates				
Gender	-0.04	0.07	-0.52	.602
Education	-0.03	0.07	-0.52	.602
Income	-0.14	0.08	-1.65	.100
Accommodation	0.13	0.07	1.77	.077
Driver-passenger	0.08	0.08	0.94	.348
Model R^2 = .28, F (7, 226) = 12.58, p < .001				

B = unstandardized coefficient

3.4.1.2 Contemplation Stage as Mediator Variable

In second analysis, contemplation stage was the mediator variable. As Figure 3 illustrates, the results showed that severity of event significantly predicted contemplation stage of TTM (b = 0.40, SE = 0.11, p < .001), and that contemplation stage significantly predicted PTS (b = 0.28, SE = 0.03, p < .001). The results supported partial mediation. There is statistically significant relationship between severity of event and PTS when it was mediated by contemplation stage (R^2 = .39, F (7, 226) = 20.47, p < .001). When the indirect effect of contemplation stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .11, SE = .03, *95% CI* = .052 - .179) (See Table 10 for detailed resuls).



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

Figure 3. Severity of event and PTS relationship with Contemplation mediation

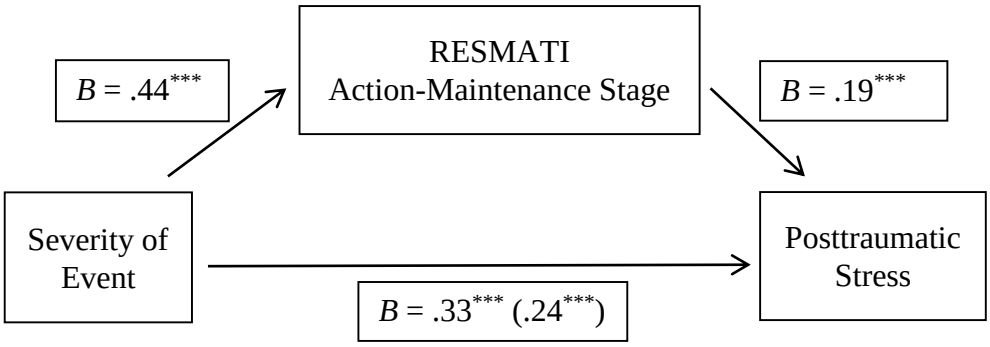
Table 10. Relationship between severity of event and PTS with Contemplation mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (Severity of event on RESMATI Contemplation stage)	0.40	0.11	3.63	.001
Mediation path *b* (RESMATI Contemplation stage on PTS)	0.28	0.03	9.49	.001
Indirect effect bootstrapped 95% Confidence Interval [0.05 – 0.18]	0.11	0.03		
Total effect, path *c* (Severity of event on PTS)	0.33	0.06	5.64	.001
Direct effect path *c'* (Severity of event on PTS with mediation)	0.22	0.05	4.24	.001
Covariates				
Gender	0.02	0.07	0.31	.759
Education	-0.05	0.06	-0.82	.410
Income	-0.15	0.08	-1.95	.052
Accommodation	0.07	0.07	1.11	.264
Driver-passenger	0.05	0.07	0.72	.470
Model $R^2 = .39$, $F(7, 226) = 20.47$, $p < .001$				

B = unstandardized coefficient

3.4.1.3 Action-Maintenance Stage as Mediator Variable

In final analysis, action-maintenance stage was the mediator variable. As Figure 4 illustrates, the results showed that severity of event significantly predicted action-maintenance stage of TTM (b = 0.44, SE = 0.11, $p < .001$), and that action-maintenance stage significantly predicted PTS (b = 0.19, SE = 0.03, $p < .001$). The results supported partial mediation. There is statistically significant relationship between severity of event and PTS when it was mediated by action-maintenance stage (R^2 = .26, F (7, 226) = 11.65, $p < .001$). When the indirect effect of action-maintenance stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .08, SE = .02, *95% CI* = .041 - .137) (See Table 11 for detailed resuls).



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

Figure 4. Severity of event and PTS relationship with Action-Maintenance mediation

Table 11. Relationship between severity of event and PTS with Action-Maintenance mediation (N = 234)

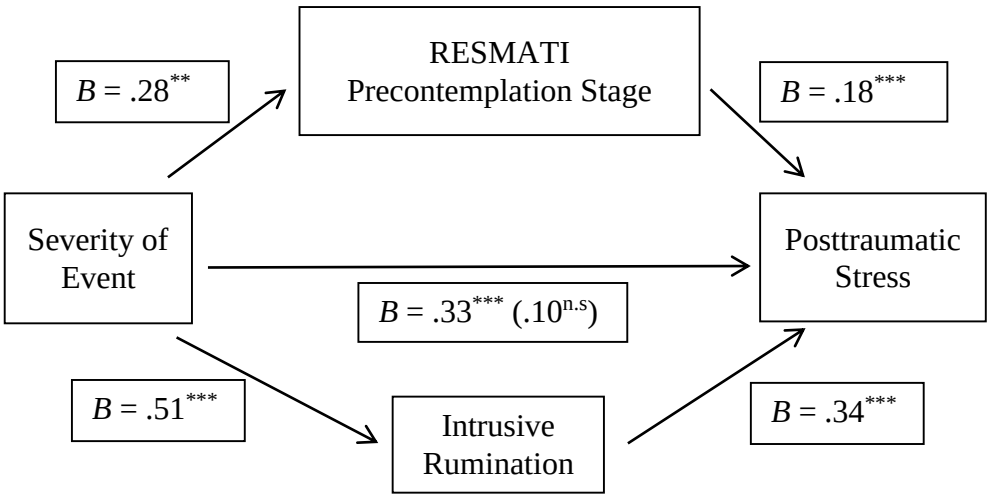
	B	***SE***	***t***	***p***
Mediation path *a* (Severity of event on RESMATI Action-Maintenance stage)	0.44	0.11	3.87	.001
Mediation path *b* (RESMATI Action-Maintenance stage on PTS)	0.18	0.03	5.82	.001
Indirect effect bootstrapped 95% Confidence Interval [0.04 – 0.14]	0.08	0.02		
Total effect, path *c* (Severity of event on PTS)	0.33	0.06	5.64	.001
Direct effect path *c'* (Severity of event on PTS with mediation)	0.24	0.06	4.36	.001
Covariates				
Gender	0.01	0.07	0.11	.915
Education	-0.03	0.07	-0.41	.678
Income	-0.16	0.08	-1.91	.057
Accommodation	0.09	0.07	1.18	.238
Driver-passenger	0.03	0.08	0.35	.723
Model R^2 = .26, F (7, 226) = 11.65, p < .001				

B = unstandardized coefficient

3.4.1.4 Precontemplation Stage and Intrusive Rumination as Mediator Variables

To investigate effects of precontemplation stage and intrusive rumination on relationship between severity of event and PTS, precontemplation stage and intrusive rumination were included the analysis as the mediator variables. As Figure 5 illustrates, the results showed that severity of event significantly predicted precontemplation stage of TTM (b = 0.28, SE = 0.10, p < .01), and intrusive rumination (b = 0.51, SE = 0.08, p < .001). In addition, that intrusive rumination significantly predicted PTS (b = 0.34, SE = 0.04, p < .001) and that

precontemplation stage significantly predicted PTS (b = 0.18, SE = 0.03, p < .001). The results supported full mediation. There is statistically significant relationship between severity of event and PTS when it was mediated by both intrusive rumination and precontemplation stage (R^2 = .45, F (8, 225) = 23.11, p < .001); but direct effect found as nonsignificant (b = 0.10, SE = 0.05, $n.s$). The indirect effects of mediators were investigated via bootstrap estimation approach with 1000 samples, the effect was found significant for intrusive rumination (b = .18, SE = .04, *95% CI* = .107 - .263) and for precontemplation stage (b = .05, SE = .02, *95% CI* = .013 - .100) (See Table 12 for detailed resuls).



Note: B. = unstandardized coefficient, p < .05*, ** p < .01, *** p < .001

Figure 5. Severity of event and PTS relationship with Precontemplation and Intrusive rumination mediation

Table 12. Relationship between severity of event and PTS with Precontemplation and Intrusive Rumination mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (Severity on RESMATI Precontemplation stage)	0.28	0.10	2.83	.01
Mediation path *b* (RESMATI Precontemplation stage on PTS)	0.18	0.03	5.58	.001
Indirect effect bootstrapped 95% Confidence Interval [0.01 – 0.10]	0.05	0.02		
Mediation path *a* (Severity on Intrusive rumination)	0.52	0.08	6.67	.001
Mediation path *b* (Intrusive rumination on PTS)	0.34	0.04	8.36	.001
Indirect effect bootstrapped 95% Confidence Interval [0.11 – 0.26]	0.18	0.04		
Total effect, path *c* (Severity on PTS)	0.33	0.06	5.64	.001
Direct effect path *c'* (Severity on PTS via both mediation)	0.10	0.05	1.96	.051
Covariates				
Gender	0.01	0.06	0.10	.921
Education	-0.01	0.06	-0.14	.889
Income	-0.10	0.07	-1.31	.189
Accommodation	0.08	0.06	1.28	.203
Driver-passenger	0.02	0.07	0.22	.823
Model $R^2 = .45$, F (8, 225) = 23.11, $p < .001$				

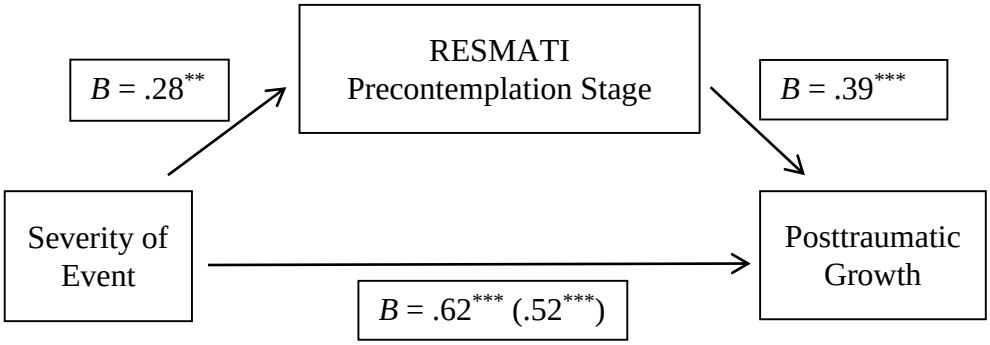
B = unstandardized coefficient

3.4.2 Mediation Analysis for Severity of Event and PTG Relation

To investigate relationship between severity of event and PTG, precontemplation stage, contemplation stage, and action-maintenance stage which are stages of TTM was separately inserted in analysis as mediator variables.

3.4.2.1 Precontemplation Stage as Mediator Variable

In first analysis, precontemplatipn stage was the mediator variable. As Figure 5 illustrates, the results showed that severity of event significantly predicted precontemplation stage of TTM (b = 0.28, SE = 0.10, p < .01), and that precontemplation stage significantly predicted PTG (b = 0.39, SE = 0.09, p < .001). The results supported partial mediation. There is statistically significant relationship between severity of event and PTG when it was mediated by precontemplation stage (R^2 = .17, F (7, 226) = 6.76, p < .001). When the indirect effect of precontemplation stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .11, SE = .05, *95% CI* = .032 - .219) (See Table 12 for detailed resuls).



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

Figure 6. Severity of event and PTG relationship with Precontemplation mediation

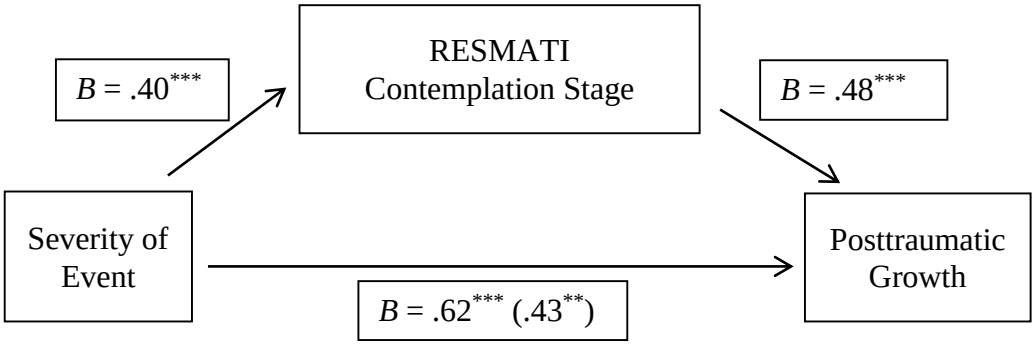
Table 13. Relationship between severity of event and PTG with Precontemplation mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (Severity of event on RESMATI precontemplation stage)	0.28	0.10	2.83	.01
Mediation path *b* (RESMATI precontemplation stage on PTG)	0.39	0.09	4.36	.001
Indirect effect bootstrapped 95% Confidence Interval [0.03 – 0.22]	0.11	0.05		
Total effect, path *c* (Severity of event on PTG)	0.62	0.14	4.58	.001
Direct effect path *c'* (Severity of event on PTG with mediation)	0.52	0.13	3.87	.001
Covariates				
Gender	0.06	0.18	0.32	.749
Education	-0.23	0.17	-1.38	.168
Income	-0.07	0.20	-0.36	.717
Accommodation	0.23	0.18	1.29	.197
Driver-passenger	0.18	0.20	0.90	.369
Model R^2 = .17, F (7, 226) = 6.76, p < .001				

B = unstandardized coefficient

3.4.2.2 Contemplation Stage as Mediator Variable

In second analysis, contemplation stage was the mediator variable. As Figure 6 illustrates, the results showed that severity of event significantly predicted contemplation stage of TTM (b = 0.40, SE = 0.11, p < .001), and that contemplation stage significantly predicted PTG (b = 0.48, SE = 0.07, p < .001). The results supported partial mediation. There is statistically significant relationship between severity of event and PTG when it was mediated by contemplation stage (R^2 = .24, F (7, 226) = 10.41, p < .001). When the indirect effect of contemplation stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .20, SE = .06, *95% CI* = .089 - .328) (See Table 13 for detailed resuls).



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

Figure 7. Severity of event and PTG relationship with Contemplation mediation

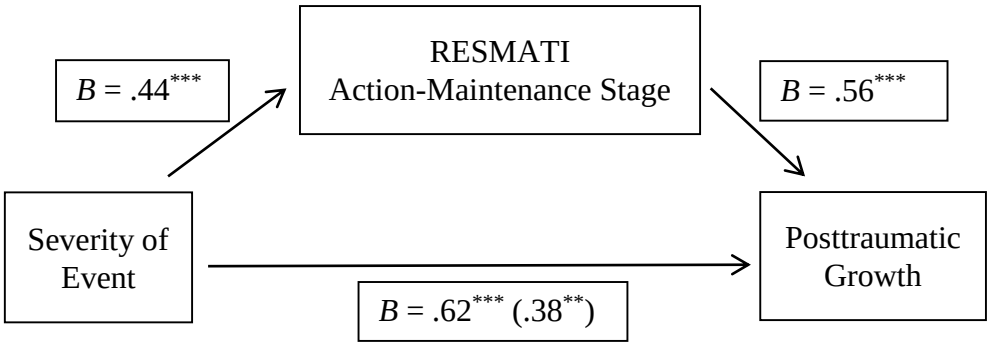
Table 14. Relationship between severity of event and PTG with Contemplation mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (Severity of event on RESMATI contemplation stage)	0.40	0.11	3.63	.001
Mediation path *b* (RESMATI contemplation stage on PTG)	0.48	0.07	6.48	.001
Indirect effect bootstrapped 95% Confidence Interval [0.09 – 0.33]	0.20	0.06		
Total effect, path *c* (Severity of event on PTG)	0.62	0.14	4.58	.001
Direct effect path *c'* (Severity of event on PTG with mediation)	0.43	0.13	3.31	.01
Covariates				
Gender	0.15	0.17	0.90	.370
Education	-0.26	0.16	-1.62	.106
Income	-0.09	0.19	-0.48	.634
Accommodation	0.14	0.17	0.81	.419
Driver-passenger	0.14	0.19	0.73	.465
Model $R^2 = .24$, F (7, 226) = 10.42, $p < .001$				

B = unstandardized coefficient

3.4.2.3 Action-Maintenance Stage as Mediator Variable

In final analysis, action-maintenance stage was the mediator variable. As Figure 7 illustrates, the results showed that severity of event significantly predicted action-maintenance stage of TTM (b = 0.44, SE = 0.11, p < .001), and that action-maintenance stage significantly predicted PTG (b = 0.56, SE = 0.07, p < .001). The results supported partial mediation. There is statistically significant relationship between severity of event and PTG when it was mediated by action-maintenance stage (R^2 = .30, F (7, 226) = 13.70, p < .001). When the indirect effect of action-maintenance stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .24, SE = .07, *95% CI* = .128 - .410) (See Table 14 for detailed resuls).



Note: B. = unstandardized coefficient, p < .05*, ** p < .01, *** p < .001

Figure 8. Severity of event and PTG relationship with Action-Maintenance mediation

Table 15. Relationship between severity of event and PTG with Action-Maintenance mediation (N = 234)

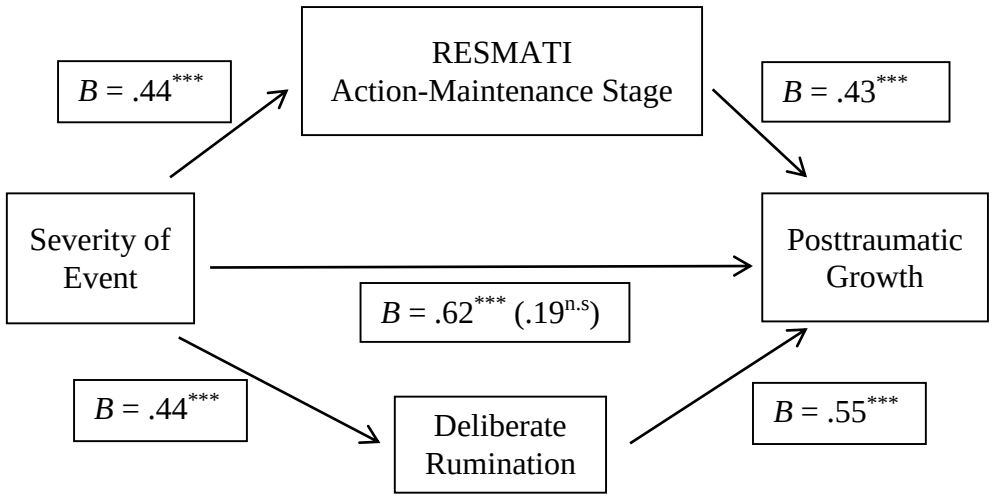
	B	***SE***	***t***	***p***
Mediation path *a* (Severity of event on RESMATI Action-Maintenance stage)	0.44	0.11	3.87	.001
Mediation path *b* (RESMATI Action-Maintenance stage on PTG)	0.56	0.07	7.91	.001
Indirect effect bootstrapped 95% Confidence Interval [0.13 – 0.41]	0.24	0.07		
Total effect, path *c* (Severity of event on PTG)	0.62	0.14	4.58	.001
Direct effect path *c'* (Severity of event on PTG with mediation)	0.38	0.12	3.03	.01
Covariates				
Gender	0.11	0.17	0.63	.527
Education	-0.21	0.15	-1.38	.169
Income	-0.11	0.19	-0.58	.563
Accommodation	0.12	0.16	0.75	.455
Driver-passenger	0.02	0.18	0.11	.911
Model R^2 = .30, F (7, 226) = 13.70, p < .001				

B = unstandardized coefficient

3.4.2.4 Action-Maintenance Stage and Deliberate Rumination as Mediator Variables

To investigate effects of action-maintenance stage and deliberate rumination on relationship between severity of event and PTG, action-maintenance stage and deliberate rumination were included the analysis as the mediator variables. As Figure 5 illustrates, the results showed that severity of event significantly predicted action-maintenance stage of TTM (b = 0.28, SE = 0.10, p < .01), and deliberate rumination (b = 0.51, SE = 0.08, p < .001). In addition, that deliberate rumination significantly predicted PTG (b = 0.34, SE = 0.04, p < .001) and that action-maintenance stage significantly predicted PTG (b = 0.18, SE = 0.03, p <

.001). The results supported full mediation. There is statistically significant relationship between severity of event and PTG when it was mediated by both deliberate rumination and action-maintenance stage (R^2 = .45, F (8, 225) = 23.11, p < .001); but direct effect found as nonsignificant (b = 0.34, SE = 0.04, $n.s$). The indirect effects of mediators were investigated via bootstrap estimation approach with 1000 samples, the effect was found significant for deliberate rumination (b = .18, SE = .04, *95% CI* = .107 - .263) and for action-maintenance stage (b = .05, SE = .02, *95% CI* = .013 - .100) (See Table 12 for detailed resuls).



Note: B. = unstandardized coefficient, p < .05*, ** p < .01, *** p < .001

Figure 9. Severity of event and PTG relationship with Action-maintenance and Deliberate rumination mediation

Table 16. Relationship between severity of event and PTG with Action-Maintenance and Deliberate Rumination mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (Severity on RESMATI Action-Maintenance stage)	0.44	0.11	3.87	.001
Mediation path *b* (RESMATI Action-Maintenance stage on PTG)	0.43	0.07	5.94	.001
Indirect effect bootstrapped 95% Confidence Interval [0.08 – 0.34]	0.19	0.06		
Mediation path *a* (Severity on Deliberate rumination)	0.44	0.07	6.04	.001
Mediation path *b* (Deliberate rumination on PTG)	0.55	0.11	4.86	.001
Indirect effect bootstrapped 95% Confidence Interval [0.13 – 0.44]	0.24	0.07		
Total effect, path *c* (Severity on PTG)	0.62	0.14	4.58	.001
Direct effect path *c'* (Severity on PTG via both mediation)	0.19	0.12	1.55	.123
Covariates				
Gender	0.10	0.16	0.61	
Education	-0.19	0.15	-1.31	
Income	-0.08	0.18	-0.43	
Accommodation	0.09	0.16	0.58	
Driver-passenger	-0.01	0.17	-0.06	
Model R^2 = .36, F (8, 225) = 16.14, p < .001				

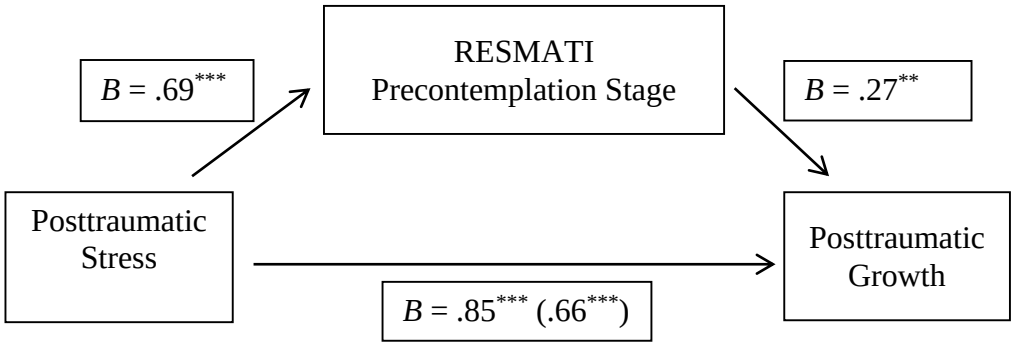
B = unstandardized coefficient

3.4.3 Mediation Analysis for PTS and PTG Relation

To investigate relationship between PTS and PTG, precontemplation stage, contemplation stage, and action-maintenance stage which are stages of TTM was separately inserted in analysis as mediator variables.

3.4.3.1 Precontemplation Stage as Mediator Variable

In first analysis, precontemplatipn stage was the mediator variable. As Figure 8 illustrates, the results showed that PTS significantly predicted precontemplation stage of TTM (b = 0.69, SE = 0.09, $p < .001$), and that precontemplation stage significantly predicted PTG (b = 0.27, SE = 0.10, $p < .01$). The results supported partial mediation. There is statistically significant relationship between PTS and PTG when it was mediated by precontemplation stage (R^2 = .18, F (7, 226) = 7.36, $p < .001$). When the indirect effect of precontemplation stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .19, SE = .07, *95% CI* = .061 - .352) (See Table 15 for detailed resuls).



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

Figure 10. PTS and PTG relationship with Precontemplation mediation

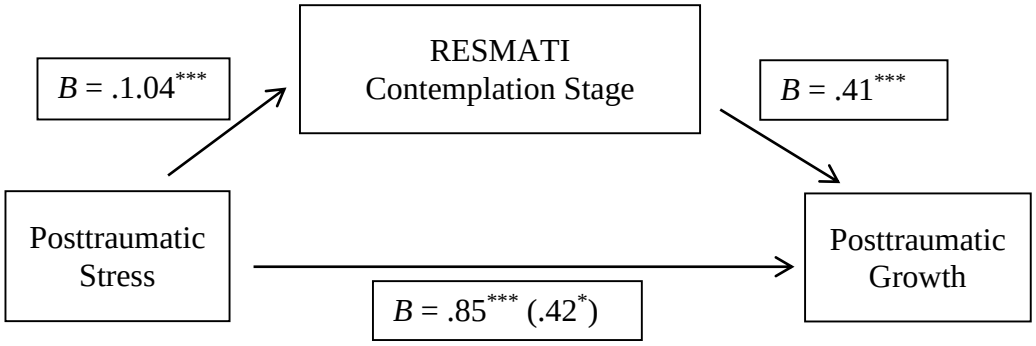
Table 17. Relationship between PTS and PTG with Precontemplation mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (PTS on RESMATI precontemplation stage)	0.69	0.09	7.22	.001
Mediation path *b* (RESMATI precontemplation stage on PTG)	0.27	0.10	2.83	.01
Indirect effect bootstrapped 95% Confidence Interval [0.06 – 0.35]	0.19	0.07		
Total effect, path *c* (PTS on PTG)	0.85	0.14	6.05	.001
Direct effect path *c'* (PTS on PTG with mediation)	0.66	0.15	4.32	.001
Covariates				
Gender	0.04	0.18	0.24	.811
Education	-0.23	0.16	-1.38	.169
Income	0.07	0.20	0.35	.728
Accommodation	0.18	0.18	1.02	.308
Driver-passenger	0.07	0.20	0.38	.703
Model R^2 = .18, F (7, 226) = 7.36, p < .001				

B = unstandardized coefficient

3.4.3.2 Contemplation Stage as Mediator Variable

In second analysis, contemplation stage was the mediator variable. As Figure 9 illustrates, the results showed that PTS significantly predicted contemplation stage of TTM (b = 1.04, SE = 0.10, p < .001), and that contemplation stage significantly predicted PTG (b = 0.41, SE = 0.09, p < .001). The results supported partial mediation. There is statistically significant relationship between PTS and PTG when it was mediated by contemplation stage (R^2 = .23, F (7, 226) = 9.63, p < .001). When the indirect effect of contemplation stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .43, SE = .11, *95% CI* = .249 - .673) (See Table 16 for detailed resuls).



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

Figure 11. PTS and PTG relationship with Contemplation mediation

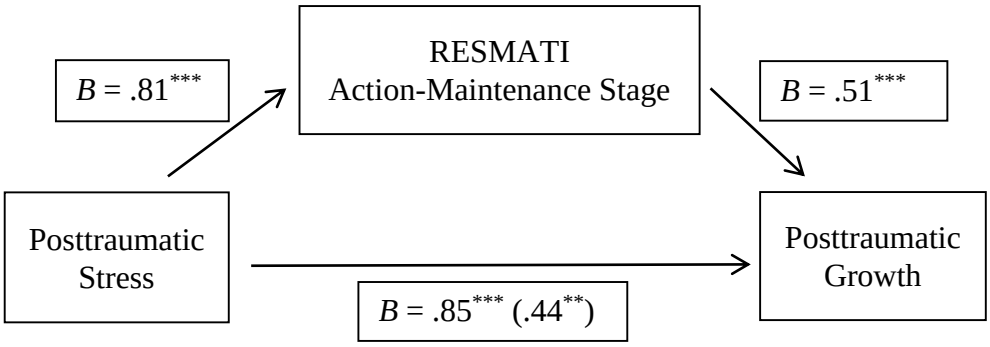
Table 18. Relationship between PTS and PTG with Contemplation mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (PTS on RESMATI contemplation stage)	1.04	0.10	10.40	.001
Mediation path *b* (RESMATI contemplation stage on PTG)	0.41	0.09	4.62	.001
Indirect effect bootstrapped 95% Confidence Interval [0.25 – 0.67]	0.43	0.11		
Total effect, path *c* (PTS on PTG)	0.85	0.14	6.05	.001
Direct effect path *c'* (PTS on PTG with mediation)	0.42	0.16	2.58	.05
Covariates				
Gender	0.12	0.17	0.67	.502
Education	-0.26	0.16	-1.62	.107
Income	0.02	0.20	0.10	.922
Accommodation	0.13	0.17	0.77	.441
Driver-passenger	0.06	0.19	0.32	.749
Model $R^2 = .23$, F (7, 226) = 9.63, $p < .001$				

B = unstandardized coefficient

3.4.3.3 Action-Maintenance Stage as Mediator Variable

In final analysis, action-maintenance stage was the mediator variable. As Figure 10 illustrates, the results showed that PTS significantly predicted action-maintenance stage of TTM (b = 0.81, SE = 0.11, p < .001), and that action-maintenance stage significantly predicted PTG (b = 0.51, SE = 0.07, p < .001). The results supported partial mediation. There is statistically significant relationship between PTS and PTG when it was mediated by action-maintenance stage (R^2 = .30, F (7, 226) = 13.76, p < .001). When the indirect effect of action-maintenance stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .41, SE = .08, *95% CI* = .260 - .580) (See Table 17 for detailed resuls).



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

Figure 12. PTS and PTG relationship with Action-Maintenance mediation

Table 19. Relationship between PTS and PTG with Action-Maintenance mediation (N = 234)

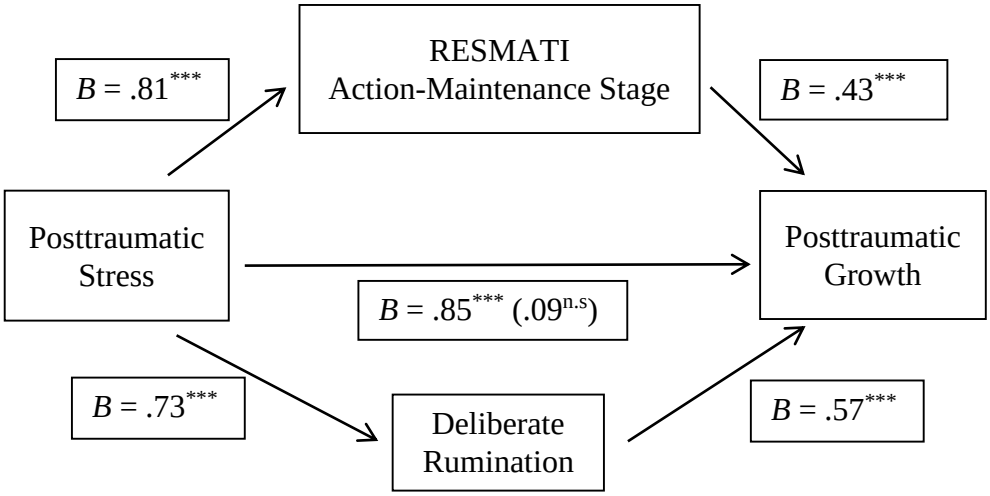
	B	***SE***	***t***	***p***
Mediation path *a* (PTS on RESMATI Action-Maintenance stage)	0.81	0.11	7.14	.001
Mediation path *b* (RESMATI Action-Maintenance stage on PTG)	0.51	0.07	6.76	.001
Indirect effect bootstrapped 95% Confidence Interval [0.26 – 0.58]	0.41	0.08		
Total effect, path *c* (PTS on PTG)	0.85	0.14	6.05	.001
Direct effect path *c'* (PTS on PTG with mediation)	0.44	0.14	3.08	.01
Covariates				
Gender	0.07	0.17	0.45	.650
Education	-0.21	0.15	-1.40	.163
Income	0.00	0.19	-0.00	.999
Accommodation	0.11	0.16	0.64	.522
Driver-passenger	-0.04	0.18	-0.24	.810
Model R^2 = .30, F (7, 226) = 13.76, p < .001				

B = unstandardized coefficient

3.4.3.4 Action-Maintenance Stage and Deliberate Rumination as Mediator Variables

To investigate effects of action-maintenance stage and deliberate rumination on relationship between PTS and PTG, action-maintenance stage and deliberate rumination were included the analysis as the mediator variables. As Figure 5 illustrates, the results showed that PTS significantly predicted action-maintenance stage of TTM (b = 0.81, SE = 0.11, p < .001), and deliberate rumination (b = 0.73, SE = 0.07, p < .001). In addition, that deliberate rumination significantly predicted PTG (b = 0.57, SE = 0.12, p < .001) and that action-maintenance stage significantly predicted PTG (b = 0.43, SE = 0.07, p < .001). The results supported

full mediation. There is statistically significant relationship between PTS and PTG when it was mediated by both deliberate rumination and action-maintenance stage (R^2 = .36, F (8, 225) = 15.75, p < .001); and direct effect found as nonsignificant (b = 0.09, SE = 0.15, *n.s*). The indirect effects of mediators were investigated via bootstrap estimation approach with 1000 samples, the effect was found significant for deliberate rumination (b = .41, SE = .011, *95% CI* = .204 - .630) and for action-maintenance stage (b = .35, SE = .08, *95% CI* = .212 - .519) (See Table 12 for detailed resuls).



Note: B. = unstandardized coefficient, p < .05*, ** p < .01, *** p < .001

Figure 13. PTS and PTG relationship with Action-maintenance and Deliberate Rumination Mediation

Table 20. Relationship between PTS and PTG with Action-Maintenance and Deliberate Rumination Mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (PTS on RESMATI Action-Maintenance stage)	0.81	0.11	7.14	.001
Mediation path *b* (RESMATI Action-Maintenance stage on PTG)	0.43	0.07	5.77	.001
Indirect effect bootstrapped 95% Confidence Interval [0.21 – 0.52]	0.35	0.08		
Mediation path *a* (PTS on Deliberate rumination)	0.73	0.07	10.65	.001
Mediation path *b* (Deliberate rumination on PTG)	0.57	0.12	4.59	.001
Indirect effect bootstrapped 95% Confidence Interval [0.20 – 0.63]	0.41	0.11		
Total effect, path *c* (PTS on PTG)	0.85	0.14	6.05	.001
Direct effect path *c'* (PTS on PTG via both mediation)	0.09	0.15	0.59	.555
Covariates				
Gender	0.08	0.16	0.51	.613
Education	-0.20	0.15	-1.34	.181
Income	-0.04	0.18	-0.21	.835
Accommodation	0.09	0.16	0.60	.550
Driver-passenger	-0.04	0.17	-0.26	.796
Model R^2 = .36, F (8, 225) = 15.75, p < .001				

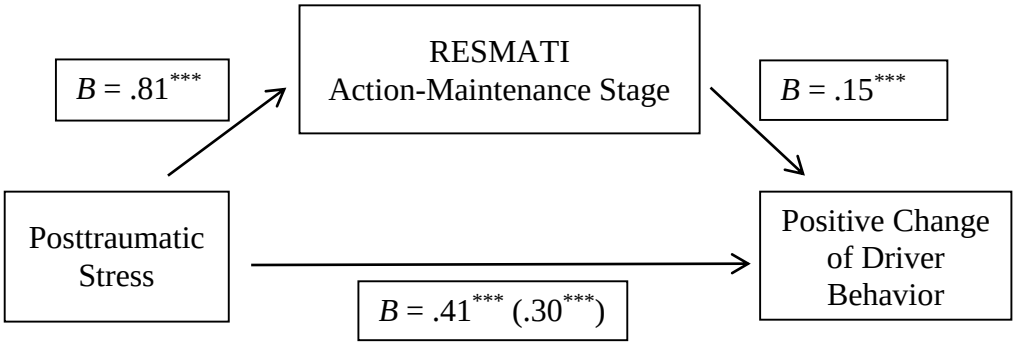
B = unstandardized coefficient

3.4.4 Mediation Analysis for Positive Change of Driver Behavior

To investigate relationship between PTS/PTG and driver behavior change, action-maintenance stage which is stage of TTM was separately inserted in analysis as mediator variable.

3.4.4.1 Action-Maintenance Stage as Mediator Variable between PTS and Positive Change of Driver Behavior

In final analysis, action-maintenance stage was the mediator variable. As Figure 10 illustrates, the results showed that PTS significantly predicted action-maintenance stage of TTM (b = 0.81, SE = 0.11, p < .001), and that action-maintenance stage significantly predicted positive change of driver behavior (b = 0.15, SE = 0.04, p < .001). The results supported partial mediation. There is statistically significant relationship between PTS and positive change of driver behavior when it was mediated by action-maintenance stage (R^2 = .19, F (7, 226) = 7.86, p < .001). When the indirect effect of action-maintenance stage was investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (b = .12, SE = .04, *95% CI* = .054 - .204) (See Table 17 for detailed resuls).



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

Figure 14. PTS and positive change of driver behavior relationship with Action-Maintenance mediation

Table 21. Relationship between PTS and Positive Change of Driver Behavior with Action-Maintenance mediation (N = 234)

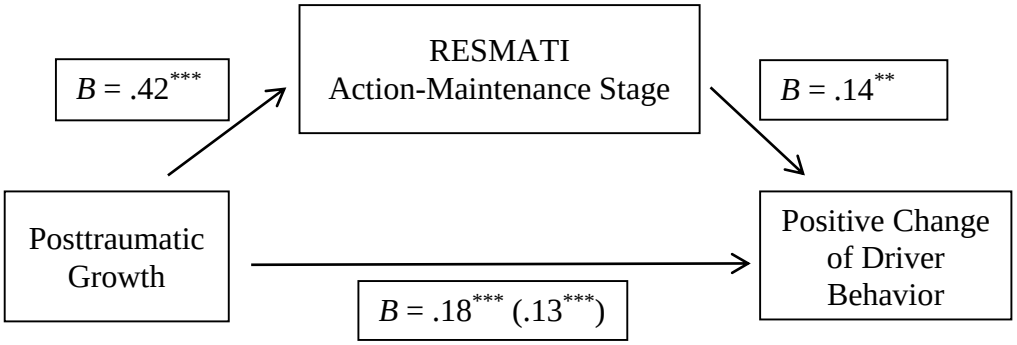
	B	***SE***	***t***	***p***
Mediation path *a* (PTS on RESMATI Action-Maintenance stage)	0.81	0.11	7.14	.001
Mediation path *b* (RESMATI Action-Maintenance stage on PTG)	0.15	0.04	3.60	.001
Indirect effect bootstrapped 95% Confidence Interval [0.05 – 0.20]	0.12	0.04		
Total effect, path *c* (PTS on PTG)	0.41	0.07	5.79	.001
Direct effect path *c'* (PTS on PTG with mediation)	0.30	0.07	3.82	.001
Covariates				
Gender	0.13	0.09	1.39	.166
Education	0.09	0.08	1.12	.263
Income	0.09	0.10	0.88	.377
Accommodation	0.07	0.09	0.76	.445
Driver-passenger	-0.00	0.10	-0.04	.965
Model R^2 = .19, F (7, 226) = 7.86, p < .001				

B = unstandardized coefficient

3.4.4.2 Action-Maintenance Stage as Mediator Variable between PTG and Positive Change of Driver Behavior

In final analysis, action-maintenance stage was the mediator variable. As Figure 10 illustrates, the results showed that PTG significantly predicted action-maintenance stage of TTM (b = 0.42, SE = 0.05, p < .001), and that action-maintenance stage significantly predicted positive change of driver behavior (b = 0.14, SE = 0.04, p < .01). The results supported partial mediation. There is statistically significant relationship between PTG and positive change of driver behavior when it was mediated by action-maintenance stage (R^2 = .19, F (7, 226) = 7.54, p < .001). When the indirect effect of action-maintenance stage was

investigated via bootstrap estimation approach with 1000 samples, the effect was found significant (*b* = .06, *SE* = .02, *95% CI* = .023 - .101) (See Table 17 for detailed resuls).



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

Figure 15. PTG and positive change of driver behavior relationship with Action-Maintenance mediation

Table 22. Relationship between PTG and positive change of driver behavior with Action-Maintenance mediation (N = 234)

	B	***SE***	***t***	***p***
Mediation path *a* (PTG on RESMATI Action-Maintenance stage)	0.42	0.05	8.78	.001
Mediation path *b* (RESMATI Action-Maintenance stage on Positive Change of Driver Behavior)	0.14	0.04	3.19	.01
Indirect effect bootstrapped 95% Confidence Interval [0.02 – 0.10]	0.06	0.02		
Total effect, path *c* (PTG on Positive Change of Driver Behavior)	0.18	0.03	5.87	.001
Direct effect path *c'* (PTG on Positive Change of Driver Behavior with mediation)	0.13	0.03	3.58	.001
Covariates				
Gender	0.11	0.09	1.24	.218
Education	0.11	0.08	1.32	.189
Income	0.06	0.10	0.59	.558
Accommodation	0.08	0.09	0.90	.370
Driver-passenger	-0.00	0.10	-0.03	.977
Model $R^2 = .19$, $F\ (7, 226) = 7.54$, $p < .001$				

B = unstandardized coefficient

CHAPTER 4

DISCUSSION

4.1 Discussion of the Results

In this section, discussion of results will be presented; the results of factor analysis, the results about predictors of PTS, the result about predictors of PTG, the relationship between PTS and PTG, and predictors of driver behavior change will be discussed, respectively.

4.1.1 Factor Analyses of URICA and RESMATI

The factor structures of URICA and RESMATI will be discussed.

4.1.1.1 Factor Analysis of URICA

The University of Rhode Island Change Assessment (URICA) is developed based on Transtheoretical Model to assess readiness to change (McConnaughy, Prochaska, & Velicer, 1983). URICA as a valid and reliable measurement tool was confirmed (Blanchard, Morgenstern, Morgan, Labouvie, & Bux, 2003; McConnaughy, DiClemente, Prochaska, & Velicer, 1989).

In this thesis, URICA was translated to Turkish; and adapted for the survivors of traffic accident. The first usage aim of this measurement tool was investigating the way from the severity of traffic accident to results of the accident as PTS and PTG in terms of individuals' readiness for change stage. The second aim was investigating the relationship between PTS and PTG. The third aim was investigating the way from PTS/PTG to driver behavior change in terms of individuals' readiness for change stage.

To examine factor structure of URICA, principal factor analysis with varimax rotation was conducted. While the original version of URICA has four factor structure (McConnaughy, Prochaska, & Velicer, 1983); in this study based on results, three factor solution was decided as best factor structure. Although some studies supported four factor structure in the same direction with original factor solution (Field, Adinoff, Harris, Ball, & Carroll, 2009; Khalil, 2011; Mander et al., 2012); factor structure was stated as controversial in the literature (Tambling & Ketring, 2014) and several factor structures were proposed (e.g., Dozois, Westra, Collins, Fung, & Garry, 2004; Tambling & Johnson, 2012). In the same direction with this study, similar three factor structure was also proposed (Tambling & Ketring, 2014). In addition to these, because of predictive properties of URICA, it was stated that it should be used with caution (Bergly, Stallvik, Nordahl ve Hagen, 2014).

In the study, in addition to different factor structre, many items did not correspond under the originators' conceptualization of the factor structure. Seven of the 32 URICA items loaded on disparate factors; six of seven items belonged to contemplation stage, and one was action stage in the originators' conceptualization. The cause of these variations might be the difference between development purpose of the tool which is assessing the stage of the person in psychotherapy and usage purpose in the study which is stage of the person aftermath of a traffic accident. In addition to this, the controversial factor structure might be the reason in the same direction with literature.

4.1.1.2 Factor Analysis of RESMATI

The Readiness to Engage in Self-Management After Acute Traumatic Injury Questionnaire (RESMATI) is developed based on Transtheoretical Model’s stages of change to assess readiness to change and as a valid and reliable measurement tool was confirmed (Wegener et al., 2014).

In this thesis, RESMATI was translated to Turkish; and adapted for survivors of traffic accident. The first usage aim of this measurement tool was investigating the way from the severity of traffic accident to results of the accident as PTS and PTG in

terms of individuals' readiness for change stage. The second aim was investigating the relationship between PTS and PTG. The third aim was investigating the way from PTS/PTG to driver behavior change in terms of individuals' readiness for change stage.

To examine the factor structure of RESMATI, principal factor analysis with varimax rotation was conducted. In the same direction with original factor solution, three factor solution best fit the data. 22 of the 23 items loaded same factors with the originators' conceptualization of the factor structure. Only item 16 loaded Contemplation factor while in the original version it loaded the Action-Maintenance factor. RESMATI was developed for assessing stages of acute injury experiencing sample, which is very close to this study's sample; it might be the reason of exact fit with original factor structure (Wegener et al., 2014).

4.1.2 Posttraumatic Stress Predictors

Posttraumatic stress (PTS) is a psychological reaction to the traumatic event; and posttraumatic stress disorder (PTSD) is a mental disorder which has re-experiencing, avoidance, negative cognitions or mood, and hyperarousal symptoms (American Psychiatric Association, 2013). In this study, perceived severity of event used to measure impact of event, and to measure PTS Stress Indications Aftermath of Trauma Scale (SITS) was used to calculate overall PTS score.

In the same direction with the literature, perceived severity of event and PTS found positively related (Bisson, 2007; Blanchard, Hickling, Mitnick, Taylor, Loos, & Buckley, 1995; Ogle, Rubin, & Siegler, 2016); the studies were conducted in Turkey also confirmed this result (Elal & Slade, 2005; Çağlayan, 2016; İkizer, Karancı, & Doğulu, 2016). In addition to this, some studies indicated that while perceived severity of traffic accident found positively related to PTS, objective severity of event cannot be found related with PTSD (Brand et al., 2014; Delahanty, Raimonde, Spoonster, & Cullado, 2003; Fujita & Nishida, 2008; Mayou, Bryant, & Duthie, 1993); some studies found both objective and perceived severity of traffic accident positively related with PTS (Bae, Hyun, & Ra, 2015; Blanchard et al., 1995; Ehlers

et al, 1998). This mixed result may arise from the usage of different measuring methods and different conceptualizations of the severity of event (Davis, & Novoa, 2013). The relationship between traffic accident and PTS might be affected by various variables such as readiness to change, and thinking style.

When stage of traffic accident survivor according to Transtheoretical Model (TTM) included as mediator variable, and was measured with RESMATI; gender, education, income, main accommodation, being driver or passenger in the time of accident were controlled; the results showed that pre-contemplation stage, contemplation stage, and action-maintenance stage had a significant mediator variable between severity of event and PTS. In other words, stage of person explains underlying mechanism of the relationship between severity of event and PTS. Even if the pre-contemplation stage and PTS were found positively related and action maintenance stage and PTS were found negatively related in one study (Wegener et al., 2014); in current study action-maintenance stage found as more significant mediator variable with its higher indirect effect than precontemplation stage; but explained variance is highest for pre-contemplation mediated model. Besides these, contemplation stage has the highest indirect effect, Wegener et al. (2014) reached similar result; contemplation stage has higher correlation coefficient than pre-contemplation stage in the positive direction. According to TTM, the pre-contemplation stage is the stage of denial or minimization of the problem (Prochaska & DiClemente, 1983); and denial is a method to cope up with unpleasant and agonizing experiences; and involves the rejection of reality (McWilliams, 2011). Consequentially, individual who denies the problems about traffic accident also denies the experiences and emotions lived after the accident such as post-traumatic stress. In the same direction with this, individual who have thoughts about problems and making change but not take action, experience much more PTS than, individual who takes actions and who deny her/his about her/his traffic accident-related problems.

After reaching importance of stage of the person in the severity of event and PTS relationship, to investigate the effect of cognitive appraisal on this relationship, intrusive rumination was included mediation analysis. It was found that the severity

of event no longer predicted PTS after the mediation of intrusive rumination and precontemplation stage. When the analysis was made with contemplation stage, the significance of relationship reduced. In literature, relationship between intrusive rumination and PTS among traffic accident survivors was confirmed (Heron-Delaney, Kenardy, Charlton & Matsuoka, 2013); mediation effect of rumination on severity of event and PTS was also confirmed (García, Cova, Rincón, & Vázquez, 2015; Zhou, Wu, Yuan, Chen, & Chen, 2015).

4.1.3 Posttraumatic Growth Predictors

Positive psychological change experienced aftermath of highly challenging experiences such as traumatic events was called as posttraumatic growth (PTG; Tedeschi & Calhoun, 1995). In this study, overall PTG score was used to investigate the mediated relationship between severity of event and PTG.

According to Functional Descriptive Model of PTG (Tedeschi, &Calhoun, 2004), the traumatic event with its challenges should create distress and the struggle with this difficulties will end up with growth. In the same direction with this model, perceived severity of event and PTG found positively related, with other studies this association was supported (Aldwin, Sutton, & Lachman, 1996; Arikan, Carnelley, Stopa, & Karl, 2010; Marshall, 2010; Martin, Byrnes, McGarry, Rea, & Wood, 2017).

When stages of traffic accident survivor according to Transtheoretical Model (TTM) included as mediator variable, and was measured with RESMATI, and gender, education, income, main accommodation, being driver or passenger in the time of accident were controlled; the results showed that pre-contemplation stage, contemplation stage, and action-maintenance stage are a significant mediator variable between severity of event and PTG. In other words, stage of person explains underlying mechanism of the relationship between severity of event and PTG. Analysis showed that partial mediation for all stages; and as it was expected it was found that there is a gradual increase in indirect effect from pre-contemplation stage mediation to action-maintenance stage mediation, the explained variance also

increased, respectively. This might be an indicator which shows that PTG is a process not the direct result of the traumatic event (Tedeschi & Calhoun, 2004).

After reaching importance of stage of the person in the severity of event and PTG relationship, to investigate the effect of cognitive appraisal on this relationship, deliberate rumination was included mediation analysis. It was found that the severity of event no longer predicted PTG after the mediation of deliberate rumination and action-maintenance stage. In literature, the relationship between deliberate rumination and PTG among traffic accident survivors was confirmed Çağlayan, 2016; Zoellner, Rabe, Karl, & Maercker, 2008); and mediation effect of deliberate rumination between severity of event and PTG was supported (Andrades, García, Calonge, & Martínez-Arias, 2017).

4.1.4 Relationship between PTS and PTG

In literature, relationship between PTS and PTG is a controversial issue; while some argue that PTS and PTG coexisting constructs and found positive association between them (Hall, Hobfoll, Canetti, Johnson, Palmieri, & Galea, 2010; Tiamiyu et al., 2016; Wilson et al., 2016; Wu, Xu, & Sui, 2016; Zhou, & Wu, 2016); this was also supported by Functional Descriptive Model of PTG; others argue that PTS and PTG are different constructs and placed the opposite ends of same continuum (Ai, Cascio, Santangelo, & Evans-Campbell, 2005; Hall et al., 2008; Johnson et al., 2007). In the current study, PTS and PTG were found positively associated; and to investigate this complicated association, firstly stages of traffic accident survivor according to Transtheoretical Model (TTM) included as mediator variable, and then rumination was counted in.

Results showed that mediation of contemplation stage between PTS and PTG has highest indirect effect, but mediation of action-maintenance stage between PTS and PTG has highest explained variance within three models. The deliberate rumination added to the model as mediator variable, it was found that PTS no longer predicted PTG. With these results, controversy about PTS and PTG relationship continues. Both the PTS and PTG are separately associated with severity of event and can be

counted as different constructs in the way from traumatic event to PTS and/or PTG; on the other hand, PTS and PTG are positively related and when rumination and stage of individual step in analysis, PTS cannot predict PTG, like model of rumination and TTM stage mediated relation between perceived severity of event and PTS/PTG. When explained variances of models were compared, two models were able to explain the same amount of variance, while rumination and stage of TTM mediated model of association between severity of event and PTG has higher F score than rumination and stage of TTM mediated model of association between PTS and PTG; but with .76 indirect effect, rumination and stage of TTM mediated model of association between PTS and PTG has higher indirect effect.

In the light of these results, when PTS takes to the stage as the independent variable or dependent variable, the contemplation stage brings change. In addition to interpret this result as the cause of denial of problem, this can be interpreted as the same direction with TTM which is stated that change is a process (Tedeschi & Calhoun, 2004). The thoughts about problems and changing problems may bring change one situation to other situation, especially in the path from PTS to PTG. In order to provide change from PTS to PTG, includes some pathological reaction, rather than from severity of event to PTG; it may be needed to take treatment to provide the change, but the number of traffic survivors who receiving treatment about the accident is too little in the sample of present study. Thus, contemplation stage can better explain path from PTS to PTG than the action-maintenance stage.

4.1.5 Relationship between PTS, PTG and Change of Driver Behavior

In the present study, the positive change of driver behavior described as an increase in positive driver behaviors, and a decrease in violations and errors; and the negative change of driver behavior described as a decrease in positive driver behaviors, and increases in violation and error. Both PTS and PTG were found as positively related to the positive change of driver behavior and negative change of driver behavior. In literature, the anxiety and PTSD generally were found related with driving with performance deficits (Baker et al., 2014), aggressive driving (Clapp et al., 2014),

increases in errors (Kontogiannis, 2006). It may be resulted due to unilaterality of research which only investigated aberrant driving behaviors. In addition to these, the positive change of driver behaviors involves increases in positive driver behaviors which can contain errors and violations (Özkan & Lajunen, 2005); this may be the cause of positive correlations of both the positive change of driver behavior and the negative change of driver behavior with PTS and PTG.

In Transtheoretical Model as a change model, action-maintenance stage involves taking actions and some behavioral changes (Tedeschi & Calhoun, 2004); to investigate effects of traumatic event on behavioral change, action-maintenance stage was included as mediator variable in the relationship between PTS/PTG and driver behavioral change; and it was found that relationship between posttraumatic stress and positive change of driver behavior significantly and positively mediated by action-maintenance stage of TTM. Similarly, it was found that relationship between posttraumatic growth and positive change of driver behavior significantly and positively mediated by action-maintenance stage of TTM. In other words, both PTS and PTG as psychological effects of traffic accident predict the positive change of driver behavior, and some part of this relationship can be explained by individual's presence in action-maintenance stage. In literature, to the best of our knowledge there is not a study investigate the relationship between psychological effects of traffic accident and driver behavior change with stages of TTM mediation; but with a pilot study it was confirmed that driver behavior change considerably fit the TTM framework (Kowalski, Jeznach, & Tuokko, 2014).

4.2 Limitations and Strenghts of Study

The present study has some limitations. First of all, the present study is a cross-sectional study; all variables related to study such as severity of event, exprienced stress aftermath of accident, growth aftermath of accident, and depended on these variables experienced driver behavior change were assessed at the same time even if these are evaluated as experiences in different time points and processes; the time point of measurement and recall bias may have an effect on evaluations about past

time; but it was hoped that this impact affects all variables in the same manner. In addition to these, as a disadvantage of cross-sectional study causal relationship between variables of study cannot be examined. Secondly, self-report method and likert type questions were used for data collection. While self-report may create social desirability bias and have an effect on responses of individuals especially for responses about the negative change of driver behavior, Likert type questions are lack of flexibility and may force people to answer according to fixed answers; this may decrease the validity. Finally, the study was announced via social media and data collection was conducted with online survey method; the sample of study consists of people who can access the internet; it can be created sample bias and has an effect on the generalizability of results.

Besides limitations of the study, the study has some strengths. Firstly, the present study provided the better understanding about PTS, PTG, and relationship between them. Both PTS and PTG are multivariate concepts which contain traumatic event with its objective sides, survivor's evaluation about the traumatic event, survivor's respond to the traumatic event, and processing time about the event. In this direction, present study brings unique view to this relationship and process about the event. To provide this different view to scales of TTM were translated to Turkish and adapted for traffic accidents. Thus, studies about TTM and readiness for change can be improved in Turkey.

In literature, Transtheoretical model almost never applied to a trauma research. With this study, effects of stages of the person on the way from the traffic accident to PTSD and/or PTG, and the way from PTSD to PTG will be examined. These two paths were compared to bring a new perspective to controversial issue about the relationship between PTS and PTG. Prochaska, DiClemente, and Norcross (1992) stated that with TTM it could be understood how people change on their own and support with therapy, in this study how people change on their own aftermath of a traffic accident was examined.

In order to create safe traffic culture and decrease accidents, changing driver behaviors in positive direction get importance, to reach this aim TTM was used as a

change model. There are very few studies which examine the relationship between stages of Transtheoretical model and drivers' behavioral change in traffic. Moreover, to the best of our knowledge, the relationship between experiencing the traumatic event at traffic and changing the driving behaviors via Transtheoretical model has never been studied before. With the present study, stages which promote safer traffic environment via increasing positive driver behavior and decreasing negative driver behavior were enlightened. In the same direction with literature, rumination styles were included analyses, and broader perspective was presented. As stated before, in 4 high-risk behaviors, majority of drivers' stage according to TTM found as preactional stages (Khadem-Rezaiyan, Moallem, & Vakili, 2017), in other words even if safe acts are supported by rules, majority of drivers not prefer safe behaviors. This condition reversed in traffic accidents which drivers experience psychological impacts of accident and become willingness to change behaviors. This study supported this claim and also enlightened.

Present study serves as a base for intervention programs which can promote to move another upper stage and teach effective rumination style to actualize PTG for traffic accident survivors. Moreover, present study serves as a base for intervention programs which can promote to move another upper stage to change driver behavior in the positive direction for safer traffic environment.

4.3 Clinical Implications and Further Suggestions

Findings of the study especially those related to PTG may also be beneficial for developing an intervention manual to provide support for traffic accident survivors and teaching them how to better adapt to the experience of the accident by fostering the use of effective rumination strategies. In order to increase PTG, positive driver behaviors and decrease PTSD, errorsi and violations, specific training programs and manuals for traffic accident survivors that aim to change stage of accident survivor can be developed. To effectively help traffic accident survivors, getting knowledge about their stage can become beneficial, according to survivor's stage specific techniques can be applied; ontaining knowledge about whether patient ready to

change or not can lighten therapy process and also can foster changing positive driver behavior.

To investigate the cause-effect relationship between traffic accident severity, PTS, PTG, and driver behavior change and effects of rumination and individual's stage on these longitudinal studies are needed, this also can provide to see all process from accident to driver behavior change, and which variables take places at which time points. In addition to these, model studies also can provide to reach this aim. Based on these results, to provide and expedite growth aftermath of accident and to increase driver behavior change in positive direction for safe traffic culture some interventions can be developed according to the stage of person. In the development of intervention programs, the eduction about effective rumination style may be beneficial to provide these changes. Further studies should be investigated causal relationships between variables; thus conducting longitudinal studies is necessary. After that, developing interventions which will target individuals who take part in different stages should be the focus to move beyond PTS, and proceed to PTG and achieve positive driver behavior change for safer traffic environment.

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APPENDICES

Appendix A: Ethnical Permission

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

DUMLUPINAR BULVARI 06800
ÇANKAYA ANKARA/TURKEY
T: +90 312 210 22 91
F: +90 312 210 79 59
ueam@metu.edu.tr
www.ueam.metu.edu.tr

Sayı: 28620826/150

08 MART 2017

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Doç.Dr. Türker ÖZKAN;

Danışmanlığını yaptığınız yüksek lisans öğrencisi Bilgesu KAÇAN' ın ***"Trafik Kazasında Travma Sonrası Strese, Travma Sonrası Gelişime, Sürücü Davranış Değişimine Giden Yolu Ruminasyon Tarzının ve Transteorik Modelin Aşamalarına Göre İncelemek"*** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay **2017-SOS-033** protokol numarası ile **08.03.2017 – 31.09.2017** tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Canan SÜMER
İnsan Araştırmaları Etik Kurulu Başkanı

Prof. Dr. Mehmet UTKU
İAEK Üyesi

Prof. Dr. Ayhan SOL
İAEK Üyesi

Prof. Dr. Ayhan Gürbüz DEMİR
İAEK Üyesi

Doç. Dr. Yaşar KONDAKÇI (Y.)
İAEK Üyesi

Yrd. Doç. Dr. Pınar KAYGAN
İAEK Üyesi

Yrd. Doç. Dr. Emre SELÇUK
İAEK Üyesi

Appendix B: Informed Consent Form

Gönüllü Katılım Formu

Bu çalışma ODTÜ öğretim üyesi Doç. Dr. Türker Özkan ve Prof. Dr. Tülin Gençöz danışmanlığında Psikoloji Bölümü Klinik Psikoloji yüksek lisans öğrencisi Bilgesu Kaçan tarafından yürütülmektedir. Çalışmada trafikte sürücü, yolcu ya da yaya olarak kaza geçirmiş kişilerin kazadan etkilenmesinin ve kaza sonrasında bu etkilerin nasıl değiştiğinin incelenmesini amaçlamaktadır. Dolayısıyla çalışmaya destek olabilmek için 18 yaşından büyük ve son 5 yılda sürücü, yolcu ya da yaya olarak trafik kazası geçirmiş kişiler katılabilmektedir. Çalışma yaklaşık olarak 20 dakika sürmekte ve çalışmada kimlik belirleyici hiçbir bilgi istenmemektedir. Anket formları gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir; elde edilecek bilgiler sadece bilimsel yayınlarda kullanılacaktır.

Çalışma genel olarak kişisel rahatsızlık verecek bir etkileşim içermemektedir. Ancak, katılım sırasında herhangi bir nedenden ötürü kendinizi rahatsız hissederseniz çalışmayı bırakmakta serbestsiniz. Çalışmanın objektif ve güvenilir sonuç verebilmesi için, yanıtları samimi olarak cevaplandırmanız son derece önemlidir. Doğru ya da yanlış seçenek yoktur. Kendinize en yakın hissettiğiniz veya düşündüğünüz cevabı işaretlemeniz yeterli olacaktır.

Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için Psikoloji Bölümü öğrencilerinden Bilgesu Kaçan (E-posta: bilgesu.kacan@metu.edu.tr) ile iletişim kurabilirsiniz.

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

İsim Soyad Tarih

İmza ----/----/-----

Appendix C: Demographic Information Form

A. Demografik Sorular

A1. Yaşınız: _____

A2. Cinsiyetiniz: ☐ Erkek ☐ Kadın ☐Diğer

A3. 5. Ekonomik durumunuz (Lütfen aylık ortalama gelirinizi işaretleyiniz.) : ☐ 0-1500 ☐ 1501-4000 ☐ 4001-6000 ☐ 6000 ve üstü

A4. Eğitim durumunuz? (En son mezun olduğunuz dereceyi seçiniz)
☐ İlkokul ☐ Lise ☐ Önlisans ☐ Üniversite ☐ Yüksek Lisans ☐ Doktora

A5. Hayatınızın büyük bir çoğunluğunu geçirdiğiniz yer:
☐ Metropol (Ankara, İstanbul, İzmir) ☐ İl ☐ İlçe ☐ Köy

A6. Sürücüyseniz kaç yıldır ehliyet sahibisiniz? _____

A7. Ortalama bugüne kadar yaklaşık olarak toplam kaç kilometre araç kullandınız?
_____km

A8. Genel olarak, ne sıklıkla araç kullanırsınız?
☐ Hemen hemen her gün ☐ Haftada 3-4 gün ☐ Haftada 1-2 gün
☐ Ayda birkaç kez ☐ Çok nadir

A9. Son üç yılda kaç kez araç kullanırken **aktif olarak** (sizin bir araca, bir yayaya veya herhangi bir nesneye çarptığınız durumlar) kaza yaptınız? (hafif kazalar dâhil)_____ kez

A10. Son üç yılda kaç kez araç kullanırken **pasif olarak** (bir aracın ya da bir yayanın size çarptığı durumlar) kaza geçirdiniz? (hafif kazalar dâhil)_____ kez

A11. Son 5 yılda toplam kaç trafik kazası geçirdiniz?_____

A12. Tek bir kaza geçirdiyseniz, geçirdiğiniz kazanın üstünden ne kadar zaman geçti?_____yıl_____ay

A13. Birden fazlaysa size en çok etkileyen kazanın üzerinden ne kadar zaman geçti?
_____yıl_____ay

Lütfen bundan sonraki soruları sizi en çok etkileyen kazayı düşünerek cevaplayınız.

Appendix C (Continued)

A.14 Kazada hangi konumda bulunuyordunuz? ☐ Yolcu ☐ Sürücü

A. 15 Kazayı geçirdiğiniz araç tipi neydi?

☐ Özel otomobil ☐ Taksi ☐ Otobüs

☐ Minibüs ☐ Kamyon ☐Diğer (belirtiniz)

A.16 Kazadan sonra fiziksel bir tedavi gördünüz mü? ☐ Evet ☐ Hayır

A.17 Kazadan sonra psikolojik tedavi gördünüz mü? ☐ Evet ☐ Hayır

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

A.18 Kazada ölen oldu mu? ☐ Evet ☐ Hayır

Cevabınız evet ise;

Ölen kişi sayısı kaçtı?

Ölenler arasında akrabanız/ arkadaşınız/ yakınınız var mıydı?

☐ Evet ☐ Hayır

A19 Lütfen geçirdiğiniz kazayı 4-5 cümle ile anlatınız.

_____
_____
_____
_____
_____
_____
_____

Appendix D: Severity of Event Form

Lütfen aşağıdaki soruları geçirdiğiniz kazayı düşünerek cavaplayınız.

1. Kazada bulunduğunuz aracın fiziksel hasar derecesi ne kadardı?
   □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
2. Kazada bulunduğunuz aracın maddi hasar derecesi ne kadardı?
   □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
3. Kazaya karışan diğer aracın/araçların fiziksel hasar derecesi ne kadardı?
   □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
4. Kazaya karışan diğer aracın/araçların maddi hasar derecesi ne kadardı?
   □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
5. Kazada yaralanma düzeyiniz ne kadardı?
   □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
6. Kazada sizin aracınızda olan kişilerin yaralanma düzeyi ne kadardı?
   □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
7. Kazada sizin aracınızda olmayan başka kişilerin yaralanma düzeyi ne kadardı?
   □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
8. Kazada öleceğiniz aklınıza ne kadar geldi?
   □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
9. Kazada başkalarının aklınıza ne kadar geldi?
   □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
10. Kaza sırasında ne kadar korktunuz?
    □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
11. Kaza sırasında hissettiğiniz çaresizlik ne kadardı?
    □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla
12. Kazanın sizde bırakmış olduğu rahatsızlık ne kadardı?
    □ Hiç □ Çok az □ Oldukça □ Fazla □ Çok fazla

Appendix E: Event-Related Rumination Inventory

Daha önceki sorularda belirttiğinize benzer bir yaşantıdan (kazadan) sonra, her zaman olmasa da, bazen insanlar, bu deneyim hakkında düşünmeye çalışmamalarına rağmen kendilerini onunla ilgili düşünceler içinde bulurlar. Aşağıda yer alan maddeleri son bir ayda ne sıklıkla yaşadığınızı belirtin.

1= Hiç 2= Nadiren 3= Bazen 4=Sıklıkla

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

Event-Related Rumination Inventory (Continued)

Daha önceki sorularda belirttiğinize benzer bir yaşantıdan (kazadan) sonra, her zaman olmasa da, bazen insanlar, özellikle ve kasıtlı olarak bu deneyim hakkında düşünerek vakit geçirirler. Aşağıda yer alan maddeler için, son bir ayda belirtilen konular ile ilgili olarak ne sıklıkla düşünmek için özellikle vakit geçirdiğinizi belirtin.

1= Hiç 2= Nadiren 3= Bazen 4=Sıklıkla

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

Appendix F: University of Rhode Island Change Assessment

Aşağıda zor bir olay yaşamış kişilerin bu olayla ilgili neler yaptığına dair bazı ifadeler sıralanmıştır. Lütfen yaşamış olduğunuz trafik kazasını düşünerek listedeki her bir maddeyi dikkatle okuyun ve geçtiğimiz ay içinde o maddede sözü edilen duruma ne kadar katılıp katılmadığınıza göre işaretleyin.

1 – Hiç katılmıyorum
2 – Kısmen Katılmıyorum
3 – Ne Katılıyorum Ne Katılmıyorum
4 – Kısmen Katılıyorum
5 – Tamamen Katılıyorum

1	Bence, değişmesi gereken herhangi bir problemim yok.	1	2	3	4	5
2	Kendimi geliştirmeye hazır olabileceğimi düşünüyorum.	1	2	3	4	5
3	Beni rahatsız eden sorunlarla ilgili bir şeyler yapıyorum.	1	2	3	4	5
4	Sorunum üzerinde çalışmak faydalı olabilir.	1	2	3	4	5
5	Kendimde bir sorun görmüyorum. Tedaviye başlamam mantıklı değil.	1	2	3	4	5
6	Zaten çözdüğüm bir sorunu tekrar yaşayabilme ihtimali beni endişelendiriyor, bu yüzden profesyonel yardım almaya karar verdim.	1	2	3	4	5
7	Nihayet sorunum hakkında bir şeyler yapıyorum.	1	2	3	4	5
8	Bir süredir kendimle ilgili bir şeyleri değiştirmek isteyebileceğimi düşünüyorum.	1	2	3	4	5
9	Sorunumla baş etmede başarılı oldum, ancak kendi başıma çaba sarf etmeye devam edebileceğimden emin değilim.	1	2	3	4	5
10	Bazen sorunum zorlayıcı oluyor, ama üzerinde çalışıyorum.	1	2	3	4	5
11	Tedavi olmak benim için tamamen zaman kaybı, çünkü sorun benimle ilgili değil.	1	2	3	4	5
12	Kendimi daha iyi anlamam için tedavinin bana yardımcı olmasını umut ediyorum.	1	2	3	4	5
13	Sanırım kusurlarım var, ancak gerçekten değiştirmem gereken bir şey yok.	1	2	3	4	5
14	Değişmek için gerçekten çaba sarf ediyorum.	1	2	3	4	5
15	Bir sorunum var ve gerçekten bunun üzerine çalışmam gerektiğini düşünüyorum.	1	2	3	4	5

Appendix F (Continued)

16	Üstesinden gelmeyi umduğum ve çoktan üstesinden geldiğim şeyleri arkamda bırakamamışım; problemlerimin tekrarlamasını önlemek için profesyonel yardım almaktayım.	1	2	3	4	5
17	Her zaman değişmeyi başaramamış olsam da en azından sorunum üzerinde çalışıyorum.	1	2	3	4	5
18	Sorunumu çözdükten sonra hiç sorunum kalmayacağını düşünmüştüm, ama bazen kendimi hala sorunumla uğraşırken buluyorum.	1	2	3	4	5
19	Keşke sorunun nasıl çözüleceği konusunda daha fazla fikir sahibi olsam.	1	2	3	4	5
20	Sorunlarım üzerinde çalışmaya başladım, ama gelecek bir yardıma hayır demem.	1	2	3	4	5
21	Belki profesyonel yardım almak derdime çare olabilir.	1	2	3	4	5
22	Şimdiye kadar yaptığım değişiklikleri koruyabilmem için desteğe ihtiyacım olabilir.	1	2	3	4	5
23	Sorunun parçası olabilirim, ama gerçekten böyle olduğumu düşünmüyorum.	1	2	3	4	5
24	Umarım bu süreçte birisinin benim için iyi bir tavsiyesi olur.	1	2	3	4	5
25	Herkes değişim hakkında konuşabilir; ben gerçekten bu konuda bir şeyler yapıyorum.	1	2	3	4	5
26	Psikoloji hakkındaki bütün konuşmalar çok sıkıcı. Neden insanlar sorunlarını unutup geçemiyorlar?	1	2	3	4	5
27	Sorunumun tekrarlamasını önlemek için profesyonel yardım alıyorum.	1	2	3	4	5
28	Sinir bozucu ama çözdüğümü düşündüğüm bir sorunun tekrarlanabileceğini hissediyorum.	1	2	3	4	5
29	Endişelerim var, ama başkalarının da var. Neden bunları düşünmek için zaman harcayayım?	1	2	3	4	5
30	Sorunum üzerinde bilfiil çalışıyorum.	1	2	3	4	5
31	Kusurlarımı değiştirmeye çalışmaktansa, üstesinden gelmeyi tercih ederim.	1	2	3	4	5
32	Problemlerimin üstesinden gelebilmek için bu kadar uğraştıktan sonra bile, zaman zaman karşıma çıkıyor.	1	2	3	4	5

Appendix G: Readiness to Engage in Self-management after Acute Traumatic Injury Questionnaire

Aşağıda zor bir olay yaşamış kişilerin bu olayla ilgili neler yaptığına dair bazı ifadeler sıralanmıştır. Lütfen yaşamış olduğunuz trafik kazasını düşünerek listedeki her bir maddeyi dikkatle okuyun ve geçtiğimiz ay içinde o maddede sözü edilen duruma ne kadar katılıp katılmadığınıza göre işaretleyin.

1 – Hiç katılmıyorum
2 – Kısmen Katılmıyorum
3 – Ne Katılıyorum Ne Katılmıyorum
4 – Kısmen Katılıyorum
5 – Tamamen Katılıyorum

1	Geçirdiğim kazaya bağlı sorunlarım tıbbi sorunlardır ve yapmam gereken tek şey bununla ilgili doktorla görüşmektir.	1	2	3	4	5
2	Doktorların farklı açıklamalarına rağmen, halen geçirdiğim kazaya bağlı sorunlarımı düzeltebilecek bazı cerrahi prosedür veya ilaçların olması gerektiğini düşünüyorum.	1	2	3	4	5
3	Yapabileceğim tek şey geçirdiğim kaza ile ilgili sorunlarımı tamamen çözebilecek bir doktor bulmak.	1	2	3	4	5
4	Neden birileri geçirdiğim kazaya bağlı sorunlarıma yönelik bir şeyler yapamıyor?	1	2	3	4	5
5	Nasıl başa çıkacağım ve daha iyi üstesinden gelebileceğime dair bütün bu konuşmalar zamanımın boşa harcanmasından ibaret.	1	2	3	4	5
6	Artık, geçirdiğim kazaya bağlı problemlerimle başa çıkmak veya bunların üstesinde gelebilmek için daha iyi bir plan geliştirmemin tam zamanı olduğunun farkındayım.	1	2	3	4	5
7	Geçirdiğim kaza ile başa çıkma becerileri geliştirmek için yardıma ihtiyaç duyup duymadığımı düşünmeye başlıyorum.	1	2	3	4	5
8	Son zamanlarda, geçirdiğim kaza ile başa çıkma ve üstesinden gelme yöntemimi değiştirme zamanının geldiği sonucuna vardım.	1	2	3	4	5

Appendix G (Continued)

9	Geçirdiğim kazaya bağlı sorunlarımın üstesinden daha iyi gelebilmek için yapabileceğim bir şeyler olup olmadığını merak ediyorum.	1	2	3	4	5
10	Geçirdiğim kaza ile ilgili sorunlarımın üstesinden gelmenin hekimlere bel bağlamak yerine bana bağlı olup olmadığını düşünmeye başlıyorum.	1	2	3	4	5
11	Geçirdiğim kaza ile başa çıkabilmek için yeni yollar geliştiriyorum.	1	2	3	4	5
12	Geçirdiğim kazayla ilgili sorunlarımın hayatımı etkilemesini engellemenin bazı iyi yollarını öğrendim.	1	2	3	4	5
13	Geçirdiğim kaza sonrasında hayatımı kontrol altına almama yardımcı olacak stratejiler bulmaya başladım.	1	2	3	4	5
14	Geçirdiğim kazaya bağlısorunlarım ortaya çıktığında, kendimi otomatik olarak arkadaşlar ve ailemden yardım istemek, rahatlamak, spor yapmak veya sorunu çözmeye çalışmak gibi geçmişte işe yarayan stratejileri kullanırken buluyorum.	1	2	3	4	5
15	Günden güne, geçirdiğim kazaya bağlı sorunumu/sorunlarımı daha iyi ele almak için bana yardımcı olacak bazı yeni stratejiler kullanıyorum.	1	2	3	4	5
16	Her ne kadar tam olarak iyileşemesem de, onunla başa çıkma şeklimi değiştirmeye hazırım.	1	2	3	4	5
17	Geçirdiğim kazaya bağlı problemleri kontrol altında tutmamı sağlayacak ne öğrendiysem kullanıyorum.	1	2	3	4	5
18	Geçirdiğim kazanın üstesinden gelmek için kendi becerilerimi kullanarak gerekli adımları atıyorum.	1	2	3	4	5
19	Son zamanlarda geçirdiğim kazayla daha iyi başa çıkabilmenin benim elimde olduğunu anladım.	1	2	3	4	5
20	Geçirdiğim kazaya bağlı sorunlarımın üstesinden gelmenin ilaçlar veya ameliyatlar dışındaki yollarını öğreniyorum.	1	2	3	4	5
21	Geçirdiğim kaza ile günlük yaşamımda başa çıkabilmek için stratejiler geliştirdim.	1	2	3	4	5
22	Geçirdiğim kazaya bağlı sorunlarımı kontrol altına almak için çok çalışıyorum.	1	2	3	4	5
23	Geçirdiğim kazayla başa çıkmada ve üstesinden gelmede büyük ilerleme kaydettim.	1	2	3	4	5

Appendix H: Stress Indications Aftermath of Trauma Scale

Aşağıda zor bir olaya bağlı olarak yoğun bir stres yaşamış kişilerin zaman zaman yaşadığı bazı durumlar sıralanmıştır. Lütfen yaşamış olduğunuz trafik kazasını düşünerek listedeki her bir maddeyi dikkatle okuyun ve geçtiğimiz ay içinde o maddede sözü edilen durumun, sizin için ne kadar geçerli olduğunu, o maddenin hemen altındaki ölçek üzerinde işaretleyin.

1 – Hiç 2 – Biraz 3 – Orta Düzeyde 4 – Çok Fazla

		Hiç	**Biraz**	**Orta Düzeyde**	**Çok Fazla**
1	Kazayla ilgili bazı rahatsızlık verici görüntüler, düşünceler ve anılar tekrar tekrar aklıma geliyor.	1	2	3	4
2	Tekrar tekrar kazayla ilgili rahatsız edici rüyalar görüyorum.	1	2	3	4
3	Kazayla ilgili konuları konuşmaktan kaçınıyorum.	1	2	3	4
4	Arada sırada kaza sanki yeniden oluyor sanıyorum ve bununla ilişkili bazı davranışlarda bulunuyorum.	1	2	3	4
5	Herhangi bir şey, olay ya da konu kazayı hatırlattığında rahatsız oluyorum.	1	2	3	4
6	Herhangi bir şey, olay ya da konu bana kazayı hatırlattığında bedenimde değişmeler oluyor (kalp çarpıntısı, nefes almada güçlük, terleme, vb.)	1	2	3	4
7	Kazayı düşünmekten kaçınıyorum.	1	2	3	4
8	Kazayı hatırlatır düşüncesiyle bazı etkinliklerden ya da durumlardan kaçınıyorum.	1	2	3	4
9	Kazayla ilgili bazı önemli olayları hatırlayamıyorum.	1	2	3	4
10	Eskiden yapmaktan hoşlandığım şeylere artık ilgi duymuyorum.	1	2	3	4
11	Kendimi diğer insanlardan uzak ve kopuk hissediyorum.	1	2	3	4
12	Bana yakın insanlara karşı sevgi hissetmiyorum, sanki duygusal olarak “robot”laşmış gibiyim.	1	2	3	4
13	Sanki artık bir geleceğim yokmuş gibi hissediyorum.	1	2	3	4
14	Uykuya dalmada ve uykuyu sürdürmede güçlük çekiyorum.	1	2	3	4

Appendix H (Continued)

		Hiç	Biraz	Orta Düzeyde	Çok Fazla
15	Kendimi eskiye kıyasla gergin hissediyorum.	1	2	3	4
16	Eskisine kıyasla öfkeli hissediyorum ve öfke patlamaları yaşıyorum.	1	2	3	4
17	Dikkatimi yaptığım işe vermekte güçlük çekiyorum.	1	2	3	4
18	Hep bir tehlike beklentisi içindeyim ve sürekli tetikteyim.	1	2	3	4
19	En ufak bir ses ya da harekette kolayca yerimden sıçrıyorum.	1	2	3	4
20	Bir otobüs ya da arabayla giderken birdenbire yol boyu olan hiç bir şeyi hatırlamadığımı fark ettiğim zamanlar oluyor.	1	2	3	4
21	Biriyle konuşurken birdenbire karşımdakinin söylediklerinin hiçbirini duymadığımı fark ettiğim zamanlar oluyor.	1	2	3	4
22	Kendimi birdenbire nasıl geldiğimi bilmediğim bir yerde bulduğum oluyor.	1	2	3	4
23	Bazen kendimi dışarıdan seyrediyormuş gibi hissettiğim ya da kendime bir başkasıymışçasına dışarıdan bakıyor gibi olduğum zamanlar oluyor.	1	2	3	4
24	Yaşamımdaki çok önemli bazı olayları hiç hatırlamadığım zamanlar oluyor.	1	2	3	4
25	Çevremdeki insanların, nesnelerin ve diğer şeylerin gerçek olmadığı duygusuna kapıldığım oluyor.	1	2	3	4
26	Arada sırada bedenim sanki bana ait değilmiş gibi hissediyorum.	1	2	3	4
27	Geçmişteki bazı olayları sanki şimdi oluyormuşçasına canlı bir şekilde hatırladığım zamanlar oluyor.	1	2	3	4
28	Hatırladığım bazı şeylerin gerçek mi yoksa hayal mi olduğundan arada sırada emin olamıyorum.	1	2	3	4
29	Hayal kurduğumda kendimi kaptırıp, sanki gerçekmiş gibi yaşıyorum.	1	2	3	4
30	Arada sırada kendimi gözlerimi boşluğa dikmiş hiçbir şey düşünmez ve zamanın nasıl geçtiğini fark etmez bir halde buluyorum.	1	2	3	4
31	Arada sırada kafamda bana neler yapmam gerektiğini söyleyen ya da yaptıklarıma ilişkin eleştirilerde bulunan sesler duyuyorum.	1	2	3	4

Appendix H (Continued)

		Hiç	**Biraz**	**Orta Düzeyde**	**Çok Fazla**
32	Arada sırada dünyaya bir sis perdesi arkasından bakıyormuş gibi hissettiğim, insanlar ve nesneleri uzaktaymışçasına, çok belirsiz şekilde gördüğüm zamanlar oluyor.	1	2	3	4
33	Kazayla ilgili bazı anıları belleğimden silmek için çaba gösteriyorum.	1	2	3	4
34	Arada sırada dalga dalga gelen yoğun ve olumsuz duygular hissediyorum.	1	2	3	4
35	Bazı kişi, yer, nesne ya da olaylar bana kazayı hatırlatıyor.	1	2	3	4
36	Zaman zaman, hiç istemediğim halde kendimi kazayı düşünmekten alıkoyamıyorum.	1	2	3	4

Appendix I: Post-traumatic Growth Inventory

Aşağıda yer alan her cümleyi dikkatle okuyunuz. En çok etkilendiğinizi belirtmiş olduğunuz trafik kazası sonrasında, yaşamınızın bu olaya bağlı olarak ne derece değiştiğini aşağıdaki ölçekte uygun rakamı daire içine alarak belirtiniz.

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

		Hiç	**Çok az**	**Az Dercede**	**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 geçirebileceğimi 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 olaydan sonra benim için yeni fırsatlar doğdu.	0	1	2	3	4	5

Appendix I (Continued)

		Hiç	Çok az	Az Dercede	Orta Derecede	Oldukça Fazla	Aşırı Derecede
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 da 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 J: Driver Behaviors Questionnaire

Aşağıda verilen durumları ne sıklıkta yaparsınız ?

Aşağıda sürücü davranışlarıyla ilgili bir takım durumlar verilmiştir. Verilen her bir durumun sıklığında, yaşadığınız kazadan dolayı herhangi bir değişim olup olmadığını ve değişimin yönünü aşağıdaki ölçeği kullanarak belirtiniz. Her bir soru için cevap seçenekleri:

1= Kazadan dolayı, sıklığında hiç değişim olmadı
2= Kazadan dolayı, sıklığında çoz az değişim oldu
3= Kazadan dolayı, sıklığında biraz değişim oldu
4= Kazadan dolayı, sıklığında orta derecede değişim oldu
5= Kazadan dolayı sıklığında oldukça değişim oldu
6= Kazadan dolayı, sıklığında aşırı derecede değişim oldu

		Kazadan dolayı ne oranda bir değişim oldu?						**Değişim hangi yöndeydi?**		
		Hiç	**Çok az**	**Az Dercede**	**Orta Derecede**	**Oldukça Fazla**	**Aşırı Derecede**	**Değişmedi**	**Arttı**	**Azaldı**
1	Geri geri giderken önceden fark etmediğiniz birşeye çarpmak	0	1	2	3	4	5	1	2	3
2	Trafikte, diğer sürücülere engel teşkil etmemeye gayret göstermek	0	1	2	3	4	5	1	2	3
3	A yönüne gitmek amacıyla yola çıkmışken kendinizi daha alışkın olduğunuz B yönüne doğru araç kullanırken bulmak	0	1	2	3	4	5	1	2	3
4	Geçiş hakkı sizde dahi olsa diğer sürücülere yol vermek	0	1	2	3	4	5	1	2	3
5	Yasal alkol sınırlarının üzerinde alkollü olduğunuzdan şüphelenseniz de araç kullanmak	0	1	2	3	4	5	1	2	3

Appendix J (Continued)

		Hiç	**Çok az**	**Az Dercede**	**Orta Derecede**	**Oldukça Fazla**	**Aşırı Derecede**	**Değişmedi**	**Arttı**	**Azaldı**
6	Aracınızı kullanırken yol kenarında birikmiş suyu ve benzeri maddeleri yayaların üzerine sıçratmamaya dikkat etmek	0	1	2	3	4	5	1	2	3
7	Dönel kavşakta dönüş istikametinize uygun olmayan şeridi kullanmak	0	1	2	3	4	5	1	2	3
8	Anayoldan sola dönmek için kuyrukta beklerken, anayol trafiğine dikkat etmekten neredeyse öndeki araca çarpacak duruma gelmek	0	1	2	3	4	5	1	2	3
9	Trafikte, herhangi bir sürücü size yol verdiğinde veya anlayış gösterdiğinde, elinizi sallayarak, korna çalarak vb. şekilde teşekkür etmek	0	1	2	3	4	5	1	2	3
10	Anayoldan bir sokağa dönerken karşıdan karşıya geçen yayaları fark edememek	0	1	2	3	4	5	1	2	3
11	Başka bir sürücüye kızgınlığı belirtmek için korna çalmak	0	1	2	3	4	5	1	2	3
12	Karşıdan gelen araç sürücüsünün görüş mesafesini koruyabilmesi için uzunları mümkün olduğunca az kullanmak	0	1	2	3	4	5	1	2	3
13	Bir aracı sollarken ya da şerit değiştirirken dikiz aynasından yolu kontrol etmemek	0	1	2	3	4	5	1	2	3
14	Kaygan bir yolda ani fren veya patinaj yapmak	0	1	2	3	4	5	1	2	3
15	Arkanızdan hızla gelen aracın yolunu kesmemek için sollamadan vazgeçip eski yerinize dönmek	0	1	2	3	4	5	1	2	3

Appendix J (Continued)

		Hiç	Çok az	Az Dercede	Orta Derecede	Oldukça Fazla	Aşırı Derecede	Değişmedi	Arttı	Azaldı
16	Kavşağa çok hızlı girip geçiş üstünlüğü olan aracı durmak zorunda bırakmak	0	1	2	3	4	5	1	2	3
17	Şehir içi yollarda hız sınırını aşmak	0	1	2	3	4	5	1	2	3
18	Önünüzdeki aracın sürücüsünü, onu rahatsız etmeyecek bir mesafede takip etmek	0	1	2	3	4	5	1	2	3
19	Sinyali kullanmayı niyet ederken silecekleri çalıştırmak	0	1	2	3	4	5	1	2	3
20	Sağa dönerken yanınızdan geçen bir bisiklet ya da araca neredeyse çarpmak	0	1	2	3	4	5	1	2	3
21	"Yol ver" işaretini kaçırıp, geçiş hakkı olan araçlarla çarpışacak duruma gelmek	0	1	2	3	4	5	1	2	3
22	Yeşil ışık yandığı halde hareket etmekte geciken öndeki araç sürücüsünü korna çalarak rahatsız etmemek	0	1	2	3	4	5	1	2	3
23	Trafik ışıklarında üçüncü vitesle kalkış yapmaya çalışmak	0	1	2	3	4	5	1	2	3
24	Yayaların karşıdan karşıya geçebilmeleri için geçiş hakkı sizde dahi olsa durarak yol vermek	0	1	2	3	4	5	1	2	3
25	Sola dönüş sinyali veren bir aracın sinyalini fark etmeyip onu sollamaya çalışmak	0	1	2	3	4	5	1	2	3
26	Trafikte sinirlendiğiniz bir sürücüyü takip edip ona haddini bildirmeye çalışmak	0	1	2	3	4	5	1	2	3
27	Arkanızdaki aracın ileriyi iyi göremediği durumlarda sinyal vb. ile işaret vererek sollamanın uygun olduğunu belirtmek	0	1	2	3	4	5	1	2	3

Appendix J (Continued)

		Hiç	Çok az	Az Dercede	Orta Derecede	Oldukça Fazla	Aşırı Derecede	Değişmedi	Arttı	Azaldı
28	Otoyolda ileride kapanacak bir şeritte son ana kadar ilerlemek	0	1	2	3	4	5	1	2	3
29	Sollama yapan sürücüye kolaylık olması için hızınızı onun geçiş hızına göre ayarlamak	0	1	2	3	4	5	1	2	3
30	Aracınızı park alanında nereye bıraktığınızı unutmak	0	1	2	3	4	5	1	2	3
31	Solda yavaş giden bir aracın sağından geçmek	0	1	2	3	4	5	1	2	3
32	Trafik ışığında en hızlı hareket eden araç olmak için yandaki araçlarla yarışmak	0	1	2	3	4	5	1	2	3
33	Trafik işaretlerini yanlış anlamak ve kavşakta yanlış yöne dönmek	0	1	2	3	4	5	1	2	3
34	Acil bir durumda duramayacak kadar, öndeki aracı yakın takip etmek	0	1	2	3	4	5	1	2	3
35	Trafik ışıkları sizin yönünüze kırmızıya döndüğü halde kavşaktan geçmek	0	1	2	3	4	5	1	2	3
36	Otobanda trafik akışını sağlayabilmek için en sol şeridi gereksiz yere kullanmaktan kaçınmak	0	1	2	3	4	5	1	2	3
37	Bazı tip sürücülere kızgın olmak (illet olmak) ve bu kızgınlığı bir şekilde onlara göstermek	0	1	2	3	4	5	1	2	3
38	Seyahat etmekte olduğunuz yolu tam olarak hatırlamadığınızı fark etmek	0	1	2	3	4	5	1	2	3
39	Sollama yaparken karşıdan gelen aracın hızını olduğundan daha yavaş tahmin etmek	0	1	2	3	4	5	1	2	3
40	Gereksiz yere gürültü yapmamak için kornayı kullanmaktan kaçınmak	0	1	2	3	4	5	1	2	3

Appendix J (Continued)

		Hiç	Çok az	Az Dercede	Orta Derecede	Oldukça Fazla	Aşırı Derecede	Değişmedi	Arttı	Azaldı
41	Otobanda hız limitlerini dikkate almamak	0	1	2	3	4	5	1	2	3
42	Aracınızı park ederken diğer yol kullanıcılarının (yayalar, sürücler vb.) hareketlerini sınırlamamaya özen göstermek	0	1	2	3	4	5	1	2	3

Appendix K: Turkish Summary/Türkçe Özet

1. GİRİŞ

Dünya Sağlık Örgütü'nün (2015) raporuna göre, trafik kazaları ölüm nedenlerine bakıldığında dokuzuncu sırada yer almakta ve her yıl 1.20 milyondan fazla kişi bu kazalar sebebiyle hayatını kaybetmektedir; bu ölüm oranlarının yüzde doksanı düşük ve orta gelirli ülkelere aittir. Orta gelirli ülkeler arasında yer alan Türkiye'de de meydana gelen trafik kaza sayısı oldukça fazla olup, 2015 yılında meydana gelen 1 milyondan fazla trafik kazasının 183 bini ölümlü ya da yaralanmalı kazalardır (TÜİK, 2015). Bu yüksek sayıdaki trafik kazaları ve kazaların getirdiği psikolojik sonuçlar trafik kazalarının etkilerinin araştırılmasının önemini arttırmaktadır.

1.1 Travma ve Travmatik Olaylar

Travma doğal afet, tecavüz, kaza gibi oldukça kötü olaylara verilen duygusal tepki olarak tanımlanmaktadır (APA;t.d.). Literatürde travma ile ilgili incelenen bir çok olay bulunmakla birlikte, hangi olayların travmatik olup hangi olayların olmadığıyla ilgili kesin bir ayrım yoktur; bu ayrımı belirleyenin olayı deneyimleyen kişinin öznel deneyimi olduğu beirtilmektedir (Weinberg ve Gil, 2016). Bu öznel deyimi olaya olan fiziksel uzaklık ve olaya maruz kalma miktarının belirlediği bulunmuştur. Bunun yanı sıra ırk, yaş, cinsiyet, sosyo-ekonomik durum, sosyal destek ve kültür gibi etmenlerin de bu değerlendirmeyi etkilemektedir (Bonanno, Brewin, Kaniasty, ve La Greca, 2010).

1.2 Travma Sonrası Stress

Travmatik olaylarla karşılaşan kimi kişiler olayı başarılı bir şekilde işlemleyemeyip, olay sonrasında psikolojik sorunlar yaşabilmekte ve Travma Sonrası Stres Bozukluğu (TSSB) geliştirebilmektedirler (Park, 2010). DSM-5'te (2013) TSSB Travma ve Strese İlişkin Hastalıklar kategorisinde yer almakta ve kişinin hangi problemleri

yaşıyorsa bu tanıyı alacağı bazı kriterlerle belirtilmiştir. Bu kriterler; gerçek bir ölüm ya da ölüm tehdidine, ciddi yaralanmaya ya da cinsel şiddete direk deneyimleyerek, gözlemleyerek ya da yakın olan kişilerden öğrenerek maruz kalmayı içermektedir. 35 çalışmayı incelecen bir derleme çalışmasında trafik kazasından sonra oluşan TSSB'nin yaygınlığının çalışmadan çalşmaya değiştiği ve bu değişimin %6 ile %45 arasında olduğu ortaya konmuştur (Heron-Delaney, Kenardy, Charlton, ve Matsuoka, 2013). Trafik kazasından sonra TSSB'yi yordayan etkenlerin ise kadın olmak, düşük eğitim seviyesi, ölümlü kaza olması, daha önceki trafik kazaları, kazadan önceki psikopatoloji, algılanan hayati tehdit ve yaralanmanın ciddiyeti olduğu vurgulanmıştır (Blanchard ve Hickling, 2004; Ehlers, Mayou, ve Bryant, 1998).

1.3 Travma Sonrası Gelişim

Travmatik olayın travma sonrası stres gibi negatif etkilerinin yanı sıra kimi pozitif etkileri de gözlemlenmektedir ve 1980'lerin ortasından sonra bu pozitif etkiler üzerinde yoğunlaşılmıştır (Joseph, 2009). Travmatik olay travma öncesi ve travma sonrası kimi faktörleri aktive eder ve bu süreç travma sonrası stresin de travma sonrası gelişim (TSG) gibi pozitif etkilerin de oluşmasına neden olabilir; TSG oldukça sarsıcı, zorlayıcı hayat olayları ile mücadele sonrasında deneyimlenen pozitif psikolojik değişim olarak tanımlanmaktadır (Joseph ve Linley, 2008; Tedeschi ve Calhoun, 1995). TSG'nin beş farklı alanda gözlemlenebilmektedir, bu alanlar; yeni olanakların algılanması, manevi değişim, kişiler arası ilişkiler, bireysel güçlülük ve yaşamın kıymetini anlamadır.

Trafik kazasından sonra deneyimlenen gelişimin yordayıcıları cinsiyet, kazanın üzerinden geçen zaman, engellilik durumu, ortalamadan düşük zihinsel ve fiziksel işlevsellik, algılanan tehdit ve yaralanmanın ciddiyeti olarak bulunmuştur.

1.4 Olayın Algılanan Ciddiyeti

Bilişsel Teori'ye göre insanların durumlar ve olaylar hakkındadi bilişleri ya da algıları duyguları ve davranşları üzerinde etkili; diğer bir deyiş ile herhangi bir olayın psikolojik ve davranışsal sonucunu olayın kendisinden ziyade, kişinin olayı nasıl

değerlendirdiği belirliyor (Beck, 1964; Beck, 2011; Ellis, 1962). Olay hakkındaki adaptif ve fonksiyonel olmayan düşünceler bazı psikolojik sorunlara yol açarken, düşünce süreçlerinden ya da algılardan etkilenen bu psikolojik problemler duygusal rahatsızlıkların semptomlarına dönüşebiliyorlar (Beck, 1976). Bilişsel teori ile aynı doğrultuda Atıf Kuramı da olay ile hastalık arasındaki ilişkinin kişinin atıfları aracılığı ile kurulduğunu ifade etmektedir (Amirkhan, 1990). Bu kuramları doğrulayacak nitelikte olan bir çalışmada da bazı olaylar travmatik olaylar ve travmatik olmayan olaylar olarak kodlanıp travma yaşamış kişilere bu olaylar gösterildiğinde, olayın özelliklerindense kişinin duygusal tepkisinin TSSB'yi yordadığı bulunmuştur(Boals ve Schuettler, 2009). Sonuç olarak travmatik bir olayı deneyimlemiş kişinin olayın ciddiyeti hakkındaki algısı olayın kişi üzerindeki etkisini anlamlandırabilmek için önem arz etmektedir.

Literatürde olayın algılanan ciddiyeti ile TSSB arasında ilişki bulunmuş olup; olayı daha ciddi olarak algılayan kişilerin daha fazla sayıda TSSB semptomu gösterdiği belirtilmiştir(Bisson, 2007; Ogle, Rubin ve Siegler, 2016). Aynı şekilde olayın TSG ile de olayın algınalan ciddiyeti arasında bir ilişki bulunmuş olup; olayı daha ciddi algılayan kişilerin daha yüksek oranda TSG deneyimlediklerini ifade ettikleri bulunmuştur(Marshall, 2010; Martin, Byrness, McGarry, Rea ve Wood, 2017). Literatürde olayın ciddiyeti ile ilgili farklı sonuçlar bulunduğu gözlenmiştir. Kimi çalışmalar olayın objektif ciddiyetini ölçerken, kimi çalışmalar algılanan ciddiyetini ölçmektedir; bu da sonuçlarda tutarsızlıklarla sonuçlanabilmektedir. Bir çalışmada olaydaki hayati tehtidin kişi tarafından öznel değerlendirmesinin TSSB'yi yordadağı bulunmuş ama olaydaki yaralanma ile ilgili objektif sonuçlar ile TSSB arasında direkt bir ilişki bulunamamıştır; daha ilginç bir şekilde, olaydan yaralanma düzeyi arttıkça kişinin olayı daha az hayati olarak değerlendirdiği belirtilmiştir (Delahanty, Raimonde, Spoonster, ve Cullado, 2003). Türkiye'de de, Turan, Eşel ve Keleş (2003) tarafından trafik kazası mağdurları ile görüşülmüş ve hem olayın fiziksel ciddiyeti hem algılanan hayati tehdit TSSB ile ilişkili bulunmuştur. TSG ile incelendiğinde olayın algılanan ciddiyeti ile trafik kazasından sonra deneyimlenen TSG ilişkili bulunmuştur (Çağlanyan, 2016; Zoellner, Rabe, Karl ve Maercker, 2008).

1.5 Travmatik Olayın İki Sonucu Olarak Travma Sonrası Stres ve Travma Sonrası Gelişim

Tedeschi ve Calhoun'a (2004) göre kişinin dünya hakkındaki inançlarını sarsmak için kişinin bir sıkıntı yaşaması gerekmektedir ve bu sıkıntı ile mücadele de kişinin gelişmesi için elzemdir. Sonuç olarak TSG ve travmanın negatif bir sonucu olarak sıkıntı ve stress yani TSS bir arada bulunabilmekle birlikte, iki ayrı yapıyı oluşturmaktadırlar. Literatürde ise TSSB ve TSG arasında ilişki tam net değildir. Çok az çalışmada ikisi arasında herhengi bir ilişki bulunamamıştır; diğer bir deyişle TSS ile TSG'nin bağımsız yapılar olduğu ve farklı değişkenler tarafından yordandığı çok az çalışma tarafından doğrulanmıştır (e.g. Cordova et al., 2007; Zhou, Wu ve Zhen, 2017). Çoğu çalışmada ise TSS ile TSG ilişkili bulunmuş olup bu çalışmalardan kimileri positif ilişkiyi yani iki yapının aynı anda bulunan yapılar olduğunu doğrularken (Hall ve ark., 2010; Tiamiyu ve ark., 2016; Wilson ve ark., 2016; Wu, Xu ve Sui, 2016; Zhou ve Wu, 2016); kimileri negatif bir ilişkiyi yani aynı sürecin zıt sonuçları olduklarını doğrulamıştır (Hall et al., 2008; Johnson et al., 2007). Kırk iki çalışmayı içeren bir meta analiz çalışmasında TSS ile TSG'in linear bir ilişkiye sahip olduklarıve bu ilişkinin gücünün travmanın özelliklerinden ve yaştan etkilendiği ifade edilmiştir (Shakespeare-Finch ve Lurie-Beck, 2014). Başka bir meta analiz çalışmasında iki yapı arasındaki pozitif ilişki doğrulanmıştır (Wang, Liu, Li ve Gong, 2016).

1.6 Ruminasyon

Bilişsel bir süreç olan ruminasyon, herhanfi bir olayın ya da durumun nedenleri ve sonuçları hakkında tekrar eden düşünceler olarak tanımlanmaktadır ve genellikle olay hakkındaki olumsuz düşünceler olarak değerlendirilmektedir (örn., Ehring, Frank ve Ehlers, 2008). Son yıllarda olay hakkındaki olumlu tekrarlayan düşüncelere de odaklanılmaya başlanmış ve bu ruminasyonun intrusif (araya girici) ve istemli ruminasyon olarak iki ayrı konsepte ayrılmasına neden olmuştur (Cann ve ark., 2011).Intrusif ruminasyon olay hakkındaki istemsiz düşünceleri tanımlarken, istemli ruminasyon kişinin olayı anlamlandırmak amacıyla bilerek yaptığı düşünme biçimini tanımlamaktadır. Intrusif ruminasyon rahatsızlığın sürmesi veya artışı ile ilşkiliyken;

istemli ruminasyon iyi oluş, gelişim ve baş etme ile ilişkilidir (Blackburn ve Owens, 2016; Hill ve Watkins, 2017). Ruminasyonun aracı değişken rolü de incelenmiş olup, intrusif ruminasyonun olayın ciddiyeti ile TSSB rasındaki ilişkide aracı değişken olduğu ifade edilmiştir (Zhou, Wu, Yuan, Chen ve Chen, 2015) Başka bir çalışmada aynı bulgu doğrulanırken aynı ilişki olayın ciddiyeti, TSG ve istemli ruminasyon arasında bulunamamıştır (Morris ve Shakespeare-Finch, 2011).

1.7 Transteorik Model (TTM)

Travmatik olaydan TSS'ye ve/veya TSG'ye giden yolda önemli etkenlerden biri de değişim olabilir, değişim denildiğinde de Transteorik Model(TTM) diğer bir deyişle değişim basamakları modeli önde gelen modellerdendir (Prochaska ve DiClemente, 1983). Transteorik Model'e göre kişinin değişime hazır oluşunu gösteren beş aşama ya da basamak vardır ve değişime hazır olma ilk basamak olan değişmeyi hiç düşünmemekten, son basamak olan kişilerin yaptığı değişiklikleri sürdürmeye çalıştıkları basamağa kadar bir süreci oluşturmaktadır (Prochaska, DiClemente ve Norcross, 1992). Bu beş basamak sırasıyla ön-düşünme, düşünme, hazırlık, harekete geçme ve sürdürme basamaklarıdır (Prochaska ve DiClemente, 1983).

İlk olarak sigara bırakma davranışı için geliştirilen bu modelin zamanla uygulama alanları genişlemiştir (Prochaska ve Velicer, 1997) ve literatürde çeşitli sağlık savranışları ile kullanıldığı gözlemlenmiştir (örn; Evren ve ark., 2006; Keshmiri ve ark., 2017; Miçooğulları, Cengiz ve Aşçı, 2010). Klinik ortamda ise danışanın terapiye hazırlığını ölçmek ve kişinin ihtiyacına uygun müdahaleyi oluşturmak için kullanılmıştır (Abel ve O'Brien, 2014). Modelin travma mağdurları ile incelenmesinin literatürde epey az olduğu gözlenmiştir, trafik kazası mağdurları ile yapılmış bir çalışmaya ise rastlanmamıştır.

1.8 Sürücü Davranışları

Reasons ve arkadaşlarının(1990) sürücü davranışları taksonomisine göre sapkın sürücü davranışları hatalar ve ihlaller olarak iki altkatagoriye ayrılır. Hatalar planan hareketin başarısız olması olarak tanımlanırken ihlaller güvenlik önemlerinin ya da

güvenli davranışların kasti ihmali olarak tanımlanabilir. Sapkın sürücü davranışlarının yanı sıra Özkan ve Lajunen(2005) trafik ve yol kullanıcılarına özen göstermeyi amaçlayan positif davranışları da sürücü davranışları içerisinde incelenmesi gerektiğini göstermişlerdir. Sapkın sürücü davranışları kazaya dahil olmanın önemli yordayıcıları olarak bulunmuş (Mesken, Lajunen ve Summala, 2002; Özkan ve Lajunen, 2005; Verschuur ve Hurts, 2008; de Winter ve Dodou, 2010) ve sapkın sürücü davranışı ile pozitif sürücü davranışları da negatif bir ilişki içerisinde bulunmuştur (Özkan ve Lajunen, 2005). Bu bilgilerin ışığında hata ve ihlalleri azaltırken azaltırken pozitif sürücü davranışlarını arttırmak büyük önem arz etmektedir.

1.8.1 Sürücü Davranış Değişimi

Sağlıksız davranışı sağlıklısı ile değiştirmek konusunda TTM öne çıkan modellerden biri olmakta ve riskli yanıyla sağlıksız sayılabilecek sapkın sürücü davranışlarını değiştirmek konusunda da etkili olabileceği düşünülmüştür. Sürücülerin bulundukları basamkları tanımlamak bu değişimi gerçekleştirmenin, etkili müdahale programları geliştirmenin ilk basamağı olabilir (Asgarabad, Tahami ve Khanjani, 2012). Trafikteki dört riskli davranış incelenmiş ve bu davranışlar baz alındığında sürücülerin bir çoğu aksiyon öncesi basamaklarda bulunmuştur (Khadem-Rezaiyan, Moallem ve Vakili, 2017). Bir pilot çalışma ile de TTM'nin sürücü davranış değişimine uygulanabilirliği desteklenmiştir (Tuokko, McGee ve Rhodes, 2006).

1.9 Çalışmanın Amacı

Çalışmanın amacı kişinin TTM'ye göre bulunduğu basamağın ve/veya ruminasyon tarzının trafik kazasının algılanan ciddiyeti ile TSS, TSG ve sürücü davranış değişimi arasındaki ilişkisine etkisini incelemektir. Bu amaçla TTM'nin basamakları ve ruminasyon tarzları trafik kazasının algılanan ciddiyeti ile TSS, TSG ve sürücü davranış değişimi ilişkisinde aracı değişken olarak incelenmiştir.

2. YÖNTEM

2.1 Örneklem

Çalışmaya son beş yılda en az bir tane trafik kazası geçirmiş, 18 yaş üstü sürücüler dahil edilmiştir. Çalışmada Türkçe'ye çevrilen iki ölçeğin faktör analizleri ve iç tutarlılık analizleri için 409 kişilik bir örneklem kullanışmış olup, katılımcıların 268'i erkek, 139'u kadın, 2'si de diğer olarak cinsiyetlerini belirtmişlerdir. Katılımcıların ortalama yaşı 28 (*SS* = 7.96) olup, 7 kişi ilkokul mezunu, 138 kişi lise mezunu, 33 kişi meslek yüksekokulu, 181 kişi üniversite mezunu, 39 kişi master mezunu ve 11 kişi ise doktoradan mezun olduğunu belirtmiştir. 133 kişi kendini düşük ekonomik seviyede tanımlarken, 173 kişi orta, 64 kişi üst orta ve 39 kişi yüksek ekonomik düzeyde tanımlamıştır. Katılımcıların 260'ı temel ikametlerini metropol, 114'ü il, 28'i ilçe ve 7'si köy olarak belirtmiştir. Çalışmada diğer tüm analizler 234 kişilik bir örneklemle yapılmıştır. Katılımcıların 154'ü erkek, 80'i kadın olarak cinsiyetlerini belirtmişlerdir. Katılımcıların ortalama yaşı 27.72 (SS = 8.56) olup, 1 kişi ilkokul mezunu, 97 kişi lise mezunu, 13 kişi meslek yüksekokulu, 98 kişi üniversite mezunu, 20 kişi master mezunu ve 5 kişi ise doktoradan mezun olduğunu belirtmiştir. 84 kişi kendini düşük ekonomik seviyede tanımlarken, 98 kişi orta, 29 kişi üst orta ve 23 kişi yüksek ekonomik düzeyde tanımlamıştır. Katılımcıların 158'i temel ikametlerini metropol, 60'ı il, 11'i ilçe ve 5'i köy olarak belirtmiştir.

Tüm analizlerin yapıldığı 234 kişilik örneklemin 169'u kaza anında sürücüyken, 65'i yolcudur. Örneklemin büyük bir çoğunluğu olan %88.5'i kazayı kendi arabalarıyla geçirmiştir. Katılımcıların ortalama kat ettikleri yol 202.281 km (SS = 942480) olup son 5 yılda geçirdikleri kaza sayısı ortalaması 2.38'dir (SS = 1.64). En etkilendikleri, çalışmada düşünmeleri rica edilen kazanın üstünden geçen zamanın ortalması 22.58 aydır (SS = 17.89). Katılımcıların 27'si kazadan sonra fiziksel bir yedavi görürken, 10 kişisi de psikolojik tedavi görmüştür. Katılımcıların deneyimlediği kazaların 9'u ölümlü kaza olup bu 9 tanesinden 3'ünde kaybedilen kişi bir katılımcının yakınıdır.

2.2 Veri Toplama Araçları

Çalışmada Sosyo-demografik Bilgi Formu, Olayın Ciddiyeti Formu, Rhode Adası Üniversitesi Değişim Değerlendirmesi, Akut Travmatik Kaza Sonrası Öz Yönetim ile Uğraşmaya Hazır Oluş Ölçeği, Olaya İlişkin Ruminasyon Envanteri, Travma Sonrası Stres Belirtileri ÖlçeğiTravma Sonrası Gelişim Envanteri ve Sürücü Davranışları Ölçeği veri toplama araçları olarak kullanılmıştır.

2.2.1 Sosyo-Demografik Bilgi Formu

Form katılımcılar hakkında yaş, cinsiyet, eğitim durumu, ekonomik düzey, temel ikametkah ve toplam kat ettikleri yol gibi bilgileri öğrenmek amacıyla sorular içermektedir. Bunun yanı sıra kazayla ilgili, kişilerin toplam geçirdikleri trafik kazası sayısı, kazanın üstünden geçen zaman, kazada kazazedenin bulunduğu konum (sürücü ya da yolcu), kaza yapılan aracın tipi, kaza ile ilgili fiziksel ya da psikolojik tedavi geçmişi, kazanın ölümlü bir kaza olup olmadığına yönelik bilgi toplamayı hedefleyen sorular da bulunmaktadır.

2.2.2 Olayın Ciddiyeti Formu

Form trafik kazasının kişinin ne kadar ciddi algıladığını ölçmek amacıyla geliştirilmiştir; bazı sorular Çağlayan'ın (2016) doktora tezinden alınırken bazı sorular çalışmanın araştırmacıları tarafından eklenmiştir. 12 sorudan oluşan form 5 kategorilidir ve 1'den (Hiç) 5'e (Çok fazla) puanlanmıştır. Olaya karışan araçlardaki algılanan fiziksel ve maddi hasarı, algılanan fiziksel yaralanma miktarını, algılanan hayati tehdidi ölçmeyi amaçlayan sorular bulunmaktadır. 12 sorudan toplam olayın algılanan ciddiyeti puanı oluşturulmuştur. Formun iç tutarlılık sayısı .80 bulunmuştur.

2.2.3 Rhode Adası Üniversitesi Değişim Değerlendirmesi

Rhode Adası Üniversitesi Değişim Değerlendirmesi TTM'yi destekleyen araştırmacılar tarafından terapide değişime hazır oluşu ölçmek amacıyla geliştirilmiştir (McConnaughy, Prochaska ve Velicer, 1983). Teoriden yola çıkılarak

geliştirilen ölçek, ön-düşünme, düşünme, harekete geçme ve sürdürme alt ölçeklerinden oluşmaktadır ve 5 kategorili 32 maddeden meydana gelmektedir.

Bu çalışmada trafik kazazedelerinin TTM'ye göre bulundukları basamakları belirlemek amacıyla Türkçe'ye çevrilmiş trafik kazazedelerine uygun hale getirilmiştir. Ölçeğin 3 faktörlü yapısı kullanılmış olup ölçeklerin iç tutarlılık katsayıları .72, .74 ve .96 olarak bulunmuştur.

2.2.4 Akut Travmatik Kaza Sonrası Öz Yönetim ile Uğraşmaya Hazır Oluş Ölçeği

Ölçek 5 kategorili 23 sorudan oluşmakta olup değişim kuramına göre geliştirilmiştir (Wegener ve ark., 2014). Ölçek ön-düşünme, düşünme ve harekete geçme/sürdürme 3 alt ölçeğinden oluşmaktadır.

Bu çalışmada trafik kazazedelerinin TTM'ye göre bulundukları basamakları belirlemek amacıyla Türkçe'ye çevrilmiş trafik kazazedelerine uygun hale getirilmiştir. Ölçeğin 3 faktörlü yapısı kullanılmış olup ölçeklerin iç tutarlılık katsayıları .84, .92 ve .95 olarak bulunmuştur. Faktör yapılarıyla ilgili detaylı bilgi Sonuçlar başlığı altında verilmiştir.

2.2.5 Olaya İlişkin Ruminasyon Envanteri

Cann ve arkadaşları (2011) tarafından travma deneyimlemiş kişilerin olayı bilişsel işlemlemlemelerini intrusif ve istemli ruminasyon olarak ölçmeyi amaçlayan envanter 20 sorudan oluşuyor ve 4 kategorili puanlama sistemine sahip. Türkçe uyarlaması Haselden(2014) tarafından yapılmış olan ölçeğin iki faktörlü yapısı doğrulanmıştır. Bu çalışmada da Cronbach alfa değeri intrusif ruminasyon için .96 ve istemli ruminasyon için .93 olarak bulunmuştur.

2.2.6 Travma Sonrası Stres Belirtileri Ölçeği

Ölçek kültürler arası araştırmalarda kullanılan 3 ölçekten alınan maddelerin bir araya getirilmesiyle oluşturulmuştur (Şahin, Batıgün ve Yılmaz, 2001); 10 madde Travma Sonrası Stress Bozukluğu Kontrol Listesinden (Weathers, Litz, Huska ve Keane,

1994), 13 madde Olayın Etkisi Ölçeği'nden (Horowitz, Wilner ve Alvarez, 1979) ve 13 madde Çözülmeli Deneyimler Anketi'nden (Carlson ve Putnam, 1993) alınmıştır. 4 kategorili 36 maddeden oluşan ölçek Tekrarlı Düşünceler, Uyarılma ve Kaçınma alt ölçeklerinden oluşmaktadır. Bu çalışmada iç tutarlılık kat sayıları sırasıyla .94, .94 ve .95 olarak bulunmuştur.

2.2.7 Travma Sonrası Gelişim Envanteri

Tedeschi ve Calhoun (1996) tarafından Travmatik olay sonrası pozitif gelişimi ölçmeyi amaçlayan envanter 6 kategorili 21 sorudan oluşmakta ve yeni olanakların algılanması, manevi değişim, kişiler arası ilişkiler, bireysel güçlülük, ve yaşamın kıymetini algılama 5 alt ölçeğinden oluşmaktadır. Ölçek Türkçe'ye Kılış (2005) tarafından çevrildikten sonra Dirik ve Karanci (2008) tarafından bazı değişiklikler yapılmıştır. Bu çalışmada tüm ölçekten elde edilen toplam puan kişinin gelişim düzeyini belirlemek için kullanılmıştır ve tüm ölçeğin iç tutarlılık kat sayısı .96 olarak bulunmuştur.

2.2.8 Sürücü Davranışları Ölçeği

Reason ve arkadaşları (1990) tarafındn sapkın sürücü davranışlarını ölçmek için geliştirilen ölçek 6 kategorili 28 maddeden oluşmaktadır. Özkan, Lajunen ve Summala (2006) tarafından hatalardan ve ihlallerden oluşan iki alt ölçekli yapısı önerilmiş ve bu çalışmada da o haliyle kullanılmıştır. Ölçeğin Türkçe adaptasyonu profesyonel (Sümer ve Özkan, 2002) ve amatör (Lajunen ve Özkan, 2004) sürücüler için yapılmıştır. Pozitif davranışları ölçmek için Özkan ve Lajunan (2005) tarafından 14 madde ölçeğe eklenmiştir. Bu çalışmada iç tutarlılık kat sayısı ihlaller için .94, hatalar için .96 ve pozitif davranışlar için .98 bulunmuştur. Ölçek değişimi ölçmek amacıyla yönergesi değiştirilerek kullanılmıştır.

2.3 Prosedür

Çalışma için öncelikle Orta Doğu Teknik Üniversitesi Sosyal Bilimler Enstitüsü Etik Kurulu'ndan etik izin alınmıştır. Veri toplamak için Qualtrics programı kullanılmış

olup, katılımcılara ulaşmak amacıyla sosyal medya kanalları kullanılmıştır. Gönüllü Katılım Formu çalışma öncesinde katılımcılara sunulmuştur.

3. SONUÇLAR

3.1 Faktör Analizleri

Rhode Adası Üniversitesi Değişim Değerlendirmesi ve Akut Travmatik Kaza Sonrası Öz Yönetim ile Uğraşmaya Hazır Oluş Ölçeği'nin Türk kültüründeki faktör yapısını anlamak için temel bileşen analizi yapılmıştır.

Rhode Adası Üniversitesi Değişim Değerlendirmesi orijinal 4 faktörlü yapısının yerine 3 faktörlü bir yapı göstermiş ve Cronbach alfa katsayıları kabul edilebilir ölçüde olup .72 ile .96 arasında değişmektedir.

Akut Travmatik Kaza Sonrası Öz Yönetim ile Uğraşmaya Hazır Oluş Ölçeği orijinal faktör yapısıyla bir soru hariç birebir uyum göstermiş olup 3 faktörlü olduğu görülmüştür. Cronbach alfa katsayıları yüksek olup .83 ile .94 arasında değişmektedir.

3.2 Aracı Değişken Analizleri

Trafik kazasının ciddiyetinden TSS VE TSG'ye giden yolu, TSS'ten TSG'ye giden yolu ve TSS VE TSG'den sürücü davranış değişimine giden yolu incelemek için öncelikle aracı değişken olarak Transteorik Model'in basamakları olan ön-düşünme, düşünme ve harekete geçme/sürdürme basamakları analize dahil edilmiş sonrasında ise en yüksek varyansa ya da indirekt etkiye sahip olan aracı değişkene ruminasyon tarzından biri teoriye uygun olarak eklenmiştir. Faktörlerinin birebir uyumu ve yordayıcılığının gücü nedeniyle Akut Travmatik Kaza Sonrası Öz Yönetim ile Uğraşmaya Hazır Oluş Ölçeği ile yapılan analizler sunulmuştur ve analizlerde cinsiyet, kaza zedelerin eğitim durumu, geliri ve temel ikametkahları ve kaza esnasın da sürücü mü yolcu mu oldukları kontrol edilmiştir. Analizler PROCESS Macro programı kullanılarak yapılmıştır (Hayes, 2013).

Olayın ciddiyeti ile TSS arasındaki ilişki incelendiğinde TTM'nin üç basamağının da indirekt etkisinin anlamlı olduğu bulunmuş ve üçü için de kısmi aracı değişkenlik sağlanmıştır. En yüksek indirekt etkiyi yaratan aracı değişken düşünme basamağıyken, varyansı en iyi ön-düşünme basamağı sağlamaktadır. Ön-düşünme basamağı ile intrusif ruminasyon aracı değişken olarak analize dahil edildiğinde tam aracı değişken ilişkisi sağlanmış olup, olayın ciddiyeti artık TSS'i yordamamıştır.

Olayın ciddiyeti ile TSG arasındaki ilişki incelendiğinde TTM'nin üç basamağının da indirekt etkisinin anlamlı olduğu bulunmuş ve üçü için de kısmi aracı değişkenlik sağlanmıştır. Basamaklar yükseldikçe indirekt etki de sırasıyla yükselmektedir. Harekete geçme/sürdürme basamağı ile istemli ruminasyon aracı değişken olarak analize dahil edildiğinde tam aracı değişken ilişkisi sağlanmış olup, olayın ciddiyeti artık TSG'yi yordamamıştır.

TSS ile TSG arasındaki ilişki incelendiğinde TTM'nin üç basamağının da indirekt etkisinin anlamlı olduğu bulunmuş ve üçü için de kısmi aracı değişkenlik sağlanmıştır. En yüksek indirekt etkiyi yaratan aracı değişken düşünme basamağıyken, varyansı en iyi harekete geçme/sürdürme basamağı sağlamaktadır. Harekete geçme/sürdürme basamağı ile istemli ruminasyon aracı değişken olarak analize dahil edildiğinde tam aracı değişken ilişkisi sağlanmış olup, TSS artık TSG'yi yordamamıştır.

Olayın TSS ve TSG gibi etkilerinden sürücü davranış değişime giden yolu incelemek için her iki değişkenle sırasıyla harekete geçme/sürdürme basamağı aracı değişken olarak analize sokulmuştur. TSS ile sürücü davranışının pozitif yönde değişimine giden yolda harekete geçme/sürdürme basamağının aracı değişken rolünü üstlendiği ve kısmı aracı değişkenliğin sağlandığı bulunmuştur. TSG ile sürücü davranışının pozitif yönde değişimine giden yolda harekete geçme/sürdürme basamağının aracı değişken rolünü üstlendiği ve kısmı aracı değişkenliğin sağlandığı bulunmuştur.

4. TARTIŞMA

4.1 Faktör Analizleri

Orijinal faktör yapısından farklı bir faktör yapısı göstererek 3 faktörlü yapı gösteren ve maddelerin farklı alt ölçeklere yüklendiği Rhode Adası Üniversitesi Değişim Değerlendirmesi yordayıcılık açısından da çalışmada çok başarılı olamamıştır. Literatürde bu ölçeğin faktör yapısının tartışmalı bir konu olduğu, farklı faktör yapılarının önerildiği (Tambling ve Ketring, 2014) ve yordayıcılığından ötürü dikkatli kullanılması gerektiği belirtilmiştir (Bergly, Stallvik, Nordahl ve Hagen, 2014).

Akut Travmatik Kaza Sonrası Öz Yönetim ile Uğraşmaya Hazır Oluş Ölçeği bir madde hariç orijinal versiyonu ile birebir uyum göstermiştir. Bu uyumun nedenlerinden biri ölçeğin geliştirilirken kullanıldığı örneklem ile bu çalışmanın örnekleminin benzerliğinin olabileceği düşünülmüştür.

4.2 Travma Sonrası Stresin Yordayıcıları

Transteorik Model'in üç basamağı olan ön-düşünme, düşünme ve harekete geçme/ sürdürme basamaklarının olayın ciddiyeti ile TSS arasındaki ilişkide aracı değişken rolünü üstlendiği bulunmuştur. Beklenenin aksine en büyük değişimi getiren basamağın ön-düşünme basamağı değil de düşünme basamağı olduğu bulunmuştur. Literatür ile birlikte değerlendirildiğinde ön-düşünme basağı sorunun inkarı, ya da küçümsenmesi basamağı olarak bahsedilmiştir (Prochaska ve DiClementa, 1983). İnkar ise istenmeyen zorlayıcı durumlarla baş etme mekanızması olarak tanımlanır ve kişinin gerçekliği reddetmesini içerir (McWilliams, 2011). Bu bağlamda değerlendirildiğinde kişinin trafik kazasının kötü yanlarını reddedeceği ön-düşünme basamağındansa bir problemi olduğunu düşündüğü düşünme aşamasının daha yüksek bir etki yapması çok olası bulunmuştur.

Daha önce aracı değişken rolü doğrulanmış olan intrusif ruminasyonun (Garcia, Cova, Rincon ve Vazquez, 2015), yani olay hakkında istemli olmadan,

engellenemeyen bir şekilde düşünmenin de bu etkiyi güçlendirdiği hatta olayın ciddiyeti ile TSS arası ilişkiyi tamamen açıkladığı gözlemlenmiştir.

4.3 Travma Sonrası Gelişimin Yordayıcıları

Transteorik Model'in üç basamağı olan ön-düşünme, düşünme ve harekete geçme/ sürdürme basamaklarının olayın ciddiyeti ile TSG arasındaki ilişkide aracı değişken rolünü üstlendiği bulunmuştur. Beklenildiği üzere kişinin TTM'ye göre basamağı ilerlemesinin olayın ciddiyeti ile TSG arasındaki ilişkiyi daha iyi açıkladığı gözlemlenmiştir. Diğer bir deyişle sorunları hakkında harekete geçen ve yaptığı değişiklikleri korumaya çalışan kişiler travmadan sonra gelişimi deneyimleyen kişilerdir. Bu gelişimin direk bir sonuçtan ziyade bir süreç olduğunun da göstergesi olabilecek niteliktedir (Tedechi ve Calhoun, 2004).

Daha önce aracı değişken rolü doğrulanmış olan istemli ruminasyonun (Andrades, Garcia, Calonge ve Martinez-Arias, 2017), yani olay hakkında istemli olarak, olayı anlamlandırmak amacıyla düşünmenin de bu etkiyi güçlendirdiği hatta olayın ciddiyeti ile TSS arası ilişkiyi tamamen açıkladığı gözlemlenmiştir.

Transteorik Model'in üç basamağı olan ön-düşünme, düşünme ve harekete geçme/ sürdürme basamaklarının TSS ile TSG arasındaki ilişkide aracı değişken rolünü üstlendiği bulunmuştur. En büyük etkiyi düşünme basamağının yaptığı gözlenmiştir. Bu travmatik olaya patolojik bir tepkiyi içeren TSS'in olaya dahil olduğunda gelişimi sorun hakkında harekete geçmektense olay hakkında düşünmenin getirdiğini göstermiştir. Bunun bir nedeni de patolojik bir tepkiden gelişime giden yolun kişinin kendi kendine uğraşından ziyade bir psikolojik yardım ile sağlayabileceği ve çalışmanın örnekleminde psikolojik tedavi almış kişilerin az sayıda olmasının bunu etkilemiş olabileceği düşünülmüştür.

4.4 Sürücü Davranış Değişimi

Çalışmada hataların ve ihlallerin azalması ve pozitif davranışların artması olarak tanımlanan pozitif davranış değişimi ile TSS ve TSG ilişkisinde Transteorik Model'in basamağı olan harekete geçme/ sürdürme basamağının aracı değişken

rolünü üstlendiği bulunmuştur. Literatürde daha önce trafik kazazedelerinin davranış değişimi ile incelenmemiş olan bu konunun başlangıç niteliğinde olan bir pilot çalışma ile TTM'in bu yapıya uyduğu desteklenmiştir (Kowalski, Jeznach ve Tuokko, 2014).

4.5 Çalışmanın Sınırlılıkları ve Güçlü Yanları

Çalışmanın sınırlılıkları incelendiğinde verilerin tek bir zaman diliminde toplanmış olması bir sınırlılık olarak gösterilebilecek olup katılımcıların geriye dönük olarak kazayla ilgili soruları cevaplaması beklenmektedir. Bu kimi yanlılıklara neden olmuş olabileceği neden-sonuç ilişkisi kurulamamasına da sebep oluşturmaktadır. Diğer bir kısıtlılık olarak katılımcılara internet üzerinden ulaşılması internet kullanılmayan kişilere ulaşılmamasına ve katılımcı kitlesinin sınırlı olmasına neden olmuş olabilir. Son olarak kişilerin beyanına dayanan bir ölçüm yapıldığı için cevapların güvenirliliği sorgulanabilir niteliktedir.

Çalışmanın güçlü yanlarından biri iki ölçeğin Türkçe'ye kazandırılmış olup, trafik kazazedelerine uygun hale getirilmesidir. Bu sayede bu alanda bulunan bir açıklık giderilmiştir. Bunun yanı sıra ilk defa TTM trafik kaza zedelerine uygulanmış olup, travmadan gelişime giden yolda ne kadar önemli bir yere sahip olduğu gözlemlenmiştir. Bunun yanı ne kadar kurallarla güvenli davranış sağlanmaya çalışsa da sürücülerin çoğunluğu riskli davranışlar anlamında TTM'ye göre hareket öncesi aşamalardadırlar, diğer bir deyişle güvenli olmayan davranışları tercih etmekte ve uygulamaktadırlar; bunun tersine döndüğü yer sürücülerin de daha güvenli davranışları ve trafiği seçmelerine yol açan trafik kazalarıdır. Sürücü davranış değişiminde bu kadar önemli bir yere sahip olan trafik kazalarının bir değişim modeliyle incelenmesi çalışmanın en güçlü yanlarından biridir. Genel olarak bakıldığında bu çalışma travmatik olaydan TSS, TSG ve sürücü davranış değişimine giden yolu aydınlatıcı bir niteliktedir.

4.6 Klinik Uygulanabilirlik ve Gelecek Çalışmalara Öneriler

Çalışmanın özellikle TSG ile ilgili bulguları trafik kazası geçiren kişiler için müdahale programı geliştirmede bir temel oluşturabilicek niteliktedir. Bu kişilere bulundukları basamaklara göre geliştirilmiş spesifik programlar geliştirilebileceği gibi bu gelişimi sağlayıcı düşünme biçimleri ile de bu programlar zenginleştirilebilir.

Müdahale programlarını yanı sıra eğitim programları ile de kişilerin basamakları değiştirilebilir ve bu sürücü davranışının değişmesi ve güvenli bir trafik kültürü oluşması için bir temel olabilir.

Trafik kazazedelerinin psikolojik bir yardıma başvurması durumunda da bu çalışma temel nitelikte olup, bu terapiler için TTM'yi temel alan terapi manuelleri geliştirilebilir.

Gelecek çalışmaların bu amaçlar doğrultusunda aynı amacı hedefleyen çalışmalara odaklanmaları ve bu çalışmaların tek bir zaman noktasındansa boylamsal olarak incelenmesi önem kazanmaktadır. Bunun yanı sıra değişimi neyin belirlediğini daha iyi anlamlandırabilmek için değişimi deneyimleyen grupla deneyimlemeyen grubu karşılaştırıcı çalışmaların yapılmasının da çok değerli olacağı düşünülmektedir.

Appendix L: Tez Fotokopisi İzin Formu

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü ☒

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

YAZARIN

Soyadı : Kaçan
Adı : Bilgesu
Bölümü : Psikoloji

TEZİN ADI (İngilizce) : The Path from Traffic Accident to Post-Traumatic Stress, Post-Traumatic Growth, and Driver Behavior Change: An Examination with Rumination and Transtheoretical Model

TEZİN TÜRÜ : Yüksek Lisans ☒ Doktora ☐

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

TEZİN KÜTÜPHANEYE TESLİM TARİHİ: