POSITIVE OUTCOMES AMONG the 1999 DÜZCE EARTHQUAKE SURVIVORS:
Earthquake Preparedness Behavior and Posttraumatic Growth

THESIS SUBMITTED TO

THE GRADUATE SCHOOL OF SOCIAL SCIENCES

OF

MIDDLE EAST TECHNICAL UNIVERSITY

BY

MEHMET ŞAKİROĞLU

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR

THE DEGREE OF DOCTOR OF PHILOSOPHY

IN

PSYCHOLOGY

July, 2011

Approval of the Graduate School of Social Sciences

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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 Doctor of Philosophy.

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ABSTRACT

POSITIVE OUTCOMES AMONG the 1999 DÜZCE EARTHQUAKE SURVIVORS: Earthquake Preparedness Behavior and Posttraumatic Growth

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July, 2011, 173 Pages

The current study aimed to examine two potential positive outcomes of an earthquake experience, namely posttraumatic growth (PTG) and earthquake preparedness behavior. Variables that may be related to PTG and earthquake preparedness behavior were examined after earthquake victimization by using two models, which were the Person Relative to Event (PrE) Model (Mulilis & Duval, 1997) to understand earthquake preparedness behavior, and Model of Life Crises and Personal Growth (Schaefer & Moos, 1992) to understand PTG. In order to examine earthquake preparedness behavior, the roles of demographic variables, event-related variables, cognitive appraisal factors, and coping strategies, and in order to examine PTG, environmental factors, system factors, event related factors, earthquake specific coping and cognitive appraisal factors, and general ways of coping responses factors were examined.

Data was collected by a questionnaire consisting of three parts. The first part was a socio-demographic information form. The second part of the questionnaire included set of items designed to examine past earthquake experience, the severity of past earthquake experience and reasons to prepare for a possible future earthquake. The third part of the questionnaire consisted of eight scales. These

scales were Ways of Coping Inventory (WCI) to measure coping strategies used in stressful situations, Revised and Translated Mulilis-Lippa Earthquake Preparedness Scale (MLEPS) to measure the level of earthquake preparedness behavior, perceived difficulty and perceived effectiveness of being prepared, Religiousness Scale (RS) to measure the level of religious resources of participants, The Multidimensional Scale of Perceived Social Support (MSPSS) to measure perceived adequacy of social support, The Quality of Life Scale (WHOQOL) to measure the quality of life of the participants, Psychological Well-Being Scale to measure the level of psychological well-being of participants, Traumatic Stress Symptom Checklist (TSSC) to measure posttraumatic stress, and Post-traumatic Growth Inventory (PTGI) to measure stress-related growth.

One hundred ninety nine adults (105 females and 94 males with an age range of 18 to 73) were participants of the study. The participants were from Kaynaşlı, Düzce. The participants were selected on the basis of their age, gender, and the type of their houses. They were contacted through home visits.

In the result section, the level of the different categories of earthquake preparedness behavior, self-efficacy and outcome efficacy; the reasons of preparedness and nonpreparedness for earthquakes, the variables related to earthquake preparedness behavior and PTG were presented. Hierarchical regression analysis results revealed that perceived responsibility to prepare for earthquakes, outcome efficacy, and problem-focused coping were positively and posttraumatic stress was negatively related to earthquake preparedness behavior. As a result of the regression analysis, it was found that being married, perceived social support, well-being, problem-focused coping, and seeking social support coping were significant predictors of the level of PTG. The results of regression analysis also showed that, general problem focused coping was more efficient than earthquake specific active coping after earthquake victimization for the development of PTG.

The results of the study were discussed within the relevant literature, shortcomings of the current study, clinical implications and suggestions for future research were proposed.

Keywords: Disasters, Posttraumatic Growth, Earthquake Preparedness Behavior, Coping, Resources.

ÖZ

1999 Düzce Depremi'ni Yaşayanlarda Depremin Muhtemel Olumlu Etkileri:

Depreme Önlem Alma Davranışı ve Travma Sonrası Gelişim

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Temmuz 2011, 173 Sayfa

Bu çalışma 1999 Düzce Depremi'nin ortaya çıkardığı muhtemel olumlu sonuçları incelemek üzere, ileride gerçekleşmesi muhtemel depremlerin zararlarını azaltıcı önlem alma davranışını ve travma sonrası gelişimi yordayan faktörleri incelemektedir. Depreme önlem alma davranışını incelerken Person Relevant to Event (PrE) Modeli (Mulilis & Duval, 1997), travma sonrası gelişimi incelerken ise Model of Life Crises and Personal Growth Modeli (Schaefer, & Moos, 1992) baz alınmış ve bazı ilgili modellerden yapılan eklerle bunların geçerliliği araştırılmıştır. Yetişkinlerin betimleyici özellikleri, depreme maruz kalma düzeyleri, kullandıkları başa çıkma stratejileri, önlem almanın algılanan zorluğu, önlem almanın algılanan yararlılığı, sorumluluk, algılanan tehdit, travma sonrası gelişim, sosyal destek ve dinsel inanç değişkenlerinin depreme önlem alma davranışını ve travma sonrası gelişimi yordama becerileri ölçülmüştür.

Veriler üç bölümden oluşan anket aracılığı ile toplanmıştır. Anketin birinci bölümü katılımcının betimleyici özelliklerini incelemeye yönelik maddelerden oluşturulmuştur. İkinci bölüm, kişinin geçmiş deprem yaşantısı ve depremle ilgili sıkıntılarını, önlem alma sorumluluğu algısını ve önlem alma veya almama nedenlerini ölçen maddelere ayrılmıştır. Anketin üçüncü bölümü sekiz farklı ölçekten meydana getirilmiştir. Bu ölçeklerden Başaçıkma Yolları Ölçeği ile

katılımcıların kullandıkları başa çıkma stratejileri, Geliştirilmiş Mulilis-Lippa Depreme Hazırlık Ölçeği (Revised and Translated Mulilis-Lippa Earthquake Preparedness Scale, MLEPS) ile katılımcıların depreme hazırlık seviyeleri, hazırlanmanın zorluğu ve yararlılığı ile ilgili algıları, Dindarlık Ölçeği ile dini inanç düzeyleri, Sosyal Destek Ölçeği ile sosyal destek miktarları, travma sonrası stres belirtileri ile depremle ilişkili sıkıntı düzeyleri, Psikolojik İyi Olma Ölçeği ile algıladıkları iyilik halleri ve Yaşam Kalitesi Ölçeği ile halihazırda yaşam kalitelerini nasıl değerlendirdikleri ölçülmüştür.

Çalışma örneklemi Kaynaşlı'da yaşayan 199 yetişkinden (18-73 yaşları arasında 105 kadın ve 94 erkek) oluşmaktadır. Katılımcılar yaş, cinsiyet ve oturdukları evin özelliği (deprem evi ya da değil) temel alınarak seçilmiş ve veri toplanırken ev ziyaretleri kullanılmıştır.

Çalışmanın sonuç bölümünde, depreme önlem alma oranları ile önlem almanın algılanan zorluk ve faydalılık miktarları, önlem alma ve almama nedenleri verilmiş, bunlara ilaveten depreme önlem alma ve travma sonrası gelişim miktarlarını yordayan faktörleri tespit etmek için regresyon analizleri sunulmuştur. Yapılan regresyon analizi sonuçları, önlem almanın algılanan yararının, sorumluluğun, travma sonrası stres tepkilerinin azlığının ve problem odaklı başetmenin depreme önlem alma davranışı ile; evli olmanın, problem odaklı başetmenin, iyi olma halinin, sosyal destek arama ve sosyal desteğin travma sonrası gelişim miktarı ile anlamlı olarak ilişkili olduğunu ortaya koymuştur. Yapılan regresyon analizinde, yukarıdaki bulgulara ek olarak, genel problem odaklı başetme becerilerinin, depreme özel aktif başetme davranışlarına nazaran travma sonrası gelişimi daha etkili yordadığı bulunmuştur.

Çalışmanın sonuçları ilgili literatür çerçevesinde tartışılmıştır. Ayrıca çalışmanın kısıtlılıkları, klinik göstergeleri tartışılmış ve gelecek çalışmalar için önerilerde bulunulmuştur.

Anahtar Kelimeler: Afetler, Depreme Önlem Alma Davranışı, Travma Sonrası Gelişim, Kaynaklar, Stresle Başetme Yolları

To my family

ACKNOWLEDGEMENTS

I would like to thank my supervisor Prof. A. Nuray Karancı for expertise and support at each stages of this thesis. She always provided ongoing encouragement. She is also a wonderful role model for me as an academican. Prof. Karancı taught me many skills especially making a research and academic writing. She has a special role in my life.

I would like to thank my dissertation committee: Prof. Dr. Mehmet Ecevit and Prof. Dr. Tülin Gençöz. They provided valuable advice throught the entire process. I would also like to thank the other members of my committee, Assoc. Prof. Özlem Bozo and Assoc. Prof. Banu Yılmaz for their thoughtful contributions and suggestions.

I am forever grateful for my supportive network. Therefore, I would like to express my thanks to my family, special thanks go to my mother and father for their unconditional love and continous support. I also thank to all my friends, some of them are Ali Bayramoğlu, Özal Özenirler, İsmail Davarcıoğlu, Burak Mirza, Ozanser Uğurlu, Korhan Sezin, Nevzat Kaya, İlker Nefşioğulları, Volkan Demirciler, Murat Türemen, Muhlis İnan, Elçin Gündoğdu, Pınar Bıçaksız, Aslı Göncü, Özge Orbay Mergen, Nuray Sakallı Uğurlu, Serkan Acar and especially Başak Akbay. They provided unconditional support and love that enable me to achieve my goals.

I am also like to thank the participants of the study (earthquake survivors) for volunteering their time and energy. They also shared difficult times in their lives with me.

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CHAPTER 1

INTRODUCTION

Natural disasters, such as earthquakes, can lead to massive physical destruction, loss of lives and injury, and psychological distress. In order to reduce the devastating effects of earthquakes, earthquake preparedness behaviors are necessary. In terms of psychological aftermaths, although the negative consequences of earthquakes have been extensively studied, it has been found that they may also lead to positive psychological experiences in survivors, labeled as posttraumatic growth (PTG) (Calhoun, Cann, Tedeschi, & McMillan, 2000; Hobfoll, 1988; Schaefer & Moos, 1992).

The current study aimed to examine two potential positive outcomes of an earthquake experience, namely posttraumatic growth (PTG) and earthquake preparedness behavior. Variables that may be related to PTG and earthquake preparedness behavior were examined. The roles of demographic variables, posttraumatic stress, perceived severity of the earthquake, perceived self-efficacy, perceived outcome-efficacy, social support, religiousness, perceived responsibility, and coping abilities in predicting posttraumatic growth (PTG) and earthquake preparedness behavior were studied in a sample from Kaynaşlı in Turkey, which was severely affected by the 1999 Düzce Earthquake. The present study aimed to evaluate positive psychological reactions and preparedness after earthquake victimization by using two models, which were the Person Relative to Event (PrE)

Model (Mulilis & Duval, 1997) and Model of Life Crises and Personal Growth (Schaefer & Moos, 1992). From these models, the PrE Model of Mulilis and Duval (1997) was used to understand earthquake preparedness behavior. On the other hand, Life Crisis and Personal Growth Model of Schaefer and Moos (1992) was used to evaluate PTG. Studying earthquake preparedness behavior is important to reduce the devastating effects of earthquakes, and understanding PTG better is important to increase survivor's ability to return to social life and normalization. In the introduction part, the literature about disasters, earthquake preparedness behavior and PTG will be presented. The next section covers the general and psychological information about disasters and earthquakes.

1.1 Disasters

International Strategy for Disaster Reduction (ISDR) (2008) defines disasters as "a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses and which exceed the ability of the affected community or society to cope using its own resources". World wide numbers of natural and man-made disasters have greatly increased in recent years (Al khalaileh, Bond, Beckstrand, & Al-tahalfa, 2010). According to the statistics of Centre for Research on the Epidemiology of Disasters (CRED), in 2009, 335 natural disasters were reported. They caused 10655 deaths, affected more than 119 million others and caused over US$ 41.3 billion economic damages. Litz and Roemer (1996) stated that 800 million people have been affected by a natural disaster over the past two decades, and according to Kaiser and Sattler (1996) between 1900 and 1986, natural disasters have caused 42 million deaths. According

to ISDR (2008), 157511938 people experienced the unexpected effects of disasters and 91963 people died during the year 2005 as a result of disasters. Estimating the prevalence ratio to expose a natural disaster in the population is not easy, however to find it, a study was conducted with 935 participants. Findings showed that the lifetime self-reported prevalence of natural disaster exposure was 22% and the most common one among them was earthquakes with 8% prevalence (Briere & Elliot, 2000).

The most widely employed classification of disasters, based on the causal mechanism, has two broad categories, which are natural disasters and man-made disasters. A lot of disastrous events may be classified under the broad category of natural disasters, including earthquakes, hurricanes, tornados, avalanches, volcanic eruptions, land slides, floods etc. On the other hand, terrorism, war, nuclear power plant failures, airplane crashes are the examples of man-made disasters. Natural forces, human errors, and technological failures can work together in some other disasters (Vogel & Vernberg, 1993).

One of the most prevalent natural disasters is earthquakes and earthquakes accounted for 58.7 % of fatalities from global natural disasters between 2000 and 2008. In 2009 this was only 17%, and the most powerful earthquake of 2009 struck Sumatra, killing 1117 people (Vos, Rodriguez, Below, & Sapir, 2010). Since this study is conducted with 1999 Düzce Earthquake survivors, the next section presents information about earthquakes in general and 1999 Marmara and Duzce Earthquakes in Turkey.

1.1.1 Earthquakes

The release of the energy of seismic waves leads to the creation of earthquakes, which is a kind of natural disaster. The classification of disasters can varies according to the criteria used. The nature of the onset, the predictability, the controllability, and the duration can be given as examples for these criteria. In terms of these criteria, earthquakes are natural, sudden, unpredictable, uncontrollable and short-lasting natural events with destructive effects.

Turkey had experienced two major earthquakes in the past 10 years. One of them was in 17 August 1999 in Kocaeli, Marmara, Turkey with a magnitude of 7.4 and the other earthquake was the 12 November 1999 Düzce, Karadeniz, Turkey quake with a magnitude of 7.2.

1.1.2 1999 Marmara and Duzce Earthquakes

The 17 August 1999 Marmara Earthquake was the second worst natural disaster in terms of extent of human loss, after the 1939 Erzincan Earthquake, ever to take place in Turkey. It affected 7 cities, namely İstanbul, Sakarya, Kocaeli, Yalova, Bolu, Bursa and Eskişehir. It resulted from the rupture of the North Anatolian fault system with a magnitude of 7.4 at the Richter scale. The earthquake caused 17,127 deaths and 43,953 injuries. After the earthquake, 10,000 houses were totally destroyed and approximately 240,000 houses and work buildings were severely damaged (Government Crisis Center, 1999a). The 17 August 1999 Marmara Earthquake affected a region that is the most important industrial area of Turkey and therefore, the financial loss was 10 billion dollars (15 milyar TL)

(Mitchell, 2000; Ozmen, 2000; Rathje, Karatas, Wright, & Bachhuber, 2004). In addition to these results, due to the severity of the earthquake, it is estimated that long-term economical and psychological consequences will be seen in a large percentage of survivors (Mitchell, 2000).

Three months after the 17 August 1999 Marmara Earthquake, another earthquake of 7.2 magnitude occured near Duzce on November 12, 1999 (Government Crisis Center, 1999b). In Düzce Earthquake, the disaster occured in a less densely populated rural area as compared to the Marmara Earthquake, but in an area that had already suffered damage from the Marmara Earthquake. Nearly most of the collapsed buildings were damaged by the previous Marmara Earthquake. The 1999 Duzce Earthquake was not the first but the latest event to devastate the city, which had been badly damaged by earthquakes in 1944 (Duzce), 1957 (Abant), 1967 (Adapazarı), and 1999 (Kocaeli). The distribution of fatalities in different provinces is presented in Table 1.

Table 1. Distribution of 1999 Düzce Earthquake-caused deaths and injuries based on cities, affected by this earthquake

Residence	Number of Deaths	Number of Injured People
Kaynaşlı	244	544
Düzce	219	2300
Bolu	48	354
Kocaeli	1	61
Sakarya	3	168
Yalova	1	25
Zonguldak	0	189

When we consider the results of these two earthquakes, it can be seen that most of the time people do not get injured or die as a result of the disaster itself. Loss and damage were experienced because of collapsed buildings and tunnels, unfixed furniture, lack of land-use plans, and not knowing what to do before and during the earthquake. Therefore, is it reasonable to attribute all the loss and damage to the earthquakes? Or is there something that human beings can do to lessen the effects of earthquakes? Some precautions can be taken to lessen the negative effects of earthquakes. There are some factors to facilitate preparedness, therefore, one aim of the present study is to examine variables related to preparedness behaviors, which is taken as a potential positive effect of a past quake experience.

1.1.3 Psychological Effects of Disasters

According to psychology research, disasters have significant effects on alcohol related problems (Adams & Adams 1984; Smith, North, Mc Cool, & Shea, 1990), depression (Palinkas, Downs, Petterson, & Russell, 1993; Smith, North, Mc Cool, & Shea, 1990), violence (Adams & Adams 1984), generalized anxiety disorders (Smith, North, Mc Cool, & Shea, 1990), and PTSD (Bonanno, Brewin, Kaniasty, & La Greca 2010; Nolen-Hoeksema & Morrow, 1991; Norris, Smith, & Kaniasty 1999; Palinkas, Downs, Petterson, & Russell, 1993). Thus, disasters cause psychological problems in adults, but the proportion of adults, showing psychological problems rarely exceeds 30% of most disaster samples (Bonanno, Brewin, Kaniasty, & La Greca, 2010).

PTSD has been the most extensively studied psychological disorder in most disaster survivors. Generally, the literature confirmed that exposure to a traumatic event increases the rate of showing PTSD symptoms, however, PTSD is not the only result of trauma. Adams and Adams (1984) performed a study after Mount Saint Hellen's Ashfall. They classified disaster-related stress reactions as physiological and psycho-emotional responses and suggested that in overt and observable behaviors these stress reactions are manifested. In accordance with this suggestion, findings revealed that, as a consequence of disaster the likelihood of physical or psychosomatic illness, alcohol related problems, family stress, violence and aggression increased. In an assessment of pre-post disaster, participant's subjective stress response and symptoms of psychological distress after the Loma Prieta Earthquake were measured. The findings showed that, PTSD symptoms continously increased throughout ten days after the earthquake (Nolen-Hoeksema & Morrow, 1991). Norris, Smith, and Kaniasty (1999) performed a study after Hurricane Andrew to assess the stress and the symptom levels of 241 survivors. The results of the study showed that 20-30% of adults met criteria for PTSD. In another study, conducted 4-6 weeks after a jet plane crash into a hotel, 34% of the survivors developed a new diagnosis of PTSD, alcohol dependence, major depression, or generalized anxiety disorder (Smith, North, Mc Cool & Shea, 1990).

In a study with 594 men and women conducted one year after ExxonValdez Oil Spill, social and psychological effects of the disaster were examined. High-exposed group members were 3.6 times more likely to have generalized anxiety disorder, 2.9 times more likely to have PTSD, and 1.8 times more likely to have

depression than low-exposed group members (Palinkas, Downs, Petterson, & Russell, 1993). In addition to increasing psychological distress, disasters may cause disruptions in daily life, in living conditions, in relationships, in working status, and in economic situation. According to the results of Rubonis and Bickman's meta-analysis (1991), after disaster victimization, the rate of psychological distress was 17% higher in the survivor group than the control group. In addition to this assumption, Rubonis and Bickman (1991) stated that external attributions for the causes are associated with lower perceived control over the negative event and therefore may be related to higher levels of psychopathology.

Research has demonstrated that disasters have long-term psychological effects. Chen, et al. (2007) examined the long term psychological outcome of 1999 Taiwan Earthquake, and showed that a severe earthquake can cause long-term psychological impact in the survivors, even 7 years after than the event. In another study 4 years after the Parnitha earthquake in Greece, %22 of the survivors reported subjective distress and %15 of them impaired adjustment. The results suggested that the psychological outcomes of earthquakes can be serious and long-lasting even when the magnitude of the earthquake is moderate (Livanou, et al., 2005).

Twenty months after the 1999 Marmara Earthquake, Salcıoğlu, Başoğlu, and Livanou (2003) studied the incidence of PTSD among earthquake survivors living in prefabricated housing sites. The findings of this study suggested that catastrophic earthquakes have long-term psychological effects, because the estimated rates of PTSD were %39 of all participants. A study, conducted 18 months after Jupiter

Cruise Ship Sinking, revealed that intrusive symptoms were still evident for survivors (Joseph, Yule, & Williams, 1997).

As has been mentioned in the introduction, negative aftermaths of disasters have been studied extensively as the review in this section shows. However, disasters, and specifically coping with the negative aftermaths of disasters have been shown to lead to positive transformations in survivors. This positive change, PTG, is chosen as one of the positive outcomes of an earthquake experience in this study and will be discussed later in a separate section. First, earthquake preparedness behavior will be presented in the next section.

1.2 Disaster Preparedness

The concept of preparedness represents a series of self-protective behaviors to mitigate the loss of life and property in a disaster. All of the actions that are carried before the disaster which aim to increase safety and effectiveness of a disaster response are in the scope of preparedness (Edwards, 1993). Disaster preparedness is an increasingly important topic for its potential to reduce life and property losses and to control disaster response activities. Since disasters are uncontrollable and generally unpredictable occurrences with important physical and psychological consequences, disaster preparedness gains importance in respect to prevent to damage to life and property (Mulilis & Lippa, 1989). Therefore, in the present study earthquake preparedness was taken as a positive outcome and variables related to it were examined.

The adoption of preventive or protective actions and providing knowledge about disasters should be considered as an effective strategy to cope with disaster related stress. According to Morissey and Reser (2003), preparation for natural disasters relieves psychological distress related to the probability of the occurrence of these disasters. In this respect, it can be said that earthquake preparedness can increase the positive psychological adjustment after a disaster, by providing a sense of control.

The most widely employed classification of disaster preparedness has three categories (Mulilis & Lippa, 1989):

a) Material Preparedness: It includes durable modifications of the household such as fixing tall and heavy furniture or water heater to the wall, and possession of various equipments useful during a disaster such as, food and water supplies, fire extinguisher, or first aid kit.

b) Planning Activities: The preparedness activities include some arrangements to reduce the adverse affects of disasters and to be ready to cope with them. For example, determining a safe place in the house or identifying a meeting place for the family outside the house.

c) Knowledge and Skills: The third category reflects individual's knowledge and skills about coping with disasters and about preparedness methods such as joining a first aid course or reading materials about preparedness.

Now, the questions, whether it is reasonable to attribute all the loss and damage to disasters or whether there is something that human beings can do to lessen the effects of disasters should be examined. The answer that "disaster itself does not kill people but improperly structured buildings, roads, and furniture in the household; and lack of taking precautions for disasters kills people" increases the importance of disaster preparedness. Because of the reason that disasters are sudden and unpredictable, to prevent life and property losses or to minimize them, disaster preparedness gains importance.

Preparedness is the measure that disaster risk management includes and it must be used actively to lessen the adversity of disasters. Preparedness includes the use of administrative decisions, organization, operational skills and capacities systematically to create and perform policies and strategies to decrease the effects of natural and manmade hazards (Christoplos, Mitchell, & Liljelund, 2001).

1.2.1 Disaster Preparedness as a Positive Outcome of a Past Disaster

Disaster preparedness may cause to the reduction of physical damages and psychological distress of a possible future disaster. Extreme environmental events, such as earthquakes are low-probability events and people remain generally unaware of the risks they face or they underestimate it. If earthquake is an unexpected occurrence, when it occurs, its psychological and physical effects will be traumatic. On the other hand, if a person gets prepared for an earthquake and is aware of its destructive effects, its physical and psychological effects will be less traumatic. According to Horowitz's social cognitive model (1986); the memories,

thoughts and images which are provided by a traumatic experience cannot be assimilated into individual's current existing schemata. Since the information coming from traumatic experience cannot be integrated with the pre-existing schemata, it is kept out of conscious awareness. Completion tendency maintains the trauma-related information in active memory, causing it to break through these defenses and intrude into consciousness in the form of intrusive cognitions such as flashbacks, nightmares, and repetitive memories. In this respect, taking precautions related to disaster awareness may reduce the traumatic effects of disaster through its potential to ease the integration of disaster-related information to preexisting schemata, and by reducing possible negative consequences of disasters. Furthermore, when individuals know what they can experience during a disaster, the disaster will not be an unexpected event anymore, so the intrusion of the feelings and thoughts of the disaster period will be less likely to be traumatic after the disaster.

Therefore, disaster preparedness may have three possible positive consequences;

a) Reduction of the physical consequences of the event.

b) Reduction of the psychological distress related to the probability of occurence of these disasters.

c) Reduction of the traumatic stress of a future earthquake by developing a sense of control and self-efficacy.

Next section covers the identification, strategies, and related models to understand the term of earthquake preparedness behavior, and its relationship with coping.

1.2.2 Earthquake Preparedness and Coping with Disasters

One of the potential positive outcomes of an earthquake experience is earthquake preparedness behavior. In the current study, earthquake preparedness behavior was tried to understand on the basis of Person Relative to Event (PrE) Model (Mulilis & Duval, 1997).

1.2.2.1 Person Relative to Event (PrE) Model:

The person relative to event model (Mulilis & Duval, 1997) is based on the theoretical work of Lazarus and his colleagues about coping, stress, and cognitive appraisal. Deriving from Lazarus' work, the person relative to event model aims to more clearly specify the conditions that foster problem-focused coping within the context of negative threat appeals. Lazarus and Folkman (1984) stated that when an individual face with the possible occurrence of a dangerous event, he/she attempts to manage the threatening situation by either engaging in activities which is problem-focused coping or regulating emotional reactions which is emotion-focused coping. In problem-focused coping two cognitive appraisal processes are important. The first one is the appraisal of the event; the degree of its harmfulness and the second one is the appraisal of personal resources that can be used in threat management (Mulilis & Duval, 1997).

In the person relative to event model, self efficacy (beliefs regarding personal capacity to do something) and outcome efficacy (perceptions of whether certain actions will reduce a problem) are used for person variables, and severity (estimated degree of destructiveness of a potential earthquake) and probability of occurence of event (the idea of the time of a potential earthquake) are used as event variables. In summary, it argues that an important variable determining the degree of problem-focused coping concerns the level of appraised coping resources relative to the level of the appraised magnitude of the threatening event (Duval & Mulilis, 1999).

Person relative to event model states that the critical point in engaging in problem-focused coping is the balance between the appraised features of the event and the appraised level of coping resources of the person. The model assumes that if the person evaluates his/her own resources as sufficient in the degree of the quality and quantity of demands relative to the perceived magnitude of the event, he/she will likely to obtain problem-focused coping. However, a person who evaluates his/her own resources as insufficient relative to the magnitude of the threatening event, then she/he will be less likely to engage in problem-focused coping behaviors. In addition, it was stated that if personal resources are evaluated as sufficient, then increase in the appraised level of the threat will increase problem-focused coping efforts. On the contrary, when personal resources are evaluated as insufficient, then an increase in the perceived level of the threat will likely to decrease problem-focused coping efforts (Mulilis & Duval, 1997).

The person relative to event model, applied to earthquake preparedness, predicts that increasing levels of threat when resources are appraised as sufficient relative to the magnitude of the threat will increase problem-focused coping (See figure 1). Conversely, increasing levels of threat when resources are appraised as insufficient relative to threat magnitude will decrease problem-focused coping (Duval & Mulilis, 1999). In the person relative to event model cognitive resources and coping resources are used for person variables, and event-related variables, such as posttraumatic stress and severity of earthquake experience is used as event variables.

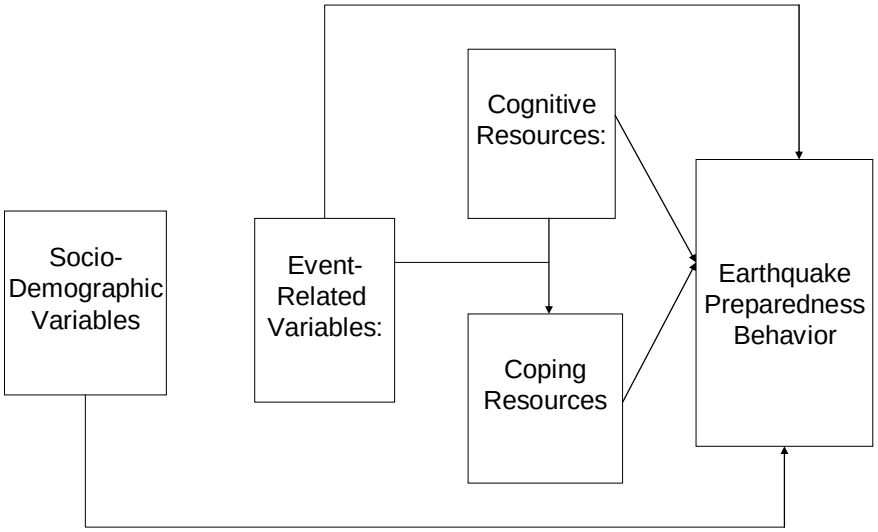

Figure1. Person Relative to Event Model
Source: (Mulilis & Duval, 1997)

Duval and Mulilis (1999) studied 112 homeowners from Los Angeles to test the hypotheses suggested by the person relative to event model. Generally, findings of the study supported the model in that if level of appraised threat increased,

earthquake preparedness increased, but only for participants who also appraised resources as sufficient relative to threat. On the other hand, conditions in which resources are appraised as insufficient relative to appraised threat, increasing absolute level of appraised threat decreased problem-focused coping. In essence, problem-focused coping was greater when appraised resources relative to event magnitude were assessed as being sufficient rather than insufficient; but for participants in the low resources conditions, level of change in preparedness decreased sharply as level of event magnitude increased from low to moderate to high.

Duval and Mulilis confirmed the person relative to event model by two different studies. First one was related to earthquake preparedness (1995), and second one was related to tornado preparedness (1997). Participants were assigned to groups that were clearly sufficient, probably sufficient, or clearly insufficient resources relative to the magnitude of the threatening event. According to the results, participants in the clearly sufficient resource condition evidenced greater change in preparedness levels than did those in the probably sufficient and clearly insufficient resources conditions; and participants in the probably sufficient resource condition evidenced greater change than clearly insufficient condition. On the other hand, contrary to the expectations, under low threat conditions, participants with low resource demonstrated greater change in preparedness than did those participants with high and moderate resources (Duval & Mulilis, 1995; Duval & Mulilis, 1997; cited in Duval & Mulilis, 1999). This finding was contrary to both "protection motivation theory" and "person relevant to event" model.

Therefore, it can be said that, under low threat conditions people could accept themselves as more vulnerable to danger, when they have low resources.

Williamson (1997) tried to explain this contrary finding with two possible explanations. First explanation was related to Bandura's "supremely self-efficacious person" concept. According to this explanation, when a supremely self-efficacious person confronts an easy task he/she invests less energy in it and performs more poorly than persons with lower self-efficacy. This explanation can be applied to the low level of preparedness of high person resources-low threat condition, that perceiving task of preparedness as easy may lead to low levels of motivation which resulted in lower levels of earthquake preparedness. According to Williamson (1997), the second explanation proposed that the positive valence of a particular goal is a direct function of the amount of energy that is used by the person he/she prepares to do an effortful task. When the amount of energy spent increases as a result of increased task difficulty of the low resource condition, the task desirability does also increase leading to high levels of task performance. In other words, the increased energy spent as a function of high perceived task difficulty increases the perceived desirability of the task, and therefore, leads to an increase in the level of problem focused coping or earthquake preparedness behavior.

Şakiroğlu (2005) conducted a study about the factors related to earthquake preparedness behavior on an adult sample from Istanbul, Turkey. He found that, severity of exposure to past earthquakes and perceived effectiveness of being prepared (outcome efficacy) increased the preparedness behavior, whereas having avoidance symptoms and perceived difficulty of being prepared (self efficacy)

decreased it. Moreover, it was found that, older individuals are more prepared compared to younger ones. Reasons for non preparedness was also evaluated and it was found that, lack of economic power, lack of knowledge, fatalistic thinking, neglectfulness, trust in the building, being at rent, lack of time, and not planning to stay at the current house were the reasons for non preparedness. Problem solving and optimistic coping strategies were positively related to preparedness behavior, whereas fatalistic coping and self blaming were negatively correlated with it.

In summary, PrE Model (Mulilis & Duval, 1997) suggests that increased levels of threat when resources are appraised as sufficient increases problem-focused coping and also earthquake preparedness behavior, so earthquake preparedness behavior is a result of combination of resources, perceived threat and coping. In other words, problem-focused coping plays an important role to prepare for earthquakes in PrE Model, and in the next section this relationship will be reviewed in detail with a theoretical background.

1.2.2.1.1 Theoretical Background of PrE Model and Coping Responses

In order to understand the relationship between coping and earthquake preparedness behavior it is needed to look at coping literature in detail. Coping is the use of thoughts and actions to manage stressful situations (Lu & Chen, 1996). In this respect, coping is the key feature of the stress process, because it is viewed as a complex set of processes that may moderate influences of stressful situations on the physical and mental health of individuals (Lu & Chen, 1996). In order to use coping

strategies, firstly the person has to perceive a situation as stressful. Stress is the result of the disturbed relationship between the person and his/her environment due to the demands exceeding the individual's resources for managing them (Folkman & Lazarus, 1985).

If an individual succeeds in coping, he/she is more successful in dealing with stress or he/she is no longer in danger and reasons for emotional distress are solved. The personality of the individual, the life situation being faced, the possible threat of the situation, and the beliefs of the person determine the things that the individual will perform in order to change the stress level or to cope with it (Lazarus & Lazarus, 1994).

According to recent research there is growing evidence that the ways of coping with stressful situations affect all mental and physical health aspects and the social well being of individuals (Piko, 2001).

The usefulness of coping depends on the types of the coping strategies selected by the person. Lazarus and Folkman (1985) defined coping as "efforts to manage" instead of "successful management of stressors" to make a distinction between coping processes and outcomes of coping. Therefore, according to Lazarus and Folkman's definition, coping includes all efforts to manage stressful situations, regardless of how well it works.

Coping is composed of two stages of appraisal, which is an important term for the stress process. These two stages of appraisal process are primary and secondary appraisal. Primary appraisal involves the evaluation of the seriousness of the demand, and secondary appraisal is the evaluation of the adequacy of one's resources and

options for meeting the demand. According to the results of this evaluation, the person chooses a coping strategy to reduce the impact of the stressor. In other words, coping strategies are used in stressful situations to reduce stress (Quine & Pahl, 1991). The degree to which a person experiences stress is mainly determined by the evaluation of which coping resources are available and whether they are functional. These coping strategies can be divided in two main categories. The first, problem-focused coping, is directed toward managing or altering the problem through direct action. The second, emotion-focused coping, aimed at reducing or managing the emotional distress that is associated with the situation by reinterpreting the meaning of the situation. Two general types of coping, problem-focused coping and emotional-focused coping, can potentially involve several different activities. For example, problem-focused coping involves planning, taking direct action, seeking assistance, screening out other activities, and sometimes even forcing oneself to wait before acting; and emotion-focused coping involves denial, destruction, and positive reinterpretation of events (Carver, Scheier, & Weintraub, 1989).

Problem-focused coping is usually seen as more effective than emotion-focused coping, because it focuses on thoughts and actions that generate solutions to the causes of distress (Folkman & Moskowitz, 2000). However, emotion-focused coping is less effective because it focuses on the symptoms rather than treating the causes (Hess & Richards, 1999).

Coping is an important concept for not only understanding earthquake preparedness behavior better but also to understand the relationship between earthquake preparedness behavior and PTG (Hobfoll, 1988). In the current study,

earthquake preparedness behavior is also used as a kind of behavior based on active problem focused coping in predicting PTG.

There are some premise models of PrE Model. One of them is Protection Motivation Theory (Rogers, 1983). It is an extension of primary and secondary appraisal processes (Tanner, Day, & Crask, 1989). According to this theory, if an event is appraised as severe, as likely to occur, and if something can be done about the event; and if the person has the capability to produce recommended response, protection motivation will activate coping with the stressful effects of this event or the event itself.

Protection Motivation Theory (Rogers, 1983) is closely related to the present research, which attempted to describe, predict, and explain the relationship among some factors, such as self-efficacy, responsibility, coping, and disaster preparedness. Protection Motivation Theory is a cognitive approach to give a meaning to most aspects of disaster research on preparedness behavior.

Protection Motivation Theory was proposed and revised by Rogers (1975, 1983). As initially proposed, if an event is appraised as severe (severity of threat), as likely to occur (probability of occurence), and if something can be done about the event (outcome- efficacy), then protection motivation will be activated and there will be an intention to act or change behavior. On the other hand, if one or more of these values are equal to zero, no protection motivation will be aroused. According to the first version of the theory, as suggested by Rogers, to change behavior, there are three important cognitive appraisal processes;

a) The probability of occurence of the threatening event,

b) The severity of the threatening event, and

c) The efficacy or effectiveness of a recommended coping response (outcome-efficacy)

Later in 1983, Rogers revised the protection motivation theory and incorporated Bandura's Self-Efficacy Theory (Bandura, 1997) and thus, added self-efficacy expectancy, or capability to adopt the recommended coping response, as a fourth factor. The self-efficacy expectancy was found to be the most powerful predictor of behavioral intentions in adopting a recommended coping behavior with respect to cigarette smoking in a study of Maddux and Rogers (1983). According to the revised version, the intention to protect oneself depends upon four factors: (i) the perceived severity of a threatened event, (ii) the perceived probability of the occurrence, or vulnerability, (iii) the efficacy of the recommended preventive behavior (i.e. the perceived response efficacy), and (iv) the perceived self-efficacy. These concepts of self-efficacy and outcome–efficacy are the basis of person variables of PrE Model, and according to PrE Model they are main personal resources.

The possibility of future earthquake can be conceptualized as a demand requiring adaptation in the primary appraisal process. In the secondary appraisal process victims will evaluate their resources to overcome the distressing situation. During this process they will use certain coping strategies to manage the difficulties or problems encountered in the light of their resources. In the present study, earthquake is taken as a potential stressful encounter involving the estimation of personal resources to deal with this stressor, as self-efficacy and outcome-efficacy.

Mulilis and Lippa (1990) examined behavioral change on earthquake preparedness by manipulating the variables of severity, probability of occurence, response (outcome) efficacy, and self efficacy. Their study investigated the behavioral effects of a negative, threat-inducing persuasive message, which were based on the theory of protection motivation theory of Rogers (1983), on earthquake preparedness. Their results indicated that these messages could influence the earthquake preparedness behavior. Subjects, exposed to negative, threat-inducing communications, increased their earthquake preparedness. The authors did not obtain any main effect for the four factors of protection motivation theory, and offered revisions of the theory, because the effects of these four cognitive factors on behavior might be more complex than the theory suggests.

The revised version of the theory was tested by Rogers and Rippetoe in 1987 by employing religious faith, fatalism, hopelessness, avoidance and wishful thinking as maladaptive behaviors and problem-solving coping as an adaptive response. The variables of severity, vulnerability, fear, outcome efficacy, and self-efficacy of the protection motivation theory were used as mediators associated with only one of the maladaptive behaviors. According to these results the related variables were; severity of danger produced wishful thinking, beliefs in vulnerability increased the feelings of hopelessness, the fear stimulated avoidant thinking, perceiving the response as ineffective produced fatalism, and perceiving oneself as not self-efficient produced hopelessness. According to another finding of the study, the most maladaptive coping response was avoidant thinking. It weakened the adaptive response and reduced fear, which had no direct positive

effect on the intention to perform the recommended coping response. Therefore Rogers and Rippetoe (1987) strengthened the model with the addition of adaptive and maladaptive coping responses.

In summary, protection motivation is the result of cognitive appraisal and coping responses. The cognitive appraisal of threat and coping responses result in the intention to perform problem-focused coping or may lead to maladaptive coping responses that place individuals at risk and hopelessness. This relationship between appraisal and coping and the concepts of self-efficacy and outcome-efficacy formed the basis of PrE Model (Mulilis & Duval, 1997).

After PrE Model was formed by Mulilis and Duval (1997), it is supported by some other models and research findings. One of these models was The Disaster Preparedness Model (DPM) (Paton, 2003; Paton, Smith, & Johnston 2005).

DPM reflects a developmental process that explains preparedness behavior for earthquakes. It starts with the precursor factors which motivate people to prepare; progress through the formation of intentions and finishes in decision to prepare. The first phase of DPM is composed of motivating factors, which are risk perception, critical awareness, earthquake anxiety, and general anxiety. Thus, according to this model, disasters can be a source of anxiety, which can have motivating and demotivating effects on preparedness behavior. It has been claimed that, these factors must be present at appropriate levels to progress to the next phase. These motivating factors remind of event variables of PrE Model.

In the second phase, there are variables linking initial motivation with the formation of intentions. These variables consist of outcome expectancy, self

efficacy, and problem-focused coping. It is important that, if a person forms outcome expectancy and he/she has enough self efficacy, he/she will form intention towards engaging in the behavior. Problem-focused coping refers to the individuals' perception of the availability of the resources required to engage in preparedness behavior. These intention variables remind of person variables of PrE Model.

According to DPM, in the third phase the relationship between preparedness intentions and actual preparedness behavior is formed. There are two kinds of intentions as intention to prepare and intention to seek information. It was shown empirically that only intention to prepare predicts actual preparation and intention to seek information does not. In terms of behavior, some behaviors can be considered as preparedness behavior. Behaviors such as "securing tall furniture, heavy items, and water heaters" or "preparing and maintaining a household emergency plan" and similar behaviors must be considered as preparedness behavior. In the current study, these active earthquake preparedness behaviors were measured and used in the analysis.

The literature about earthquake preparedness behavior, and coping responses were reviewed widely with their models. Earthquake preparedness behavior after disaster victimization was discussed by some variables. Most important one of these variables was coping and for earthquake preparedness behavior problem-focused coping was significant factor. Coping is the determinant of the bridge between intention and behavior to increase earthquake preparedness behavior.

After presenting theoretical background of PrE Model, the next section will cover empirical research on factors related to disaster preparedness. The disaster preparedness behavior is a widely examined topic in disaster psychology literature and the following variables are used in these studies.

1.2.3 Empirical Research on Factors Related to Disaster Preparedness

The field of disaster psychology and social and clinical psychology examined some factors that may predict earthquake preparedness behavior. The roles of demographic characteristics of the participants (Edwards, 1993), trait anxiety (Paton, Smith, & Johnston, 2003), the severity of exposure of past earthquake experience (Rogers, 1975; Perry 1979; Weinstein, 1989), religiosity (Carver, Scheier, & Weintraub, 1989), outcome efficacy (perceived effectiveness of preparedness) (Duval & Mulilis, 1995; Duval & Mulilis, 1997; cited in Duval & Mulilis, 1999), self efficacy (perceived difficulty of preparedness) (Duval & Mulilis, 1995; Duval & Mulilis, 1997; cited in Duval & Mulilis, 1999), impact of past experience (avoidance and intrusion symptom levels) (Sattler et al. 2000), risk perception (Paton, Smith, & Johnston, 2003), critical awareness (Paton, Smith, & Johnston, 2003), locus of control (Karancı, Aksit, & Dirik, 2005; Rustemli & Karancı, 1999) and coping strategies (problem focused coping or emotional focused coping) (Paton, Smith, & Johnston, 2003) in predicting earthquake preparedness behavior were studied in different research studies.

1.2.3.1 Socio-Demoghraphic Factors That Predict Earthquake Preparedness Behavior

A number of variables, such as age (Sattler, Kaiser, & Hittner 2000), being male (Russell, Arms, & Bibby 1995), having higher household income (Russell, Arms, & Bibby 1995; Edwards, 1993; Sattler, Kaiser, & Hittner, 2000; Fisek, Müderrisoğlu, Yeniçeri, & Özkarar, 2002), being employed (Russell, Arms, & Bibby 1995; Kasapoglu & Ecevit, 2003), being married (Russell, Arms, & Bibby, 1995), having school aged children in the home (Russell, Arms, & Bibby 1995; Edwards, 1993), higher education level (Russell, Arms, & Bibby 1995; Edwards, 1993; Rustemli & Karanci 1999) have been shown to influence the likelihood of taking earthquake preparedness behavior. For example, Russell, Arms, and Bibby (1995) studied the Whittier Narrows Earthquake and the Loma Prieta Earthquake to examine earthquake preparedness behavior. They found for The Whittier Earthquake that certain demographic variables, such as having higher education, being female, and owning a home were associated with pre-earthquake preparedness. For post-earthquake preparedness after The Whittier Earthquake, greater levels of damage from the earthquake and having children in the home were significant factors. For The Loma Prieta Earthquake, pre-earthquake preparedness behavior was predicted by such socio-demographic variables as having higher education, being employed, being married, owning a home, and higher income. For post-earthquake preparedness, being younger and being married were significant factors in determining earthquake preparedness after The Loma Prieta Earthquake.

Edwards (1993) showed that individuals with higher household income were more likely to be prepared than people with lower household income. According to Edwards (1993), income is an important factor to predict earthquake preparedness, because higher income households were more likely to have the resources necessary to conduct preparedness activities.

Edwards (1993) did also suggest that people with higher education are more likely to be prepared, because they are more likely to understand the relationship between earthquake preparedness and the potential of these preparedness behaviors to reduce the impact of disasters. The study of Rustemli and Karanci (1999) showed that educational level was a significant predictor in predicting earthquake anticipation and preparedness in a sample from Erzincan, Turkey.

Sattler, Kaiser, and Hittner (2000) studied disaster preparation at the peak of Hurricane Emily and Hurricane Fran. Both in study 1 and study 2, being older, and only in study 1, higher household income predicted preparation significantly.

Edwards (1993) also found that having children in the home is another factor related to the prediction of the likelihood of earthquake preparedness. There are two possible explanations for the positive relationship between the presence of children in the home and earthquake preparedness. Parents either may be more sensitive about the safety of their children than themselves or children may bring home preparedness information from their schools that parents did not have.

Fisek, Müderrisoğlu, Yeniçeri, and Özkarar (2002) conducted a study in Istanbul after the 1999 Marmara Earthquake to examine earthquake preparedness

behavior, and they found that, preparedness was predicted by higher income and higher education.

After 1999 Marmara Earthquake, Kasapoglu and Ecevit (2003) conducted a study to examine earthquake preparedness behaviors for future earthquakes. To lessen the problems experienced after the earthquakes, the authors investigated the factors that influence society's awareness of and preparedness for disasters. In regards to socio-demographic variables, education and working status were found to be significant predictors. Those with higher education and employment showed more preparedness. Accordingly, it was suggested that for those who have experienced an earthquake, emphasis should be placed on the wide range and diversified aspects of education in order to be less affected by the future earthquakes.

So, research has shown that individuals with more resources, as reflected by education, income, and employment, are more likely to be prepared.

1.2.3.2 Coping Strategies as Predictors of Earthquake Preparedness Behavior

Coping strategies can be divided into two main categories; namely, problem-focused coping and emotion-focused coping, as discussed in the previous sections. Problem-focused coping is usually seen as more effective than emotion-focused coping, because it focuses on thougths and actions to generate solutions to the causes of distress (Folkman & Moskowitz, 2000).

Like all other stressors, when a person perceives the earthquake possibility as a stressor, he/she chooses a coping strategy to reduce stress. Problem-focused coping involves planning, taking direct action, seeking assisstance etc., and in regards to earthquake preparedness people using more problem-focused coping than emotional-focused coping are expected to engage in earthquake preparedness behaviors more. On the other hand, emotion-focused coping involves some maladaptive behaviors, such as denial and fatalistic thinking (Carver, Scheier, & Weintraub, 1989). As an emotion-focused coping strategy, fatalistic thinking can lead to a reduction in earthquake preparedness behavior, because fatalistic person is likely to believe that he/she is unable to do something to decrease the hazards of a possible future earthquake. In this respect fatalism is one of the factors that may contribute to people's failure to get prepared for earthquakes (Lindell & Perry, 1992; McCLure, Walkey, & Allen, 1999).

1.2.3.3 Self-Efficacy and Outcome-Efficacy to Predict Earthquake Preparedness Behavior

In the current study, the factors of self-efficacy and outcome efficacy were taken from Person Relative to Event Model of Mulilis and Lippa (1999). Mulilis and Lippa (1999) examined the self efficacy (beliefs regarding personal capacity to do something) and response efficacy (perceptions of whether personal actions will reduce a problem) as person variables. The variable of self-efficacy reflects the perceptions of personal capacity to do something, for decreasing devastation from potential earthquake, and the variable of outcome efficacy is the measure of the

perceptions of necessary actions in reducing earthquake damage. The person relative to event model, which is used for earthquake preparedness, predicts that increasing levels of threat appraisal when resources are appraised as sufficient relative to the magnitude of the threat will increase problem-focused coping and preparedness (Mulilis & Lippa, 1999).

The study of Paton, Smith, and Johnston (2005) on disaster preparedness showed that both self-efficacy and outcome efficacy predicted problem-focused behavior or action coping being in turn linked to earthquake preparedness behavior.

1.2.3.4 Perceived Control/Responsibility to Predict Earthquake Preparedness Behavior

Because earthquakes are relatively uncontrollable events, it can be suggested that perceived control would reduce the impact of the disasters by increasing earthquake preparedness behavior as a personal resource (Karancı, Aksit, & Dirik, 2005; Sumer, Karancı, Berument, & Gunes, 2005). In order to explore the relationship between earthquake related cognitions and earthquake preparedness behavior, a study was conducted 16 months after the Erzincan Earthquake. Data was obtained from 461 adults. Results showed that preparedness could be predicted by perceived control, fear, and educational background (Rustemli & Karancı, 1999). This finding about belief in personal control provide support to PrE Model (Duval & Mulilis, 1999)" by showing that having personal resources, such as belief in personal control is an important factor for increasing preparedness behavior (Karancı, Aksit, & Dirik, 2005).

Similar with earthquake preparedness behaviour, another possible positive effect of earthquake victimization is PTG. Therefore, in the present study, a second focus was to examine variables related to PTG in a sample with a previous devastating earthquake experience.

1.3 Posttraumatic Growth

The literature on trauma has focused mostly on the negative outcomes of traumatic events, however alongside the negative ones, traumatic events can also produce positive outcomes. Tedeschi and Calhoun (2004) defined posttraumatic growth (PTG) as "positive psychological change experienced as a result of the struggle with highly challenging life circumstances". These positive changes can occur in relationships, coping skills, philosophy of life, personal strength, and spirituality (Tedeschi, Park, & Calhoun, 1998). PTG have been reported following a wide range of traumatic events, such as, bereavement among HIV/AIDS caregivers (Cadell, Regehr, & Hemsworth, 2003), sexual assault (Frazier, Conlon, & Glaser, 2001), cancer patients (Bellizzi & Blank, 2006; Cordova, Cunningham, Carlson, & Andrykowski, 2001), Turkish breast cancer patients (Kesimci & Karancı, 2006), parents of Turkish autistic children (Elçi, 2004), heart failure patients (Sheikh, 2004) and shipping disaster survivors (Joseph & Linley, 2004). According to Schafer and Moos (1992), after a trauma, nearly %60 of sufferers have changed in a positive way, or experienced posttraumatic growth. There are different models proposed to explain posttraumatic growth. In the current study, although there are several growth models, Schaefer and Moos' Model of Life Crises and Personal Growth (1992) was taken as the main model due to its comprehensive coverage of pre-

disaster, disaster, and post-disaster variables. This model is more comprehensive than other PTG models and they focused on personal resources and coping abilities. The model derives from the individual need, and explains the traumatic event in a more mature way and also emphasizes the role of social support and problem solving coping in PTG (Karancı & Erkam, in press; Mc Veigh, 2005). The model clearly identifies the factors contributing to the growth process of the human beings rather than only describing PTG.

1.3.1 Model of Life Crises and Personal Growth

Schaefer and Moos (1992) incorporated the possible roles of environmental, individual, and event related factors, cognitive processing, and coping in explaining subsequently on growth reactions. They suggested a conceptual framework, namely "life crises and personal growth model" to explain PTG as an unintentional change model. According to the model, environmental and personal factors influence life crisis and their aftermath, and influence appraisal and coping responses which in turn influences personal growth. Growth is based on enhanced social resources, personal resources, cognitive appraisals, and coping responses. Environmental and personal system factors interact with event related factors (e.g., severity, duration, and timing of a crisis and its scope), which determine cognitive processes and coping and subsequently their aftermath, which in turn affects resources (see Figure 2).

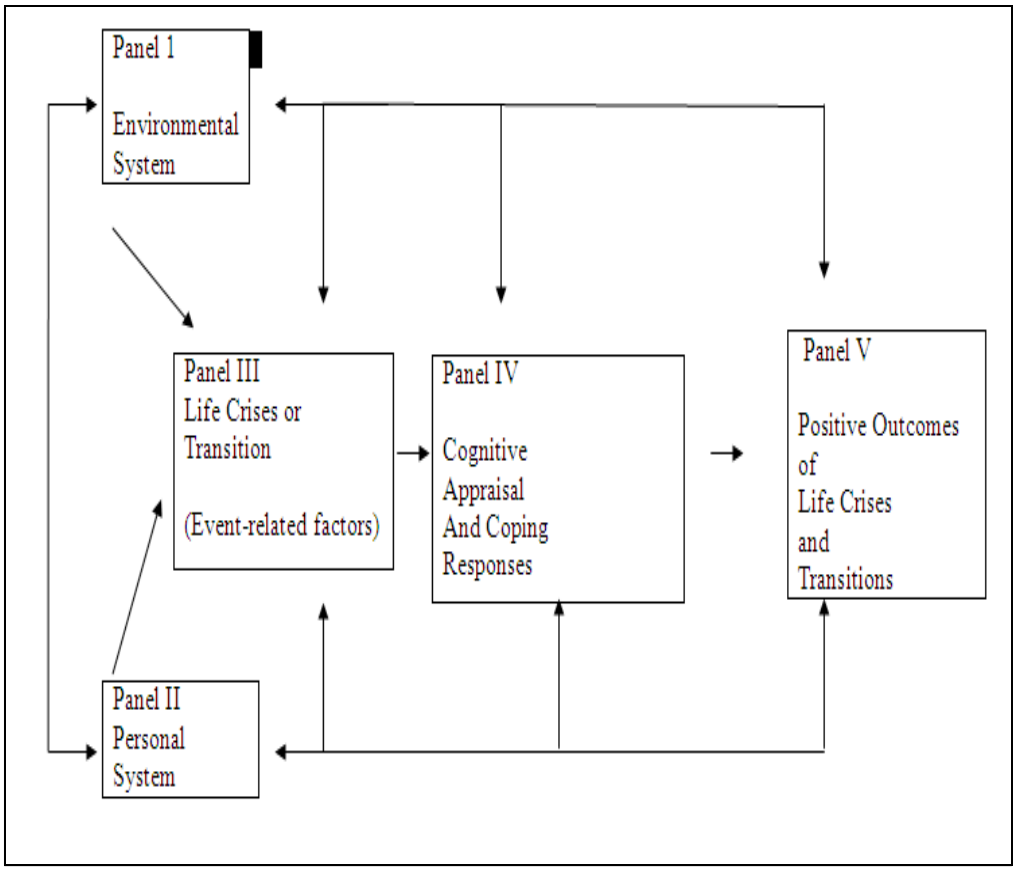

Figure 2. A conceptual model for understanding positive outcomes of life crises and transitions

Source: Schafer & Moos, 1992

Therefore, what determines the situation after the traumatic experience (Panel III) is the combination of one's personal (Panel II), and environmental (Panel I) resources and how it is appraised and dealt with (Panel 4). Thus, according to the model for PTG (Panel 5), crucial factors are:

• Panel I: Environmental System Factors: The resources of this panel are economical situation, social support network, quality of life determinants, income, a positive family environment. In the current study, quality of life, social support, and

income were examined as the factors of Panel I. Increased social resources such as new social support networks and better family or friend relationships are important environmental factors.

- Social and Family Support: After a traumatic event, event-related factors, personal resources, and environmental resources influence the amount of support individuals receive. The family environment has been linked to adaptation to natural disasters and divorce.
- Community Groups and Resources: Self-help and mutual support groups foster better adaptation and threby contribute PTG.

- Panel II: Personal System Factors: The resources of this panel are increased personal resources such as maturity, empathy, assertiveness, self-efficacy, resilience, motivation, health status, spirituality, and past experiences. Socio demographic characteristics, such as being married, being older, being female and having better education are related to facilitation of PTG. In the current study, age, marital status, sex, education, religiousness and well-being were examined as the factors of Panel II.
- Panel III: Life Crisis and Transition (event-related factors): In the current study, severity of earthquake experience and posttraumatic stress were examined as the factors of Panel III. Life crisis experience can boost people's self-efficacy and enhance their coping resources.

- Panel IV: Cognitive Appraisal and Coping Responses Factors: In the current study, earthquake preparedness behavior was examined as earthquake specific coping, and self-efficacy and outcome-efficacy were examined as earthquake specific cognitive appraisals. Problem-Focused Coping, Seeking Social Support, Helplessness Coping and Fatalistic Coping were examined as general coping responses. Coping is closely related to processes that are linked to adaptation, especially development of new coping resources such as the capability to think logically and regulate affect. Individuals with more personal and social resources are less likely to appraise a life crisis as a threat and more likely to rely on problem focused coping strategies that are related to successful adaptation and PTG. Specifically, active and problem focused coping increase the probability of personal growth (O'Leary et al., 1998).
- Panel V: Positive Outcomes of Life Crisis and Transitions (PTG): In the current study, PTG was used as positive outcome panel. "Individuals with more personal and social resources are less likely to appraise a life crisis as a threat and more likely to rely on active coping strategies that are linked to successful adaptation and PTG" (Schaefer & Moos, 1992). The results of the study of Holahan and Moos (1990) exemplified the relationship among personal and social resources, coping, and improved functioning outcomes. Individuals, reported strengthened personal and social resources and more problem-focused coping, experienced growth in spite of the fact that life crises such as the death of a family members or severe financial problems.

Consistent with the theory of stress and coping, Schaefer and Moos (1992) suggested that how much the person becomes distressed is affected by his or her characteristics, appraisal of the event, and coping strategies. These three factor groups determine the transition from trauma to PTG. Appraisals and coping strategies play an important role in this transition. With problem-focused coping, the individual evaluates the event in a rational manner and reappraises the event in a more positive way, and takes actions to solve problems. However, with avoidance coping, the individual evaluates the event as unimportant or beyond their control, and chooses to be passive in the face of the traumatic event.

Schaefer and Moos' Model (1992) clearly identifies the environmental, personal and coping resources as factors contributing to the growth process of the human beings rather than only describing the term of growth. Some studies have empirically tested Schaefer and Moos model. The study of Siegel, Schrimshaw and Pretter (2005) showed that negative affect negatively and positive reappraisal coping, and emotional support were positively and significantly related to PTG among the HIV/AIDS patients. A study, with breast cancer patients in Turkey, explored the relationships of problem-solving coping and perceived social support with PTG and showed the predictive power of problem-focused coping and perceived social support on PTG in breast cancer patients (Karancı & Erkam 2007). The study of Dirik and Karancı (2005) with rheumatoid arthritis patients found that sex, perceived severity of the illness, perceived social support, and problem solving coping were significant predictors of PTG.

Similar to Schaefer and Moos' model, Conservation of Resources (COR) Theory (Hobfoll, 1989) emphasized that individuals, families, societies try to maintain, foster and protect their resources when exposed to traumatic events. Their purpose is to provide further resource protection by repairing their damage and mobilizing resources. In this process, they don't show only reactive behaviors to the stressors, they also show proactive behaviors. This result may lead to change in their reliance on themselves and on others (Hobfoll, 2001). This is the proposal of the COR theory. In the current study resources and active coping behavior concepts of COR Theory were used to supplement the Schaefer and Moos' Model, which is the basic model of the current study. For this purpose, earthquake preparedness behavior was taken as an active coping behavior and integrated into the cognitive appraisal and coping responses panel of Schaefer and Moos' Model. So, in the current study, earthquake preparedness behavior was taken into account as an earthquake specific coping behavior (See figure 3).

In the current study, this active coping behavior was earthqauke preparedness behavior and so in addition to Schaefer and Moos Model, cognitive appraisal and coping responses panel was divided into two parts. First part include earthquake specific coping, namely earthquake preparedness behavior and earthquake specific cognitive appraisal namely self-efficacy and outcome-efficacy, it comes from Hobfoll's argument and we added it to the Schaefer and Moos' Model. On the other hand, second part includes general ways of coping namely problem-focused, seeking social support, helplessness and fatalistic coping responses.

COR Theory was developed to explain the central mechanisms of stress and coping process (Hobfoll, 1989). This resource-oriented theory is based on the assumption that psychological stress is a reaction to a threat of loss of resources, loss of resources and/or lack of resource gain after investment in resources. Similar with Schaefer and Moos' Model, religiousness, coping abilities, coping self-efficacy, and social support are very important personal resources for COR Theory.

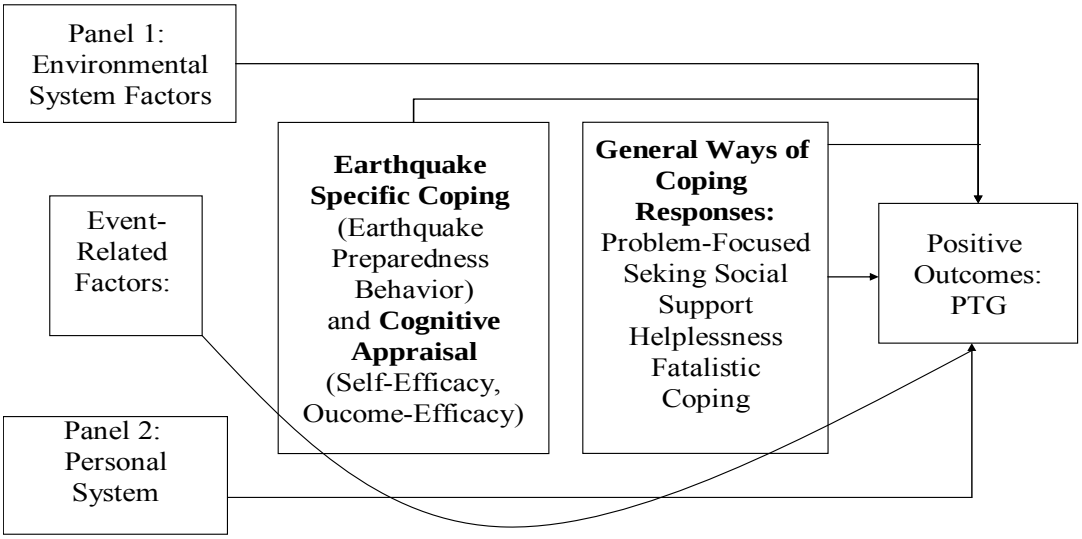

Figure 3. Addition of Hobfoll's argument to the Model of Life Crisis and Personal Growth
Source: Hobfoll, 2001

COR Theory supported the Schaefer and Moos' Model with its importance given to the resources. Four kinds of resources are delineated in the COR Theory (Hobfoll 1989):

- Object Resources (residence, transportation)
- Energy Resources (income, time, knowledge, education)

- Condition Resources (a stable marriage, secure employment)
- Personal Resources (self efficacy, self confidence)

According to Hobfoll (2001), social and economic resources are invested in order to provide stress resistance. A number of researchers examined different resources such as self-efficacy, optimism, and self-esteem (Bandura, 1997; Scheier & Carver, 1985) and found evidence to support this proposal. According to the results of these studies self-efficacy, optimism and self-esteem were related to higher stress resistance. From COR perspective self efficacy, like social support, has a contribution to the maintenance of strong resource reservoirs. Self-efficacy has a key role in stress reactions and determines how well people cope with stress. People who have high coping self-efficacy, choose appropriate coping strategies and consequently the traumatic process may turn into a positive outcome, such as PTG (Benight & Bandura, 2004).

These resources increase the resilience of individuals. On the other hand, resource losses can be identified as significant predictors of psychopathology after a natural event. For example, Sumer, Karancı, Berument, and Güneş (2005) studied the psychological impact of resource loss in Turkish earthquake survivors after the 1999 Marmara Earthquake, and they found that resource loss was positively related to psychological distress.

In the present study, psychological adjustment of earthquake survivors was evaluated within the Schaefer and Moos' Model supplemented by COR model, hypothesizing that key personal resources which are self-efficacy, coping abilities, religiousness and perceived social support will influence the patients' PTG. The

most important addition of Hobfoll (2007) to the model of Schaefer and Moos is "the need for behavioural changes for PTG" argument. In order to experience PTG, survivors should actually engage in something behavioural. According to Hobfoll, if changes in thoughts are not transformed into behavioural changes, PTG can be an illusion. Therefore behavioural strategies and active coping are important for "real PTG". If survivors turn their beliefs into action, they can experience a protective effect of PTG. In the current study, earthquake preparedness behavior was taken into account as an active coping behavior and it is added to the Model of Life Crises and Personal Growth of Schaefer and Moos. Earthquake preparedness behaviour was integrated into the cognitive appraisal and coping responses panel of Schaefer and Moos' Model in the present study as an earthquake specific coping.

According to Hobfoll (1989), active coping is a very important concept in understanding PTG. He concluded that those who did not use PTG as only a way of coping had better outcomes and the protective effect of PTG was only seen when the beliefs were converted into action. According to Hobfoll, PTG has two faces, as self deceptive and constructive. In addition, he stated that we should not foster PTG as it is related to greater PTSD symptoms.

Personal and social resource losses have been identified as strong predictors of psychological and physical health and PTG in the aftermath of natural disasters such as floods (Smith & Freedy, 2000), hurricanes (Ironson et al., 1997), earthquakes (Hsu, 2003). In this respect earthquake victimization provides a context to study PTG. Therefore, PTG was examined as a dependent variable in the current study. Personal and social resources that may predict PTG were examined as

independent variables, because resources are theorized to play a central role in the PTG process.

In the current study, as a supplement to Schaefer and Moos' Model, the concepts of resources and active coping from COR theory was used in developing the model to be tested for PTG. Because COR is an integrated resource theory, key resources, such as social support and coping strategies need to be incorporated into an integrated model to understand the interaction of these key resources (Hobfoll, 2002).

Different models emphasize different parts of the growth concept. In the present study, PTG after victimization was evaluated within the COR model and Schaefer and Moos' Life Crises and Personal Growth Model, hypothesizing that key personal resources which are socio-demoghraphic factors, coping abilities, religiousness and perceived social support influence the PTG after earthquake victimization. As can be seen in the next section, several variables were examined to understand growth by Schaefer and Moos' Life Crises and Personal Growth Model and the integration of proposal of the COR Model to it.

1.3.2 Empirical Research on Factors Related to Posttraumatic Growth

Although there are several factors related to PTG after earthquake victimization, in the following sections only the variables of Schaefer and Moos' Life Crises and Personal Growth Model examined in the current study will be discussed.

1.3.2.1 Environmental System Factors That Predict Posttraumatic Growth

Some of the environmental system factors, such as quality of life, social support and income were investigated as environmental system factors panel of Schaefer and Moos Life Crisis and Personal Growth Model in the current study. According to Schaefer and Moos' Model the quality of pre-post crisis life can have a potent effect on PTG. There is no research directly examine the relationship between QOL and PTG. In the present study, the brief version of World Health Organization of Quality of Life (WHOQOL) Scale was used to assess QOL and to examine the relationships between QOL and PTG, and earthquake preparedness behavior. There are two types of QOL as subjective QOL and objective QOL. Subjective QOL was defined as life satisfaction and objective QOL was defined as participation in activities and relationships. WHOQOL, the scale used in the present study, assesses both subjective and objective QOL.

Another important environment factor related to PTG is perceived social support. Karancı and Erkam (2007), showed the predictive power of perceived social support on PTG in breast cancer patients. The study of Elçi and Karancı on PTG of the parents of children with autism showed that perceived social support was an important and significant predictor of PTG of both mothers and fathers of autistic children (Elçi & Karancı, 2004). According to study of Tang (2006) after the Southeast Asian Earthquake-Tsunami, frequent support seeking was one of the best predictors of PTG. In order to extend their model on PTG, Calhoun and Tedeschi (2004) studied children who experienced Hurricane Floyd and the

subsequent flooding. According to the results of their study, supportive social environment was significantly related to PTG.

Bozo, Gündoğdu, and Çolak (2009) conducted a study among postoperative breast cancer patients in order to investigate the dispositional optimism-PTG relationship and to examine if perceived social support moderates this relationship. According to the results of the study, all sources of social support were significantly related to the development of PTG. Besides, among all sources of social support, only social support from a private person moderated the relationship between dispositional optimism and PTG.

According to Linely and Joseph (2004), social support can be helpful for the development of PTG, because narratives about the changes can be shared and different perspectives can be offered to facilitate schema change. Social groups can affect the willingness of trauma survivors to engage in new schemas. However, it is important to state that social support is effective if it is stable and consistent.

Furthermore, the amount and type of social support can be important and they can be determined by the severity of the event, prior stressors, and prior personal and social resources (Tedeschi, Park, & Calhoun, 1998). The more prior traumatic life events the person experienced, the more support s/he gets. The more severe the event, the more social support the person attains. In addition, if the person has more prior resources, it is more likely that there will be more social support (Tedeschi, Park, & Calhoun, 1998).

With regards to income, Linley and Joseph (2004) and Hobfoll's (2001) studies examined the relationship between socio-demographic variables and PTG.

The results of these studies showed that income is a significant predictor of PTG. Higher income was found to be significantly related with more PTG (Linley & Joseph, 2004). Thus, individuals with higher income as a resource, as proposed by Hobfoll (2001), show more PTG.

1.3.2.2 Personal System Factors That Predict Posttraumatic Growth

Age, marital status, sex, education, religiousness, and well-being were investigated as reflecting personal system factors panel of Schaefer and Moos' "Life Crisis and Personal Growth Model" in the current study. With regard to sex and age, women and younger survivors were found to be more likely to report PTG than men and older survivors, respectively (Linely & Joseph, 2004). However, in terms of age, the developmental level of maturation that survivors have reached is important. It was found that older adolescents report higher PTG than younger adolescents. In addition, life expectancy or age can be a confounding variable in PTG studies. Older people expect to live shorter than younger people. Moreover, younger people are more open to change and learn more new things than older people. Besides, PTG is more applicable to adolescents and adults than younger children as schemas need to be established and changed after trauma for PTG to take place (Tedeschi & Calhoun, 2004). These factors may lead to age differences in PTG development.

Elçi (2004) showed that mothers of children with autism reported more PTG than fathers of children with autism, therefore, according to this study there was a sex difference in PTG.

The level of religiosity can be taken into account as a personal resource. For instance, Milam (2004) found significant contribution of religiosity on PTG among HIV/AIDS patients. There are two types of religious coping, namely positive religious coping and negative religious coping. In positive religious coping, there are themes such as working collaboratively with God, accessing social support from God and others and vice versa. Negative religious coping involves self-blame, questioning religious beliefs, and feeling punished by God.

Religiousness may have a stress-buffering role by influencing the choice of specific coping strategies (Park, Cohen, & Herb, 1990). Kilpatric and McCullough (1999) stated that the relationship between religiousness and health is mediated by psychosocial factors such as social support. Individuals' religious views lead to different views about the same life event and they may also affect the perceived availability of coping styles. Kilpatric and McCullough (1999) argued that religiousness is a resource and it helps in handling physical disability and reported that physically disabled people who are religious and spiritual have better physical well-being and less psychological disturbances.

Shaw, Joseph, and Linely (2005) made a review study about traumas and they found that spirituality is an important resource for over-coming trauma as it resulted in positive changes, deepening of faith, and a sense peace.

Religiousness could be thought of as a cognitive and social resource to handle the situation after disaster victimization. Religious activities were one of the many available resources for extending social networks. For example, going to mosque after disaster victimization might be a critical way of interacting with other

disaster victims. Social support might be an important mediator in the relationship between religiosity and PTG. Reynolds (2006) reported that lower levels of religiosity and spirituality were associated with higher levels of social isolation.

There is a scarcity of research examining the relationship between well-being and PTG. Tedeschi and Calhoun (1995) suggest that posttraumatic growth is rather independent of psychological well-being. In their recent review of the literature, Zoellner and Maercker (2006) find no consistent trend for the relationship between PTG and well-being in the face of trauma.

1.3.2.3 Life Crisis or Transition (Event-Related) Factors That Predict Posttraumatic Growth

People's responses to crisis are based on some event related factors, such as severity, amount of exposure, proximity and duration (Schaefer & Moos, 1992). Some studies found that more severe exposure is associated with more psychological symptoms and distress (Carr, Lewin, Webster, Hazell, Kenardy, & Carter, 1995; Lonigan, Shannon, Taylor, Finch, & Sallee, 1994).

Experiencing multiple disasters in a relatively short time period has been found to be related to higher psychological distress (Phifer & Norris, 1989). People in Kaynaşlı, study site, experienced two severe earthquakes during a span of 3 months.

Before recent studies, psychological distress and PTG seemed to be bipolar concepts, but in fact they are not negatively associated (Linely & Joseph, 2004). Quantitative evidence is mixed. Although some studies revealed that as PTG scores

increases, distress also increases, in some other studies it was stated that there is no reliable relation between distress and PTG (Linley & Joseph, 2004; Tedeschi, Calhoun, & Cann, 2007). According to Hobfoll (2002), PTG is related to greater PTSD symptoms, however if the person is high on self-efficacy this effect becomes weaker.

According to PTG Model of Tedeschi and Calhoun (1998), greater distress is expected to lead to greater posttraumatic growth. According to Tedeschi and Calhoun (1998), the traumatic event can lead to significant damage in the existing schemas. Traumatic stressful events are seismic challenges for the previous schemas by shattering pre-trauma goals, beliefs and coping. In other words, some important goals and worldviews of the person should be shaked or destructed by the crisis and greater severity of traumatic event lead to greater distress and greater shaking and so greater PTG. Some studies have shown positive relationships between the severity of the event and posttraumatic growth (McMillen, Smith & Fisher, 2001) and between the posttraumatic stress and posttraumatic growth (Tedeschi & Calhoun, 1996).

In the current study, posttraumatic stress was measured by traumatic stress in earthquake survivors scale. Participants' answers to the question of "Have you had a family member or a relative who died or was injured in the earthquake" were used as severity of exposure to the earthquake variable. This independent variable and posttraumatic stress were taken as life crisis (event-related) factor panel of Schaefer and Moos Life Crisis and Personal Growth Model in the current study.

1.3.2.4 Earthquake Specific Coping, Cognitive Appraisal and General Coping Responses Factors That Predict Posttraumatic Growth

Earthquake preparedness behavior was investigated as earthquake specific coping and self-efficacy and outcome-efficacy were examined as earthquake specific cognitive appraisals. Problem-Focused Coping, Seeking Social Support, Helplessness Coping, and Fatalistic Coping were examined as general coping responses of Schaefer and Moos Life Crisis and Personal Growth Model. In the current study, earthquake specific coping appraisal (cognitive appraisal) and coping responses were considered separately from each other and used as different panels. In the earthquake specific coping appraisal panel, earthquake preparedness behaviour, self-efficacy, and outcome-efficacy were examined; and in the coping responses panel, problem-focused coping, seeking social support coping, helplessness/self-blaming coping and fatalistic coping were examined.

There is no research that directly examine the relationship between earthquake preparedness behaviour, self-efficacy, outcome-efficacy, and PTG. One of the important contributions of the current study is to analyze the relationship between earthquake preparedness behavior and PTG. To our knowledge, the relationship between earthquake preparedness behavior and PTG has not been scientifically investigated previously, but it is known that coping is one of the key concepts to understand the relationship between them (Hobfoll, 1988). For this reason, earthquake preparedness behavior was taken as specific coping behavior and integrated into the cognitive appraisal and coping responses panel of Schaefer and Moos' Model. Therefore, in the present study, earthquake preparedness

behavior was taken into account as an earthquake specific coping behavior and the relationship between it and PTG could be examined.

Problem-focused coping, seeking social support coping, helplessness/self-blaming coping, and fatalistic coping were examined as personal system factors panel. The development of new coping resources and using problem-focused coping is one of the most important variable related to PTG. The study of Oaksford, Frude, and Cuddihy (2004), after the Lower Limp Amputation, and the study of Tang (2004) after the Southeast Asian Earthquake-Tsunami showed the predictive power of active coping on posttraumatic psychological growth. In another study done with breast cancer patients in Turkey, while exploring the relationship of problem-solving coping with PTG, found a positive association with stress-related growth (Karancı & Erkam, 2007). According to a review of 39 studies about positive outcomes after traumatic events, problem-focused coping was associated with adversarial growth (Linley & Joseph 2004). In the study of Karancı and Acarturk (2007) after 1999 Marmara Earthquake, using problem-focused coping appeared as one of the significant predictors of PTG.

In a study conducted in Turkey (Elçi, 2004), problem solving/optimistic coping was found to be a predictor of PTG both for mothers and fathers of children with autism. According to the results of Göral, Kesimci, and Gençöz (2006) study, it was found that both problem-focused and emotion-focused coping resulted in higher stress-related growth, which reflects the power of problem-focused coping efforts to facilitate PTG.

As a result, for the post-trauma factors, people using more problem-focused coping handle the trauma more easily and have more improvement (Sheikh, 2004). By using problem focused coping, people evaluate the traumatic event in a more rational way, reappraise the event in a more positive manner, and take some logical actions to solve the trauma related problems.

1.4 Aims and Hypothesis of the Study

The present study aims to investigate the factors related to two positive long term outcomes of the 1999 Düzce Earthquake, namely, earthquake preparedness behavior and PTG. In order to achieve this general aim of the study, PrE Model of Duval and Mulilis (1997) for earthquake preparedness behavior and Model of Life Crisis and Personal Growth of Schaefer and Moos (1992) were included in the center.

1.4.1 Aims for Earthquake Preparedness Behavior

In order to examine the earthquake preparedness behavior and variables related to it, the following aims were determined;

1) Examining the level of the different categories of earthquake preparedness behavior, self-efficacy, and outcome efficacy in a sample which suffered from a serious earthquake.
2) Determining the reasons of preparedness and nonpreparedness for earthquakes.
3) Examining the predictive power of

a. Socio-Demographic Variables: Age, sex, education, income, marital status

b. Earthquake related variables: Posttraumatic stress, severity of earthquake exprience, perceived responsibility for being prepared

c. Personal Resources: Outcome efficacy (perceived effectiveness of preparedness for reducing negative outcomes in an earthquake), self efficacy (perceived difficulty of carrying out preparedness activities) and coping strategies (problem focused coping, fatalistic coping, helplessness/self blaming coping and seeking social support coping)

on Earthquake Preparedness Behavior

1.4.2 Hypothesis for Earthquake Preparedness Behavior

1. In terms of pre-earthquake variables, being older, being married, being male, higher education, and higher income will be related to higher earthquake preparedness behavior.

2. In terms of earthquake related variables, less posttraumatic stress, less severity of earthquake exprience, and higher perceived responsibility for being prepared will be related to higher earthquake preparedness behavior.

3. In terms of personal resources, higher outcome efficacy, and self efficacy and in terms of coping responses factors, more problem-focused coping, and seeking social support, and lower helplessness coping, and fatalistic coping will be related to higher earthquake preparedness behavior.

1.4.3 Aims for Posttraumatic Growth

In order to examine the PTG and variables related to it, the following aims were determined;

1) Examining the predictive power of

a) Environmental System Factors: Quality of life, social support, income

b) Personal System Factors: Age, marital status, sex, education, religiousness, well-being

c) Life Crisis and Transition (event-related factors): Severity of traumatic event, posttraumatic stress

d) Earthquake Specific Coping and Cognitive Appraisal Factors: Earthquake preparedness behavior, self-efficacy, outcome-efficacy

e) Coping Responses Factors: Problem-focused coping, seeking social support, helplessness coping, fatalistic coping

on Posttraumatic Growth

1.4.4 Hypothesis for PTG

1. In terms of environmental system factors, higher quality of life, social support, and income will be related to higher PTG.

2. In terms of personal system factors, being older, being married, being female and higher education, religiousness, and well-being will be related to higher PTG.

3. In terms of event-related factors, higher severity of traumatic event, and posttraumatic stress will be related to higher PTG.

4. In terms of earthquake specific coping and cognitive appraisal factors, higher earthquake preparedness behavior, self-efficacy and outcome-efficacy will be related to higher PTG.

5. In terms of general coping responses factors, more problem-focused coping, seeking social support, lower helplessness coping, and fatalistic coping will be related to higher PTG.

CHAPTER 2

METHOD

2.1 Participants

The participants were composed of 199 earthquake survivors, 105 females (52.7%) and 94 males (47.3%). The mean age of the participants was 34.81 (Range: 18-73). The majority of the participants were married (74.9%), while 23.6% were single, and 1.5% were widowed. Considering the work status, 55.8% of the sample was employed. In terms of having a child living at home, 73.9% of the participants reported having a child in their homes. Only 22 homeowners (11.1%) gained under 500 YTL for a month, 125 participants (62.8%) gained between 500 YTL and 1000 YTL, 42 participants (21.1%) gained between 1000 YTL and 2000 YTL, and 10 participants (5%) gained over 2000 YTL. Considering education level, 4% of them (*n*=8) were illiterate, 38.7% of them (*n*=77) were primary school graduates, 22.1% of them (*n*=44) were secondary school graduates, 32.2 % of them (*n*=64) were high school graduates, and 3% of them (*n*=6) were university graduates. Most of the sample lived the majority of their lives in Kaynaşlı. The average number of years of residence in Kaynaşlı was 24.2 years. The socio-demographic characteristics of the participants are given in Table 3.

Table 3. Socio-demographic Characteristics of the Sample

		N	Percentage	Mean	*S.D.*	Range
Age				34.81	12.6	(18-73)
Sex	Female	105	52.7			
	Male	94	47.3			
Marital Status	Married	149	74.9			
	Single	47	23.6			
	Wid./Sep.	3	1.5			
Employed	Yes	111	55.8			
	No	88	44.2			
Having Children living at home	Yes	147	73.9			
	No	52	26.1			
Income	<500	22	11.1			
	500-1000	125	62.8			
	1000-2000	42	21.1			
	>2000	10	5			
Years living in Kaynaşlı				24.2	14.9	1-73
Education	Illiterate	8	4			
	Primary S.	77	38.7			
	Secondary S.	44	22.1			
	High School	64	32.2			
	University	6	3			
Severity of Experience	Yes	115	57.8			
	No	84	42.2			
Perceived Responsibility	Him/Herself	147	73.9			
	Other	52	26.1			
Expected loss of life				3.59	.69	1-5
Expected loss of goods				3.86	.65	1-5
Earthquake Probability	Occur	162	81.4			
	Not occur	37	18.6			
Time estimation	Anytime	105	52.8			
	Later	94	47.2			

2.2 Instruments

Data was collected by a questionnaire package consisting of three parts (see Appendix A). The first part was a socio-demographic information form. This form was prepared by the investigator in order to obtain information about socio-demographic characteristics of the sample such as gender, age, level of education, income, and marital status.

The second part of the questionnaire included sets of items designed to examine the severity of past earthquake experience, perceptions of the severity of a possible future earthquake, perceptions of the probability of occurrence of a future earthquake, reasons to prepare and responsibility related to preparedness.

In order to assess past earthquake experience, a question on 17 August Marmara Earthquake was asked to respondents "During the 1999 Marmara Earthquake were you in the earthquake zone" (1=no; 2=yes); if the answer was yes, the participants had to answer a follow-up question "in which town". Another item dealt with earthquake experience "During the 1999 Düzce Earthquake, were you in the earthquake zone" (1=no; 2=yes). To continue participate to the study, participant must mark "yes" for this item, and if the answer was yes, they again had to answer the same follow-up question "in which town". To assess the severity of the past earthquake experience, 5 questions, that were related to the impact of previous earthquakes on economical, emotional, health, and loss of life aspects were asked.

There were 2 items focusing on the perceptions of the severity of a possible future earthquake: "Would you expect damage to *life* and to *property* in your family in a possible future earthquake" rated on a 5-point Likert scale, ranging from "1-completely agree" to "5-completely disagree". Two items assessed the perceived probability of occurrence of a future earthquake: "Do you think that there will be an

earthquake in Kaynaşlı" and "If you expect an earthquake, when do you think that it may happen". These questions were rated on 5-point Likert scale, ranging from "1-anytime" to "5- in 20 years".

In order to understand the reasons for preparedness, two items were presented: "Reasons of participants to prepare and not to prepare". The response alternatives for reasons of preparedness were "to provide safety for my family", "to feel myself safe", scientist's explanations", "don't trust the building", "because, my relatives prepared"; and the response alternatives for reasons of non-preparedness were "not possible to avoid the power and desire of God", "trust in their building", "neglectfulness", "don't have enough money", "don't know what to do", "no need, an earthquake will not happen", "don't think to stay in this house for a long time", "being a tenant in the building", and "don't have enough time". Participants were able to select more than one reason for preparedness or non-preparedness.

In order to examine distress related to possible future earthquakes, one question was asked to respondents "If you took precautions, did taking precautions reduce psychological distress related to a possible earthquake" (6-point Likert scale, ranging from 1-completely decreased to 5-completely increased and 0-haven't done preparation).

The third part of the questionnaire consisted of eight scales. These scales were Ways of Coping Inventory (WCI) to measure coping strategies used in stressful situations, Revised and Translated Mulilis-Lippa Earthquake Preparedness Scale (MLEPS) to measure the level of earthquake preparedness behavior, self-efficacy and outcome efficacy, Religiousness Scale (RS) to measure the level of religious resources of participants, The Multidimensional Scale of Perceived Social Support (MSPSS) to measure perceived adequacy of social support, The Quality of Life

Scale (WHOQOL) to measure the quality of life of the participants, Psychological Well-Being Scale to measure the level of well being, Traumatic Stress Symptom Checklist (TSSC) to measure posttraumatic stress, and Post-traumatic Growth Inventory (PTGI) to measure PTG.

2.2.1. The Ways of Coping Questionnaire

Ways of Coping Questionnaire (WCQ) was designed by Lazarus and Folkman in 1985 to examine a broad array of cognitive and behavioral strategies that people engage in when they are in diverse stressful contexts. In the current study, to examine the type and frequency of the coping styles, that 1999 Duzce Earthquake survivors used after victimization, the 42-item WCQ which was obtained from the study of Karanci, Alkan, Akşit, Sucuoğlu, and Balta (1999) was used. Karanci et al., (1999) reported the Cronbach's alpha reliabilities of the five scales as problem solving (r=.75), fatalistic approach (r=.78), helplessness approach (r=.69), seeking social support (r=.59), and escape (r=.39). According to data of the present study 4 factors were determined. The first factor was labeled as "problem solving/optimistic coping" (r=.81), the second factor was "fatalistic approach" (r=.76), the third factor was labeled as "helplessness/self blaming approach" (r=.59) and the fourth factor was labeled as "seeking social support"(r=.58). The internal consistency of the whole scale was found to be .84.

In the current study, according to the results of factor analysis of ways of coping inventory, a four-factor solution explaining 37.8 % of the total variance produced the clearest result. Sixteen items loaded on the first factor which was labeled as "problem solving coping". Cronbach's alpha reliability coefficient for internal consistency of this subscale was found to be .84. Ten items loaded on the second factor which was labeled as "fatalistic approach" and its Cronbach's alpha

reliability coefficient was found to be .82. Seven items loaded on the third factor which was labeled as "helplessness approach" and Cronbach's alpha reliability coefficient was found to be .63. Three items loaded on the fourth factor which was labeled as "seeking social support". Cronbach's alpha reliability coefficient for internal consistency of this subscale was found to be .51. The internal consistency of the whole scale was found to be .81 (see Appendix 8).

2.2.2 Post-traumatic Growth Inventory

Post-traumatic Growth Inventory (PTGI) was developed by Tedeschi and Calhoun (1996). PTGI was developed in order to assess perceived positive changes in people after traumatic events. The inventory consists of 21 items and 5 subscales that assess new possibilities, relating to others, personal strength, spiritual change, and appreciation of life. PTGI is a 6-point Likert type scale ranging from 0 (I did not experience this change after traumatic event) to 5 (I experienced this change to a very great extend).

In 1996, Tedeschi and Calhoun conducted a study for the reliability of the PTGI in a university sample. The results of this study showed an acceptable construct validity, internal consistency coefficient (.90) and test-retest reliability over a two months time interval (.71).

In 2005, Kılıç made the Turkish translation of PTGI. Although, the original PTGI used 6-point scales, in his translation, Kılıç used 5-point scale with a different wording as compared to the original and he also used a 4-factor solution.

In 2006, Dirik translated the scale with some modifications in wording applied and the original response format of 6-points was adopted. In the present

study, Dirik's version with the same factors, which were changes in relationships with others, changes in philosophy of life, and changes in self perception was used.

A mean PTG score was obtained simply by summing up the responses to the items of PTGI and dividing them by the numbers of items (*M*= 3.22, *SD*= .99, Min= 0, Max= 5, Range= 5, Median= 3.33). Cronbach alpha reliability of the scale was moderate (.73).

2.2.3 World Health Organization Quality of Life Scale (WHOQOL-BREF)

The WHOQOL-BREF was developed by the World Health Organization (1993) to collect information related to the quality of life of patients. The WHOQOL-BREF instrument has 26 items measuring the following broad domains: physical health, psychological health, social relationships, and environment. This version is available in approximately 19 different languages. The WHOQOL-BREF is a shorter version of the original instrument (WHOQOL-100) that may be more convenient for use in large research studies or clinical trials.

Fidaner, Elbi, Fidaner, Yalçın, Eser, Eser, and Göker (1999) adapted the WHOQOL-BREF into Turkish. The study showed that WHOQOL-BREF can be used instead of WHOQOL-100 as a reliable and valid scale. The Turkish version of the scale has 27 items and 4 subscales, measuring physical health, psychological health, social relationship, and environmental factors. It was shown that WHOQOL-BREF's items' mean scores were significantly correlated with the domain mean scores of the items according to Pearson correlations. Correlation coefficients ranged between .49 and .78. Construct, concurrent, and discriminant validity studies were found to be satisfactory. Internal consistency and test re-test reliabilities of

WHOQOL-BREF were sufficiently high. Additionally, studies conducted by using WHOQOL-100 indicated that WHOQOL-BREF could be used instead of WHOQOL-100 (Fidaner et al.1999).

Örsel, Akdemir, and Dağ (2004) conducted a study in order to determine the reliability and sensitivity of the WHOQOL. The results revealed that, WHOQOL-100 was a reliable and valid measurement. In order to examine the predictive influences of psychopathology measures on QOL domains, stepwise regression analysis was conducted. Findings revealed that, symptom severity was related to subjective QOL scores. In the current study WHOQOL-BREF version was used and it's Cronbach's alpha reliability was .88.

2.2.4 Revised and Translated Mulilis-Lippa Earthquake Preparedness Scale (MLEPS)

The original form of MLEPS is a multi-act scale for measuring earthquake preparedness of individuals and the perceived difficulty of becoming prepared for earthquakes. The MLEPS has been translated and adapted into Turkish by Şakiroğlu (2005). In the study of Şakiroğlu, preparedness was examined in 5 categories, namely supply, utilities, stabilization, planning, and knowledge.

In the original scale subjects were asked to rate the difficulty of preparing for each item to measure the variable of self-efficacy on a 5-point scale, from 1: not at all difficult to 5:extremely difficult. In the Turkish version, subjects were also asked to rate the perceived effectiveness of preparing for each item in order to measure the variable of outcome efficacy. Participants rated both difficulty and effectiveness of preparing on 3 point scales (1=not at all, 2=a little, 3=very much) instead of a 5-

point scale (Şakiroğlu, 2005). The internal reliabilities of the preparedness part was (α=.78), difficulty (self efficacy) part (α=.86) and effectiveness (outcome efficacy) part was (α=. 80) were satisfactory.

2.2.5 Religiousness Scale (RS)

RS of Yaparel (1996) was used to assess religious resources of the participants. It consists of 31 items rated on 5-point scale. According to Yaparel, RS has 4 subscales, which are religious knowledge, religious feelings, religious behaviors and religious beliefs. For not overburdening the participants with too many questions, in this study, similar to the study of Dirik and Karancı (2006), only the 10-item religious behavior subscale was used. Cronbach's alpha reliability of the 10-item RS was .91.

2.2.6 Multidimensional Scale of Perceived Social Support (MSPSS)

MSPSS was developed by Zimet, Dahlen, Zimet, and Forley (1988). It consists of 12 items rated on 7-point scales, to assess perceived adequacy of social support from friends, family and significant others. Eker and Arkar (1995) has adapted MSPSS into Turkish with high Cronbach alphas from different studies ranging between .85 to .91. In the present study, whole scale point was used and it's Cronbach alpha reliabilities was .89.

2.2.7 Psychological Well-being Scale

There are 6 distinct components of psychological well-being model, namely; autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. In order to represent and assess these components, Psychological Well-being Scale was developed by Ryff (1989). In this original form of the scale, each component included 20 items but in order to accommodate time, the scale was shortened (Ryff & Keyes, 1995). The shortened scale consists of 18 items in total, where each component is represented with 3 items selected from the original 20 items. All scales include positive and negatively keyed items (Ryff & Keyes, 1995). In the present study, the 18-item shortened Psychological Well-being Scale was used.

The correlation coefficients between the shortened subscales with the main scales ranged from .70 to .89. The factor analysis confirmed the 6-factor model with a single-second order factor called psychological well-being. LISREL analyses did also support the 6-factor model as superior to other possible factor structures. Items of each component strongly and positively correlated with only those of its scale (Ryff & Keyes, 1995).

Imamoglu (2004) translated the scale into Turkish. In her study Cronbach's alpha coefficient of total scale was reported as .79, and in the present study the Cronbach's alpha coefficient of the scale was found as .73, which is consistent with the study of Imamoglu. Only the total scale score was used in the present study; the factors of the scale were not used as separate measures. Higher scores for the scale represent higher degree of psychological well-being.

2.2.8 Traumatic Stress Symptom Checklist (TSSC)

The Screening Instrument for Traumatic Stress in Earthquake Survivors (SITSES) (Basoglu, et. al. 2001) involves 3 parts. Part 1 includes information on demographic, personal history and trauma characteristics. These are the risk factors that we found relevant to earthquake trauma. Part II, Traumatic Stress Symptom Checklist (TSSC), includes 17 PTSD symptoms and 6 depression symptoms assessed in relation to 'last week'. Part 3 assesses the severity of the subjective distress, social, occupational and family functioning, and need for psychological help. In the current study only TSSC part was used. All measures of TSSC on an 4-point intensity scale (0=not at all bothered; 1=slightly; 2=fairly, 3=very much bothered). The TSSC was validated by Basoglu et. al. (2001). Cronbach's alpha reliability of the TSSC was .83.

In the current study a mean TSSC score was obtained simply by summing up the responses to the items of TSSC and dividing them by the numbers of items (*M*= 1.84, *SD*= .62, Min= 1, Max= 3.52, Range= 2.52, Median= 1.65). Cronbach alpha reliability of the scale was high (.89). TSSC was not attached to the appendices part due to no sharing permission.

2.3 Procedure

2.3.1 Kaynaşlı- The Study Site

Data was collected from Kaynaşlı, which is a district of Düzce. Kaynaşlı is between Bolu (36 km) and Düzce (15 km), and in the centre of İstanbul-Ankara Highway. Kaynaşlı is a township of Düzce with a total population of 21639, and 9439 of them live at the centre. It has 7 districts in the centre: Merkez, Çele, Eskiköy, Karaçalı, Kumluca, Sarıyer, and Şimşir.

During 1877-1878 Ottoman-Russian War, people from eastern Black Sea region, the Caucasus region, and some parts of Anatolia found Kaynaşlı village. The

name of Kaynaşlı comes from Turkish word “kaynamak”, which means getting together and socialize. In 1999 after Düzce Earthquake, Kaynaşlı became a district of Düzce by Turkish Government. In chronological order, Kaynaşlı were dominated by Byzantine, Selcuklu, and Ottoman Empires. Kaynaşlı was a caravanserai for accommodation on the Silk Road. The ruins of Byzantine’s church and Hanyeri Mosque are important historical artifacts of Kaynaşlı. The main source of livelihood of Kaynaşlı people are live stock, agriculture, and service areas on the way between İstanbul and Ankara (Kaynaşlı Prefect, 2011).

Kaynaşlı is one of the most severely destructed districts during the Düzce Earthquake. In Kaynaşlı 85-90% of the all buildings in Kaynaşlı were heavily damaged or collapsed. In Kaynaşlı the earthquake caused 316 deaths and 543 people were injured. In Düzce Earthquake 1537 buildings were collapsed, 429 buildings have medium damage, and 1058 buildings had light damage in Kaynaşlı, where all municipality buildings, Ziraat Bank Building, PTT, 5 mosques, Kaynaşlı Private School, Kaynaşlı High School, personnel houses of municipality, and health centre were collapsed (Government Crisis Center, 1999b).

1999 Duzce Earthquake severely destructed Duzce, especially Kaynaşlı. Duzce Earthquake damaged lots of buildings in different categories as seen in Table 4.

Table 4. Building Damages in the Townships of Düzce.

DÜZCE	Heavy Damage	Medium Damage	Light Damage
Centre of Düzce	9928	6876	6816
Akçakoca	272	303	629
Cumayeri	122	242	249
Çilimli	119	294	287
Gölyaka	123	89	299
Gümüşova	54	191	446
Kaynaşlı	1537	429	1058
Yığılca	358	641	438
Total	12513	9065	10222

The participants were selected on the basis of their age, gender, and the type of their houses. These quotas were used to select participants. Potential participants were identified as homeowners, living in Düzce-Kaynaşlı of Turkey. Quota sampling was used in the current study. They were contacted with home visits. First, after obtaining the contact numbers of the participants from the social security department of the municipality, some of the participants were contacted by the help of a mini telephone interview, mainly explaining the reason for calling. Secondly, some of the participants were contacted by references taken from other participants. After explaining the aim of the present study, potential participants were invited to participate in the study. Having taken the written informed consent, the questionnaire package was given to the participants. Confidentiality was assured and they were informed that they could withdraw from the study participation at any time. The researcher applied the scales one by one by reading the whole items. Scale administration to one participant took approximately 45 minutes to 1.5 hours. The scales were presented in a random order to each participant. When the participants wanted to answer the questionnaires by themselves, this was also accepted. Only one person from each household participated in the study. The whole data was collected between May to November, 2009. Demographic characteristics of our sample seems to reflect the general characteristics of Kaynaşlı, demographic characteristics of the participants, used in the present study and general characteristics of Kaynaşlı were presented in appendix 9.

2.4 Statistical Analyses

In the current study, the data obtained from 199 adult earthquake survivors from Kaynaşlı was analyzed. Before the analysis, all data was examined through Statistical Package for Social Sciences (SPSS) for the accuracy of data. To reduce

the extreme kurtosis and skewness, *z* scores for all variables were computed and no case was found to be with extremely low and high *z* scores. All the variables of the current study are given in the next section.

2.4.1 Focus 1: The Variables Used as Predictors of Earthquake Preparedness Behavior

In the current study, earthquake preparedness behavior was evaluated on the basis of the PrE Model of Mulilis and Duval (1997) and DPM of Paton, Smith and Johnston (2005). All the variables used in evaluating earthquake preparedness behavior are given in Table 5.

Table 5. The Variables Used as Predictors of Earthquake Preparedness Behavior

Pre-Earthquake Variables	Earthquake-Related Var.	Personal Resources	Positive Outcome (DV)
Age Gender Income Education Marital Status	Severity of Earthquake Experience Post-traumatic Stress Perceived Responsibility To Prepare Earthquakes	Self-Efficacy Outcome-Efficacy Problem-Focused Coping Seeking Social Support Coping Helplessness Coping Fatalistic Coping	Earthquake Preparedness Behavior

2.4.2 Focus 2: The Variables Used as Predictors of PTG

In the current study, PTG was evaluated on the basis of Life Crisis and Personal Growth Model of Schaefer and Moos (1992) and COR Theory of Hobfoll (1988). All the variables used to understand PTG are given in Table 6.

Table 6. The Variables Used as Predictors of PTG

Panel 1: Environmental System Factors	Panel 2: Personal System Factors	Panel 3: Life Crisis or Transition (Event-related Factors)	Panel 4: Earthquake Specific Coping and Appraisal	Panel 5: Coping Responses	Panel 6: Positive Outcome (DV)
Quality of Life Income Social Support	Age Gender Marital Status Education Religiosity Well-Being	Severity of Earthquake Experience Post-traumatic Stress	Earthquake Preparedness Behavior Self-efficacy Outcome-Efficacy	Problem-Focused Coping Seeking Social Support Coping Helpless-ness Coping Fatalistic Coping	PTG

To understand the relationship among these variables some regression analyses were done. The next chapter contains the results of these analyses and other descriptive results.

CHAPTER 3

RESULTS

The results are presented in two sections. In the first section, levels of preparedness, self efficacy and outcome-efficacy; reasons for preparedness and non-preparedness; and the predictors of earthquake preparedness behavior examined by regression analysis are presented. In the second section, the predictors of PTG examined by regression analysis are given. In the first section, the roles of demographic variables, event-related variables, cognitive appraisal factors, and coping strategies in predicting earthquake preparedness behavior were examined. In the second section, in order to understand PTG after disaster victimization environmental factors, system factors, event related factors, earthquake specific coping and cognitive appraisal factors, and finally coping responses factors were examined.

3.1 Earthquake Preparedness Behavior

According to the responses given to the MLEPS Turkish version, mainly three scores were calculated, namely earthquake preparedness, perceived difficulty of becoming prepared (i.e. self efficacy) and perceived effectiveness of becoming prepared (i.e. outcome efficacy). Earthquake preparedness items, the perception of difficulties for performing each item and the effectiveness rating for each item were grouped into 5 categories according to the type of preparation (Duval & Mulilis,

1997). These were having materials/supply (such as having a transistor radio), utilities (such as knowing how to operate electric power shut), stabilization (such as stabilization of tall furnitures), earthquake planning (such as identifying a family meeting place) and knowledge (such as attending a first aid course).

Cronbach alpha reliability coefficient for the internal consistency of the whole earthquake preparedness scale was found to be .78, the internal consistency of the whole self- efficacy scale was found to be .86, and the internal consistency of the whole outcome efficacy scale was found to be .80.

Pearson product-moment correlation coefficients were computed in order to examine the inter correlations among the three different aspects for the whole scale (preparedness, self-efficacy (perceived difficulty), and outcome-efficacy (perceived effectiveness)) as can be seen in Table 6. According to these results, earthquake preparedness behavior was negatively correlated with self-efficacy and positively correlated with outcome efficacy, and self-efficacy was negatively correlated with outcome-efficacy.

Table 6. Pearson product-moment correlation coefficients among earthquake preparedness behavior, self-efficacy and outcome-efficacy

	1	2	3
1. Preparedness		-.147*	.191*
2. Self-Efficacy			-.340**
3. Outcome-Efficacy			

* $p<.05$ ** $p<.01$

Pearson product-moment correlation coefficients were also computed in order to examine the inter correlations among three different parts of the five categories of MLEPS. According to these results self-efficacy and outcome efficacy

was negatively correlated in all categories. Self-efficacy for earthquakes was negatively correlated with earthquake preparedness behavior in supply, utilities and knowledge categories and outcome-efficacy for earthquakes was positively correlated with earthquake preparedness behavior in supply, planning and knowledge categories as consistent with “person relative to event model”.

Items of the five categories, their means, their Cronbach’s alpha reliability coefficient for internal consistencies, and inter correlations among three different parts of the whole scale for all categories to be as follows:

3.1.1 “Supply” Category of the Earthquake Preparedness Behavior

The Cronbach alpha reliability coefficient for the internal consistency of the supply scale preparedness items was found to be .81, for difficulty .84, and for effectiveness .86. The effectiveness was correlated with preparedness positively and with difficulty negatively. Means and standard deviations for supply items were given in Table 7 and Pearson Correlations among three aspects of the supply category in Table 8.

Table 7: Means and Standard Deviations for Supply Items

Supply Items	Preparedness α=.81; M=1.75	Difficulty α=.84; M=1.25	Effectiveness α=.86; M=2.76
a) An operating flashlight	2.08 (.98)*	1.15 (.41)	2.85 (.41)
b) An operating transistor radio	1.66 (.93)	1.24 (.46)	2.59 (.62)
c) Extra batteries for light and the transistor radio	1.69 (.95)	1.21 (.44)	2.72 (.57)
d) A complete first-aid kit	1.77 (.95)	1.27 (.49)	2.83 (.45)
e) At least 4 days supply of dehydrated or canned food	1.76 (.94)	1.31 (.52)	2.77 (.51)
f) Having fire extinguisher	1.43 (.82)	1.41 (.64)	2.75 (.57)
g) Emergency telephone list	1.84 (.98)	1.19 (.43)	2.79 (.51)

* Standard deviations are given in parenthesis

Table 8. Pearson Correlations among Three Supply Category Aspects of the Revised MLEPS

	1	2	3
1. Supply Preparedness		-.033	.229*
2. Supply Difficulty			-.268*
3. Supply Effectiveness			

* p<.01

3.1.2 "Utilities" Category of the Earthquake Preparedness Behavior

The Cronbach alpha reliability coefficient for the internal consistency of the utilities scale preparedness items was found to be .61, for difficulty .83 and for effectiveness .78. The difficulty was correlated with preparedness and effectiveness

negatively. Means and standard deviations for utilities items were given in Table 9 and Pearson Correlations among three aspects of the utilities category in Table 10.

Table 9: Means and Standard Deviations for Utilities Items

Utilities Items	Preparedness α=.61; M=2.59	Difficulty α =.83; M=1.25	Effectiveness α=.78; M=2.76
a) Location of the water shut	2.71 (.69)*	1.27 (.50)	2.80 (.46)
b) Location of the gas shut	2.19 (.95)	1.28 (.48)	2.82 (.44)
c) Location of the electric power shut	2.86 (.50)	1.18 (.43)	2.88 (.38)

* Standard deviations are given in parenthesis

Table 10. Pearson Correlations among Three Utilization Aspects of the Revised MLEPS

	1	2	3
1. Utilities Preparedness		-.344*	.115
2. Utilities Difficulty			-.119*
3. Utilities Effectiveness			

* p<.01

3.1.3 "Stabilization" Category of Earthquake Preparedness Behavior

The Cronbach alpha reliability coefficient for the internal consistency of the stabilization scale preparedness items was found to be .72, for difficulty .84 and for effectiveness .79. The difficulty was correlated with effectiveness negatively. Means and standard deviations for stabilization items were given in Table 11 and Pearson Correlations among three aspects of the stabilization category in Table 12.

Table 11: Means and Standard Deviations for Stabilization Items

Stabilization Items	Preparedness α=.72; M=1.97	Difficulty α=.84; M=1.39	Effectiveness α=.79; M=2.81
a. Water heaters	2.53 (.83)*	1.31 (.49)	2.85 (.37)
b. Cupboards	1.81 (.97)	1.48 (.61)	2.81 (.41)
c. Tall furniture	1.70 (.93)	1.47 (.60)	2.81 (.43)
d. Heavy objects placed high on walls	1.86 (.96)	1.31 (.51)	2.77 (.47)

* Standard deviations are given in parenthesis

Table 12. Pearson Correlations among Three Stabilization Aspects of the Revised MLEPS

	1	2	3
1. Stabilization Preparedness		-.053	.080
2. Stabilization Difficulty			-.290*
3. Stabilization Effectiveness			

* p<.01

3.1.4 "Planning" Category of the Earthquake Preparedness Behavior

Cronbach alpha reliability coefficient for the internal consistency of the supply scale preparedness items was found to be .65, for difficulty .73 and for effectiveness .81. The effectiveness was correlated with preparedness positively and with difficulty negatively. Means and standard deviations for planning items were given in Table 13 and Pearson Correlations among three aspects of the planning category in Table 14.

Table 13: Means and Standard Deviations for Planning Items

Planning Items	Preparedness α=.65; M=1.57	Difficulty α=.73; M=1.57	Effectiveness α=.81; M=2.71
a) Does your household have a meeting place to come together after a possible earthquake.	1.42 (.79)*	1.25 (.50)	2.69 (.54)
b)During a possible earthquake, does your household have a plan for a safe place.	1.71 (.93)	1.33 (.58)	2.74 (.51)

* Standard deviations are given in parenthesis

Table 14. Pearson Correlations among Three Earthquake Planning Aspects of the Revised MLEPS

	1	2	3
1. Planning Preparedness		-.110	.240*
2. Planning Difficulty			-.186*
3. Planning Effectiveness			

* p<.01

3.1.5 "Knowledge" Category of the Earthquake Preparedness Behavior

Cronbach alpha reliability coefficient for the internal consistency of the supply scale preparedness items was found to be .65, for difficulty .85 and for effectiveness .62. The effectiveness was correlated with preparedness positively and with difficulty negatively. The preparedness was correlated difficulty negatively. Means and standard

deviations for knowledge item were given in Table 15 and Pearson Correlations among three aspects of the knowledge category in Table 16.

Table 15. Means and Standard Deviations for Knowledge Items

Knowledge Items	Preparedness α=.65; M=2.17	Difficulty α=.85; M=1.37	Effectiveness α=.62; M=2.82
A. Do you know the nearest health center to your home	2.94 (.30)*	1.18 (.43)	2.89 (.38)
B. Do you read material on earthquake preparedness	2.94 (.30)*	1.18 (.43)	2.89 (.38)
C. Do you attentively listen to or watch radio or television messages about earthquake preparedness	2.47 (.85)	1.20 (.47)	2.75 (.50)
D. Do you attend meetings for preparing for disasters	2.77 (.62)	1.29 (.94)	2.80 (.48)
E. Have you attended a first aid course	1.70 (.90)	1.42 (.65)	2.90 (.98)
F. Have you paid for compulsory earthquake insurance	1.65 (.92)	1.54 (.98)	2.84 (.46)
G. I have enough information about the safety of my houses	1.59 (.90)	1.57 (.98)	2.75 (.55)

* Standard deviations are given in parenthesis

Table 16. Pearson Correlations among Three Knowledge Aspects of the Revised MLEPS

	1	2	3
1. Knowledge Preparedness		-.242**	.214**
2. Knowledge Difficulty			-.173*
3. Knowledge Effectiveness			

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

3.1.6 Reasons for Earthquake Preparedness and Non-Preparedness

As presented in Table 17, participants who did not prepare for a possible future earthquake chose the following reasons for not preparing adequately. The most widely chose reason for non-preparedness was “not possible to avoid the power and desire of God”, and the least widely chose reasons were “being a tenant in the building”, and “don’t have enough time. This finding shows that the fatalistic thinking of the study participants may hinder earthquake preparedness behavior.

Table 17. Reasons of Participants for Not to Prepare

Reasons for not Preparing Adequately	Percentages
1. Not possible to avoid the power and desire of God	46.7
2. Trust in their building	28.1
3. Neglectfulness	24.6
4. Don’t have enough money	19.1
5. Don’t know what to do	14.6
6. No need, an earthquake will not happen	7.5
7. Don’t plan to stay in this house for a long time	6.5
8. Being a tenant in the building	6.0
9. Don’t have enough time	6.0

On the other hand, participants who stated that they have prepared for a possible future earthquake chose the following reasons, given in Table 18, for their preparedness.

Table 18. Reasons of Participants for Being Prepared

Reasons for Preparedness	Percentages
To provide safety for my family	70.4
To feel myself safe	56.3
Scientist's explanations	21.6
Don't trust the building	13.6
Because, my relatives prepared	6.5

The most widely chose reason for preparedness was "to provide safety for my family", and the least widely chose reasons was "Because, my relatives prepared".

3.1.7 Predictors of Level of Earthquake Preparedness Behavior

One of the possible positive outcomes of a disaster is preparation for a future disaster. In this section, the predictors of earthquake preparedness behavior, examined by hierarchical regression analysis will be presented. The Pearson Product-Moment Correlations among the predictor variables and criterion variables are presented in Table 19. Hierarchical regression analysis was conducted to examine how well the factors of this study predicted earthquake preparedness behavior. In the analysis, the first block consisted of demographic variables; such as, age, gender, marital status, education, and income. Predictors in the second block were event-related variables, namely perceived responsibility to prepare for earthquakes, severity of past earthquake experience and posttraumatic stress related

to the past quake. The third block consisted of cognitive appraisal factors, namely outcome-efficacy and poor self efficacy; and coping strategies, namely, problem-focused coping, seeking social support coping, helplessness coping and fatalistic coping strategies. Blocks were added to analysis with the enter method. The criterion variable (DV) in this analysis was the level of earthquake preparedness behavior. Table 20 presents the variables that were used in the prediction of earthquake preparedness behavior, their means, standard deviations, ranges, and in which step they were introduced in the regression analyses. Table 21 presents the standardized regression coefficients *(β)*, R^2, *t* values, *df* and significant *F* change after each block of the regression analysis. $\underline{R}$ was significantly different from zero at the end of second and third block.

Table 20. The Pearson Product-Moment Correlations among the variables of the current study

Table	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Income (1)	-.046	-.157*	.111	-.241**	-.075	.042	-.109	.025	-.057	-.035	-.124	-.255**	.226**	.021	-.078	-.153	-.136*	.093	1
Quality of Life (2)	.218**	.203**	-.257**	-.024	.296**	-.146*	.081	.256**	-.369**	.022	.291**	-.087	.094	-.001	-.118	-.008	.259**	1	
Well-Being (3)	.383**	.339**	-.124	.225**	.270**	-.142*	.202**	.126	-.096	.079	.280**	.109	-.017	.069	.134	.097	1		
Age (4)	.098	.249**	.035	.332**	.105	.097	-.043	-.006	.192**	.241**	.157*	.262**	-.366**	-.323**	-.051	1			
Gender (5)	.076	.110	.061	.041	-.127	-.009	.041	-.038	.016	.134	-.080	.080	-.092	.067	1				
Marital Status (6)	-.239**	-.103	-.030	-.150*	-.247**	.049	.083	.047	-.170*	-.065	-.007	-.186*	.147*	1					
Education (7)	-.100	-.135	.039	-.354**	.032	.017	-.078	.136	-.221**	-.159*	-.017	-.177*	1						
Religiousness (8)	.169*	.232**	.145*	.383**	.206**	-.009	-.027	.015	.170*	.011	.216**	1							
Social Support (9)	.311**	.095	-.005	.176*	.336**	-.155*	.148*	.124	.073	-.126	1								
Severity of Earthquake Exprience (10)	.158*	.226**	.077	.119	.082	-.095	-.003	.039	.116	1									
PTS (11)	-.034	-.105	.338**	.308**	-.011	-.039	.001	-.192**	1										
Earthquake Preparedness Behavior (12)	.236**	.156*	.056	.048	.307**	-.147*	.191**	1											
Outcome-Efficacy (13)	.195*	.137	-.031	.155*	.122	-.340**	1												
Self-Efficacy (14)	-.200**	-.108	.097	-.144*	.234**	1													
Problem-Focused Coping (15)	.580**	.355**	-.009	.356**	1														
Seeking Social Support Coping (16)	.273**	.332**	.172*	1															
Helplessness Coping (17)	.048	-.030	1																
Fatalistic Coping (18)	.423**	1																	
PTG (19)	1																		

Table 20. Means and Standard Deviations of Criterion and Predictor Variables Entered in the Three Steps of The Regression Analysis of Earthquake Preparedness Behavior

	Mean	Std. Deviation	Range
Level of Preparedness Behavior (DV)	2.01	.36	
Step 1	34.8	12.6	18-73
Age			
Gender (1: Male; 2: Female)	1.54	.49	
Marital Status (1: Married; 2: Single)	1.27	.48	
Education (years)	12.92	3.58	3-18
Income (1: <500; 2:500-1000; 3:1000-2000; 4:2000<)	2.20	.70	
Step 2	1.27	.44	
PTS			
Poor Perceived Responsibility (1:Self; 2: Other)	1.27	.44	
Severity of Earthquake Experience (1:No, 2: Yes)	1.60	.49	
Step 3	2.49	.29	
Problem-Focused Coping (1:never, 2:sometimes, 3:always)			
Seeking Social Support Coping (1:never, 2:sometimes, 3:always)	2.15	.48	
Helplessness Coping (1:never, 2:sometimes, 3:always)	1.93	.37	
Fatalistic Coping (1:never, 2:sometimes, 3:always)	2.15	.37	
Outcome-Efficacy (1:None, 2:Little, 3: Very)	2.79	.28	
Poor Self-Efficacy (1:None, 2:Little, 3: Very)	1.31	.29	

The inclusion of all demographic variables in the first step resulted in a non significant increment in R^2 and explained 2.8% of the variance, $R^2 = .028$, $F(5, 185) = 1.071$, $p>.05$. Then, in the second step, the contribution of event related variables resulted in a significant increment in R^2 and explained 5.4% of the variance, $R^2 = .082$, $F(3, 182) = 3.571$, $p<.05$. Posttraumatic stress and perceived responsibility were significant predictors of earthquake preparedness behavior in the second step. Finally in the last step, the contribution of cognitive appraisal and coping strategies resulted in a significant increment in R^2 and explained 13.3% of the variance, $R^2 = .215$, $F(6, 176) = 4.949$, $p<.001$, and with all these factors in the model, 21.5% of the variance in the level of earthquake preparedness behavior was explained. When each single variable was considered in the last step, perceived responsibility to prepare for earthquakes ($t = -2.155$, $p<.05$) less posttraumatic stress ($t = -.206$, $p<.01$), outcome efficacy ($t= 164$, $p<.05$), and problem-focused coping ($t = .288$, $p<.001$) were found to be positively and significantly related to earthquake preparedness behavior.

Table 21. Predictors of Levels of Earthquake Preparedness Behavior

Variables	Block	R^2	*df*	*F* Change	*β*	*t*
	1	.028	5, 185	1.071		
	2	.082	3, 182	3.571*		
	3	.215	6, 176	4.949***		
BLOCK 1						
Age					.118	1.414
Gender					.016	.235
Marital Status					.101	1.352
Education (years)					.106	1.340
Income					.045	.626
BLOCK 2						
Posttraumatic Stress					-.160*	-2.142
Responsibility					-.174*	-2.398
Severity of Earthquake Experience					.014	.198
BLOCK 3						
Posttraumatic Stress					-.206**	-2.681
Poor Perceived Responsibility					-.153*	-2.155
Problem-Focused Coping					.288***	3.542
Seeking Social Support Coping					-.028	-.357
Helplessness Coping					.140	1.909
Fatalistic Coping					.014	.157
Outcome-Efficacy					.164*	2.251
Poor Self-Efficacy					-.014	-.179

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

3.2 Posttraumatic Growth

Post-traumatic growth (PTG) was measured by Posttraumatic Growth Inventory (PTGI), which was developed in order to assess perceived positive changes in people after traumatic events. Considering that 5 is the maximum possible score that can be obtained from the PTGI, a mean score of 3.22 and a median score of 3.33 showed that the sample experienced moderate levels of PTG.

3.2.1 Predictors of Level of Posttraumatic Growth

Hierarchical regression analysis was conducted to examine how well environmental factors, system factors, event related factors, earthquake specific coping and cognitive appraisal factors, and finally coping responses factors of Life Crisis and Personal Growth Model of Schaefer and Moos (1992) predicted PTG. In the analysis, the first block consisted of environmental factors, which were quality of life, social support, and income; and personal system factors namely, age, gender, marital status, education, religiosity, and well-being. Predictors in the second block were event related factors, namely severity of past earthquake experience and posttraumatic stress. The third block consisted of earthquake specific coping, namely earthquake preparedness behavior and earthquake specific cognitive appraisal factors, namely poor self-efficacy and outcome-efficacy. Predictors in the fourth block were general ways of coping responses factors, which were problem-focused coping, seeking social support coping, helplessness coping and fatalistic coping. Blocks were added to analysis with enter method. The criterion variable (DV) in this analysis was the level of PTG. Table 22 presents the variables that were used in the prediction of PTG, their means, standard deviations, ranges, and in which step they were introduced in the regression analyses. Table 23 presents the standardized regression coefficients *(β)*, R^2, *t* values, *df* and significant *F* change after each block

of the regression analyses. Variables resulted in a significant increment in explained variance (R^2) at the end of each block.

Table 22. Means and Standard Deviations of Criterion and Predictor Variables Entered in the Three Steps of the Regression Analysis of PTG

	Mean	Std. Deviation	Range
PTG (DV)	3.22	.99	
Block 1			
Income(1:<500; 2:500-1000; 3:1000-2000; 4:2000<)	2.20	.70	
Quality of Life	3.51	.49	
Well-Being	3.45	.38	
Age	34.8	12.6	18-73
Gender(1: Male; 2: Female)	1.54	.49	
Marital Status (1: Married,2: Single)	1.27	.48	
Education	12.92	3.58	3-18
Religiousness	4.37	.70	
Social Support	5.27	1.35	
Block 2			
Severity of Earthquake Experience (1:No, 2: Yes)	1.60	.49	
PTS	1.27	.44	
Block 3			
Earthquake Preparedness Behavior	2.01	.36	
Outcome-Efficacy (1:None, 2:Little, 3: Very)	2.79	.28	
Poor Self-Efficacy (1:None, 2:Little, 3: Very)	1.31	.29	
Block 4			
Problem-Focused Coping (1:never, 2:sometimes, 3:always)	2.49	.29	
Seeking Social Support Coping (1:never, 2:sometimes, 3:always)	2.15	.48	
Helplessness Coping (1:never, 2:sometimes, 3:always)	1.93	.37	
Fatalistic Coping (1:never, 2:sometimes, 3:always)	2.15	.37	

The inclusion of all environmental and system factors of Life Crisis and Personal Growth Model of Schaefer and Moos (1992) in the first step resulted in a significant increment in R^2, and explained 28.8% of the variance, $R^2 = .288$, $F(9, 181) = 8.129$, $p < .001$. Social support of environmental system factors; marital status and well-being of personal system factors were significant predictors in the first step. Then, in the second step, event related variables resulted in a significant increment in R^2 and explained 2.7% of the variance, $R^2 = .315$, $F(2, 179) = 3.523$, $p < .05$. In addition to social support, marital status and well-being; severity of earthquake experience of event related variables was significant predictor of PTG in the second step. In the third step, earthquake preparedness behavior and earthquake specific cognitive appraisal factors resulted in a significant increment in R^2 and explained 3.5% of the variance $R^2 = .350$, $F(3, 176) = 3.210$, $p < .05$. In addition to social support, marital status, well-being and severity of earthquake experience; earthquake preparedness behavior was a significant predictor of PTG in the third block. Finally in the last step, coping responses variables resulted in a significant increment in R^2 and explained 15.9% of the variance $R^2 = .509$, $F(4, 172) = 13.945$, $p < .001$. In addition to social support, marital status and well-being; problem focused coping and seeking social support coping were significant variables in the last step. While earthquake preparedness behavior and severity of earthquake experience were significant in the third step, after the inclusion of coping responses in fourth step, they were no longer significant. With all these factors in the model, 50.9% of the variance in the level of PTG was explained. When each single variable was considered in the third step, being unmarried ($t = -4.406$, $p < .001$), social support ($t = .4.291$, $p < .001$), well-being ($t = 2.917$, $p < .01$), severity of earthquake experience ($t = 2.238$, $p < .05$) and earthquake preparedness

behavior (t = 2.343, p <.05) were found to be positively and significantly related to posttraumatic growth. In the last step when coping responses were added to the analysis, being unmarried (t = -3.247, p <.001), social support (t = 3.180, p <.01), well-being (t = 2.238, p <.05), problem-focused coping (t = 5.341, p <.001) and seeking social support coping (t = 3.173, p <.01) were found to be positively and significantly related, but earthquake preparedness behavior and severity of earthquake experience was not significant after the addition of coping responses.

Table 23. Predictors of Levels of Posttraumatic Growth

Variables	**Block**	R^2	*df*	*F* **Change**	β	*t*
	1	.288	9, 181	8.129***		
	2	.315	2, 179	3.523*		
	3	.350	3, 176	3.210*		
	4	.509	4, 172	13.945***		
BLOCK 1						
Income					.052	.794
Quality of Life					.035	.487
Well-Being					.209**	2.917
Age					-.119	-1.591
Gender					.049	.776
Marital Status					-.295***	-4.406
Education					-.110	-1.575
Religiousness					.064	.953
Social Support					.288***	4.291
BLOCK 2						
PTS					-.076	-1.108
Severity of Earthquake Experience					.148*	2.238

BLOCK 3		
Earthquake Preparedness Behavior	.153*	2.343
Outcome-Efficacy	.086	1.278
Poor Self-Efficacy	-.027	-.400
BLOCK 4	**β**	**t**
Problem-Focused Coping	.379***	5.341
Seeking Social Support	.204**	3.173
Coping Helplessness	.076	1.264
Coping Fatalistic	-.013	-.181
Coping Significant Predictors On Final Block		
Well-Being	.145*	2.238
Marital Status	-.199***	-3.247
Social Support	.196**	3.180
Problem-Focused Coping	.379***	5.341
Seeking Social Support	.204**	3.173
Coping		

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

CHAPTER 4

DISCUSSION

The aim of this study was to examine variables related to earthquake preparedness behavior and posttraumatic growth (PTG), which are two potential positive outcomes following earthquake victimization. In order to achieve this aim, the predictive power of some variables that may be related to PTG and earthquake preparedness behavior were examined.

In the present study, propositions of some models that are emphasized in the introduction section, namely the Person Relative to Event Model of Mulilis and Duval (1999) to understand earthquake preparedness behavior, and The Life Crises and Personal Growth Model of Schafer and Moos (1992) to understand PTG were used. The hypotheses of the present study were proposed by considering these models and the findings of related literature. According to these hypotheses the roles of demographic variables, namely age, gender, marital status, education, and income; event-related (i.e. earthquakes) variables, namely perceived responsibility to prepare for earthquakes, severity of past earthquake experience and posttraumatic stress; cognitive appraisal factors, namely outcome-efficacy and self efficacy; and coping strategies, namely, problem-focused coping, seeking social support coping, helplessness coping and fatalistic coping responses in predicting earthquake

preparedness behavior were examined. On the other hand, environmental system factors such as the quality of life, social support, and income; personal system factors, namely, age, gender, marital status, education, religiosity, and well-being; event related factors, such as severity of past earthquake experience and posttraumatic stress; earthquake specific coping appraisal factors, namely, earthquake preparedness behavior, self-efficacy and outcome-efficacy; and finally coping responses factors, which were problem-focused coping, seeking social support coping, helplessness coping and fatalistic coping were examined in order to understand PTG in a sample from Kaynaşlı in Turkey, which was severely affected by the 1999 Düzce Earthquake. Besides the level of the different categories of earthquake preparedness behavior, self-efficacy and outcome efficacy and the reasons of preparedness and nonpreparedness for earthquakes in a sample which suffered from a serious earthquake were also evaluated.

In this chapter, the results of all the analysis will be discussed within the existing literature and theoretical models. Subsequently, the importance, the strengths, the limitations of the study, possible implications of the findings and directions for future research will be discussed.

4.1 Earthquake Preparedness Behavior

In the present study, in order to understand earthquake preparedness behavior, the level of the different categories of earthquake preparedness behavior, self-efficacy and outcome efficacy; the reasons of preparedness and nonpreparedness for earthquakes and the variables related to earthquake preparedness behavior were examined in a sample which suffered from a serious earthquake.

4.1.1 The Level of the Different Categories of Earthquake Preparedness Behavior

In the current study to assess the degree of earthquake preparedness behavior and to obtain the ratings of the perceived difficulty (self-efficacy) and perceived effectiveness (outcome-efficacy) of obtaining or performing each item, Mulilis-Lippa Earthquake Preparedness Scale (MLEPS) was used. Earthquake preparedness items were grouped into 5 categories according to the type of preparation (Duval, & Mulilis, 1997). These categories were knowledge, stabilization, supply, utilities and planning in sequence from higher rating to lower rating. The reliability coefficients of all categories reached acceptable levels.

While Şakiroğlu (2005) adapted MLEPS into Turkish, some changes were made to the original MLEPS scale in order to adapt it to Turkish culture. Five items were added (i.e. during a possible earthquake, did your household decide on a safe place to hide) based on experts' replies to a questionnaire administered in the "Disaster Management of Turkey: Sixth Roundtable Meeting" in 2003 and four items (i.e. Do you have the knowledge of the location of an emergency broadcasting station on your radio dial?) were deleted, because they were not suitable for the Turkish culture.

Considering five subcategories of preparedness highest preparation was for utilities and the lowest preparation was for supply. The high reported engagement for the utilities subcategory was questionable. High scores on this category may not purely reflect on behaviors only for earthquake preparedness, since knowing how to operate utilities may serve another purpose, such as water pipe repair. Similar with earthquake preparedness behavior score, with respect to outcome efficacy, utilities scores were also significantly higher than all other subcategories and with respect to

self-efficacy utilities scores were lower than other subcategories. The most widely known preparedness item of utilities subcategory was the location of the electric power shut and the least reported one is the location of the gas shut.

Knowledge is another important earthquake preparedness category. In this category the most widely endorsed item was “Do you read material on earthquake preparedness”, on the other hand the three items of “Do you attend meetings for learning rescue behaviors after earthquake- for preparing for disasters- for extinguishing fires” were the least endorsed ones. Therefore earthquake preparedness training may contain this kind of information to increase knowledge.

Preparedness items in the stabilization category, such as “stabilization of tall furniture to the wall”, need slight ability, knowledge and some devices. So, earthquake preparedness training mayinvolve visual applications given by trainers instead of verbal instructions.

The least reported earthquake preparedness behavior categories were supply and planning. The most widely known preparedness item of supply subcategory was “an operating flashlight” and the least one is “At least 4 days supply of dehydrated or canned food”. Having 4 days supply of dehydrated or canned food may be indicative of another purpose, daily use instead of earthquake preparedness. There is already daily use of food in every home regardless of a possible earthquake. Besides, storing food may not be appropriate for Turkish culture. In Turkish culture, putting food in an earthquake bag may seem useless, since there is already food for daily use.

With respect to planning subcategory, the items “does your household have a meeting place to come together after a possible earthquake” and “during a possible

earthquake, does your household have a plan for a safe place" were determined by only a few people.

According to Person Relative to Event (PrE) Model (Mulilis & Duval, 1999), it was predicted that, if people think that some preparation could be done to prevent loss and damage (outcome-efficacy) and believing that they themselves are capable of doing them (self-efficacy), they will engage in preventive behavior (earthquake preparedness). The results of the current study on earthquake preparedness behavior supported these hypotheses of PrE Model in spite of some exceptions. According to the results, self-efficacy and outcome efficacy was negatively correlated in all categories. Perceived difficulty of becoming prepared for earthquakes was negatively correlated with earthquake preparedness behavior in supply, utilities and knowledge categories and perceived effectiveness of becoming prepared for earthquakes was positively correlated with earthquake preparedness behavior in supply, planning and knowledge categories as consistent with PrE Model.

In order to increase earthquake preparedness behavior, the level of self-efficacy and outcome-efficacy might be increased. In order to increase the level of self-efficacy to prepare for future earthquakes, earthquake preparedness training might be organized by related institutions and they mayinvolve visual applications given by trainers instead of verbal instructions. Besides, it might be expressed that, there is no need to spend a lot of money for taking preparation items. In order to increase the level of outcome-efficacy to prepare for future earthquakes, the devastating effects of earthquakes maynot be overemphasized. If the devastating effects of earthquakes are overemphasized, it may lead to a sense of helplessness and decrease in outcome-efficacy. Thus, earthquakes might be presented as natural events instead of natural disasters.

4.1.2 Factors Related to Earthquake Preparedness Behavior

The demographic variables, namely age, gender, marital status, education, and income; event-related variables, namely perceived responsibility to prepare for earthquakes, severity of past earthquake experience and posttraumatic stress, cognitive appraisal factors, namely outcome efficacy (perceived effectiveness of preparedness for reducing negative outcomes in an earthquake), self efficacy (perceived difficulty of carrying out preparedness activities), perceived responsibility and coping strategies, namely, problem-focused coping, seeking social support coping, helplessness coping and fatalistic coping strategies in predicting earthquake preparedness behavior were used to examine the factors related to the level of earthquake preparedness behavior by regression analysis. When each single variable was considered in the final analysis, perceived responsibility, posttraumatic stress, outcome efficacy, and problem-focused coping were found to be significant predictors of earthquake preparedness behavior. Among these variables perceived responsibility, outcome-efficacy and problem focused coping were positively related to earthquake preparedness behavior; while posttraumatic stress had a negative association.

The results of the current study, especially the significant relationship between outcome-efficacy and earthquake preparedness behavior, supported some of the propositions of the Person Relative to Event Model (Mulilis & Lippa, 1999). According to The Person Relative to Event Model, when a person perceives an existing threat to well-being, he or she will engage in a coping strategy that is intended to decrease the impact of harmful outcomes of this threat. Determination of what kind of coping strategy will be chosen depends on some factors. People with

high levels of social resources are likely to use problem-focused coping strategy, which is an adaptive coping. Therefore, to motivate individuals to perform an adaptive coping, like preparing for earthquakes, perception of the level of threat and resources might be relative. The significant relationship between outcome-efficacy that is evaluating preparedness as effective, with the level of earthquake preparedness is good evidence to support this model.

In order to increase the level of earthquake preparedness, the finding of the current study that outcome efficacy or perceived effectiveness of being prepared is a significant for earthquake preparedness behavior, was important. Survivors engage in preventive behavior, only if people believe that these preparation activities could prevent them from the damages of a possible future earthquake. In other words, when they believe that certain action will be more effective than others, people will take these actions. Thus, in earthquake preparedness training programs, each preparation activity might be presented as effective enough to take.

According to Crozier, Mc Clure, Vercoe, and Wilson (2006), the perception on outcome-efficacy is an important concept for preparedness behavior. External locus of control may make individuals think that none of the things that they do will minimize the damaging consequences of earthquakes and hazards. This bias can be reduced by getting individuals focus on specific instances of harm that can be prevented. Furthermore, if people think that, the damage is only the result of the hazard, these kinds of attributions must be corrected by emphasizing the role of humans in the preventing of damage (e.g. the damage is not general; specific buildings built incorrectly lead to the damage). By this way, strategies about preparedness behavior will be perceived as more effective.

According to the results of the current study, perceived responsibility to prepare for earthquakes was another significant variable for earthquake preparedness behavior. The perception of personal responsibility to prepare for disasters could be thought of as a personal resource. Lack of personal responsibility might motivate the person to wait for the government to do something or denial of the risk of a future earthquake. Earthquake is an uncontrollable event and when faced with a perceived uncontrollable event, some individuals will cope by denying that the event will occur, when their resources are not sufficient (Lazarus & Folkman, 1984). In addition, because of the uncontrollability of an earthquake, a person can believe that there would be no necessity in worrying about a possible future earthquake and no need to spend energy on preparedness. Lack of personal responsibility may also entail helplessness and so people infer that because earthquakes are uncontrollable, their effects are also uncontrollable (McClure, 1991). Thus, in order to increase earthquake preparedness behavior, education programs mayinvolve the knowledge about community awareness and the importance of taking responsibility to participate to disaster management and giving coping skills and resources to internalize responsibility for preparation. Methods to increase community participation and ownership may prove effectively in facilitating responsibility.

In the present study, problem-focused coping was significantly and positively related with earthquake preparedness behavior. This coping strategy is usually seen as more effective than emotion-focused coping, because it focuses on thoughts and actions for generating solutions to the causes of distress (Folkman & Moskowitz, 2000). In the current study, scores on problem solving coping were higher than fatalistic coping, seeking social support coping, and helplessness coping. Therefore, it can be concluded that the most frequently used coping style for the sample of the

current study was problem solving coping. Problem solving coping was followed by fatalistic, seeking social support, and helplessness coping responses, respectively. In order to increase earthquake preparedness behavior, participants' tendency to use problem focused coping might be increased more and the tendency to use fatalistic coping might be decreased.

In order to increase problem focused coping to cope with the distress related to possible future earthquake, earthquake preparedness training mayinvolve visual behavior preparation actions given by trainers instead of verbal instructions. McClure (2006) had some proposals in his articles on how to encourage people for earthquake preparedness behavior. He proposed that behavioral interventions on earthquake preparedness must focus on specific problem focused coping actions rather than general classes of actions. Actions might be emphasized instead of intention. Increasing problem focused coping will be more useful to get people into action instead of emotion focused coping. Besides, according to McClure (2006) developing the recognition that individuals have resources to be prepared and preparation can reduce the risk will be beneficial to get people into problem-focused coping and so earthquake preparedness behaviors.

As an emotion-focused coping strategy, fatalistic thinking can lead to a reduction in earthquake preparedness, because fatalistic person is likely to believe that he/she is unable to do something to decrease the hazards of a possible future earthquake (McCLure, Walkey, Allen, 1999). In other words, because of the uncontrollability of an earthquake, a person can believe that there would be no necessity in worrying about a possible future earthquake and no need to spend energy on preparedness. In this respect fatalism is one of the factors that may contribute to people's failure to get prepared for earthquakes (Lindell, & Perry,

1992; McCLure, Walkey, Allen, & 1999). As another emotion-focused coping strategy, helplessness can also lead to a reduction in earthquake preparation. The argument that hazards of an earthquake are uncontrollable resembles helplessness and so people infer that because earthquakes are uncontrollable, their effects are also uncontrollable (McClure, 1991).

In the present study, posttraumatic stress was found to be another significant factor in prediction of earthquake preparedness behavior. According to the results of the current study, increment in posttraumatic stress resulted in a decrement in earthquake preparedness behavior following earthquake victimization. Posttraumatic stress may influence people to gather information about earthquakes and the general message given to a community after an earthquake is to report that people were injured, economically impact and psychologically distressed. Thus, gathering information about earthquakes may increase the likelihood that people would believe lack of responsibility and ability to prepare for earthquakes.

Increase in distress may result in an increase in emotion focused coping (Unger, Kipke, Simon, Johnson, Montgomery & Iverson, 1998). The study of Unger et al. (1998) showed that choice of coping strategies was dependent on levels of stress and social resources. Respondents with high levels stress were likely to perceive their resources as insufficient and may use emotion-focused coping strategies. Emotion-focused coping involve some maladaptive behavior, such as denial and fatalistic thinking (Carver, Scheier & Weintraub, 1989). Therefore the negative relationship between posttraumatic stress and earthquake preparedness behavior may be explained by using emotion- focused coping, because earthquake preparedness is a kind of problem focused coping behavior. Increase in the level of stress could have lead to emotional style of coping and this could cause less problem

focused coping like earthquake preparedness behavior. Since posttraumatic stress seem to reduce disaster preparedness, in disaster trainings before conducting methods to increase responsibility and problem-focused coping psychosocial support to reduce stress is provided. After posttraumatic stress reaches an acceptable level, the tasks to increase perceived responsibility, outcome-efficacy, and problem-focused coping mayput into action.

4.1.3 Reasons for Preparedness and Non-Preparedness

According to the results of the current study, the most frequently reasons of preparedness were “to provide safety for family”, and “to feel myself safe”, and the most frequently reported items for reasons of non-preparedness were “not possible to avoid the power and desire of God”, “trust in their building”, “neglectfulness”, “don’t have enough money”, and “don’t know what to do”, in sequence.

The results of the current study showed some inconsistencies with the study of Sakiroglu (2005), conducted in Istanbul. In this study the Istanbul participants who did not prepare for a possible future earthquake provided the reasons of neglectfulness (45.4%) most, however in the current study in Kaynaslı, fatalistic thinking (not possible to avoid the power and desire of God) (46.7%) is the most frequently given reason. Other reasons were consistent. According to both of the studies, other most repeated reasons were trust in their building and not having enough money in the given order. On the other hand the results of current study had inconsistency in non-preparation reasons with the study of Kasapoglu and Ecevit (2003), which showed that participants who did not prepare for a possible future earthquake provided the reasons of lack of economic power (25.7%), lack of knowledge (13.8%) and fatalistic thinking (11.5%) in the given order.

Kaynaşlı participants seemed to have reasons for non-preparedness more in the direction of fatalism rather than lack of resources. According to McClure, Walkey and Allen (1999), people who don't explain the natural disasters with fatalism are found to have made much more preparation for an earthquake than the ones who lend the responsibility to others and who explain the natural disasters with fatalism. According to McCLure, Walkey, & Allen (1999), since fatalistic persons are likely to believe that they are unable to do something to decrease the hazards of a possible future earthquake, fatalistic thinking might be inverted to action motivation to prepare earthquakes. In order to provide this motivation in Turkey, community leaders, especially imams might be used. The imams have preacher training, and their ability to persuade people is high.

In terms of reasons for earthquake preparedness, the purpose of protecting the family draws attention. For this purpose, education on earthquake preparedness mayinclude the title of family protection. The importance given to the family structure and its functionality might be used to increase earthquake preparedness behavior in disaster education programs.

Fatalism can lead to denial of the risk of earthquake. In order to prevent this denial bias, people maygain control and take personal responsibility or learn that they can have control themselves over the event.

4.1.4 How Can Earthquake Preparedness Behavior Be Facilitated?

a) Perceived effectiveness of preparedness for reducing negative outcomes in an earthquake (outcome-efficacy) might be increased and the earthquakes might be perceived as a natural event. The negative consequences of earthquakes might be prevented by preparedness and mitigation activities. Disaster training programs

about earthquake preparedness behavior must be conducted mentioning the effectiveness, and usefulness of the preparation behaviors. Also, to get the public attention, these programs must be interesting. Individuals mayhave the opportunity to get hand on practical training for participating these programs.

b) The perception of personal responsibility to prepare for earthquakes could be thought of as a personal resource, and it might be increased. Disaster training programs mayinvolve the importance of taking personal responsibility to prepare for earthquakes and giving coping skills and resources to internalize responsibility for preparation.

c) In order to increase earthquake preparedness behavior, participants' tendency to use problem focused coping might be increased and disaster training programs mayinvolve behavioral interventions, which mayfocus on specific problem focused coping actions.

d) Since posttraumatic stress following earthquake victimization seems to reduce earthquake preparedness behavior, disaster training programs might be started by psycho education programs to reduce posttraumatic stress and before conducting methods to increase responsibility and problem-focused coping, psychosocial support to reduce stress is provided.

e) Since fatalistic persons are likely to believe that "not possible to avoid the power and desire of God" and so "they are unable to do something to decrease the hazards of a possible future earthquake", fatalistic coping responses might be decreased.

f) Finally, in order to increase earthquake preparedness behavior, disaster training programs mayinclude the purpose of protecting the family of earthquake preparedness.

According to Fişek, Müderrisoğlu, Yeniçeri and Özkarar (2007), there are 3 important topics for facilitating earthquake preparedness. They are making the public take the ownership of responsibility, training in risk mitigation and getting organized locally. According to the authors, local communities and nongovernmental organizations can provide these programs most effectively. An ongoing cooperation between the public, administration, volunteer organizations, and experts is also important.

4.2 Posttraumatic Growth

In the current study, posttraumatic Growth Inventory (PTGI) (Tedeschi & Calhoun, 1996) was used to assess the PTG level of survivors after earthquake victimization. The results of the Posttraumatic Growth Inventory (PTGI) revealed that earthquake survivors in the present study experienced a moderate level of PTG with an average score of 67.62 (Max=105). This finding was higher than the results of some other studies with different type of samples (Cordova, Cunningham, Carlson & Andryowski, 2001; Dirik, 2006; Elçi, 2004; Sheikh, 2004). In addition, PTG level of earthquake survivors after 1999 Marmara Earthquake was high level with another Turkish sample (Tanrıdağlı, & Karancı, 2006). Tanrıdağlı and Karancı (2006) examined the PTG in earthquake survivors by using another growth inventory, which is 'Stress Related Growth Scale' (Park, et al., 1996). The study results reported that earthquake survivors experienced high levels of PTG (M= 2.41, Min= 1, Max= 3).

4.2.1 Factors Related to Posttraumatic Growth

The present study examined factors contributing to reported posttraumatic growth (PTG) after earthquake victimization. The Life Crises and Personal Growth Model of Schaefer and Moos (Schaefer & Moos, 1992) was tested. Since models describing unintentional change involve events occurring suddenly (O'Leary et al., 1998), earthquakes can be accepted as a stressful experience occurring suddenly. Hierarchical Regression Analyses was used for testing this Model.

Specifically, we examined the roles of environmental system factors, personal system factors, event-related factors, earthquake specific cognitive appraisal factors and coping responses (i.e. earthquake preparedness behavior) factors and finally general ways of coping in predicting PTG. Each block resulted in a significant increment in explained variance. The inclusion of all environmental and system factors of Life Crisis and Personal Growth Model of Schaefer and Moos (1992) in the first step, social support of environmental system factors, and marital status and well-being of personal system factors were significant predictors. Then, in the second step, after the inclusion of event related variables, in addition to social support, marital status and well-being; severity of earthquake experience of event related variables was significant predictor of PTG. In the third step, with the inclusion of earthquake specific cognitive appraisal and coping behavior (earthquake preparedness behavior) factors, in addition to social support, marital status, well-being and severity of earthquake experience; earthquake preparedness behavior of earthquake specific coping responses factor was significant predictor of PTG. Finally in the last step, general ways of coping responses variables were included. When general coping responses were added to the analysis, being married, social support, well-being, problem-focused coping and seeking social support coping were

found to be positively and significantly related, but earthquake preparedness behavior and severity of earthquake experience was no longer significant.

In the third step, there was a positive significant relationship between earthquake preparedness behaviors as an earthquake specific coping behavior and PTG. However, this significant relationship disappeared in the last step after the addition of general ways of coping responses to the equation. In order to examine individual's general coping strategies in stressful contexts, The Ways of Coping Inventory (WCI) was used in this study. On the other hand, earthquake preparedness behavior was used as earthquake specific coping. In the last step of regression analysis, reason why earthquake preparedness behavior lost its significance might related to the fact that, problem-focused coping from WCI taps general coping and on the other hand earthquake preparedness behavior is a specific coping. Therefore, it seems that problem focused coping as a general way of coping, might contain earthquake preparedness behavior as an earthquake specific coping.

One of the causes of the relationship among earthquake preparedness behavior, problem-focused coping and PTG was that earthquake preparedness behavior can be taken as a way of active and problem-focused coping. There are some coping strategies to handle the earthquake related stress. One of them is problem focused coping. Problem-focused coping involves planning and taking direct action. To prepare for the risk of a possible earthquake also requires some necessary actions. According to Hobfoll, Hall, Canetti-Nisim, Galea, Johnson & Palmieri (2007), behavioural strategies and active problem-focused coping are important for longer and "real" PTG. The survivors can experience a protective effect of PTG, only if they turn their beliefs into action. There is also an illusory side of PTG that is self-deceptive and dysfunctional. True PTG is not simply as cognitive process, but it

maycontain taking action. Individual mayactualize their benefit finding cognitions and their illusions through action. According to results of Hobfoll et. al.'s (2007) study in Gaza, after Al Aqsa Intifada, only when individuals were deeply involved in translating growth cognitions to growth actions on the forced disengagement of settlers from Gaza, they have positive benefit in PTG.

According to Hobfoll et al. (2007), in order to experience PTG, survivors mayactually engage in something behavioral, like earthquake preparedness behavior, and general beliefs were converted into action. Earthquake specific coping behavior is needed for PTG instead of general way of coping responses, such as problem-focused coping (Hobfoll et al. 2007). However, according to the results of the current study, when general ways of coping responses were added to the analysis after the addition of earthquake specific coping behavior (earthquake preparedness behavior), earthquake preparedness behavior was no longer significant in the equation. Therefore, the results of the current study did not support Hobfoll's argument. Both earthquake specific coping and general way of problem-focused coping were important predictors on PTG individually, but, when they were added to the analysis at the same time, general way of problem-focused coping predicted PTG instead of earthquake specific coping.

In order to understand whether the measured PTG is real or not, examining the relationship between measured PTG and well-being is necessary (Frazier, & Kaler, 2006; Park, & Helgeson, 2006). In the current study, with Hobfoll's terminology, it can be said that, PTG in this study was "real PTG", since well-being predicted PTG positively and significantly.

Consistent with the literature (Dirik & Karanci, 2008; Tedeschi & Calhoun, 1996), according to the results of the current study, problem focused coping was

found to be positively and significantly related to PTG. For the coping responses factors, people using more problem-focused coping handle the trauma more easily and have more improvement (Sheikh, 2004). By using problem focused coping, people evaluate the traumatic event in a more rational way, reappraise the event in a more positive manner, and take some logical actions to solve the trauma related problems. According to Tedeschi and Kilmer (2005) people transform positively after trauma as a result of their struggles with a new situation for reaching equilibrium.

Consistent with the view that PTG emerges from struggling to cope with traumatic experiences, the present study showed the significant effect of problem focused coping on PTG. Successful problem focused coping with a traumatic event may lead to perceptions of oneself as more capable than before the trauma. However by the use of emotion-focused coping responses, the individual may undervalues his/her coping with the event and choose to be passive in the face of the adverse event (Moos and Schaefer, 1998).

According to Tedeschi and Calhoun (1996), coping is related with the posttrauma adjustment. Using active problem-focused coping to handle stressful situation may lead to feeling of control and mastery. Furthermore, as mentioned before, the appraisal process is not independent from the personal resources. Individuals with active problem-focused coping and supporting resources are less likely to appraise the life crisis as threat and more likely to rely on active coping strategies which are related to better adjustment (Cadell, Regeur, Hemsworth 2003).

As consistent with the general prediction from the literature about marital status, in the present study being married also predicted PTG positively. Marital status predicted PTG, and being married was related to higher PTG. According to

COR Theory (Hobfoll, 1989), personal resources have an important role for the development of positive outcome after a stressful event. Individuals with high levels of personal resources probably use more problem focused coping and so they probably experience more positive outcomes. One of these personal resources is marriage (Dirik & Karanci, 2008). Some other findings also showed this relationship. The studies of Bellizzi and Blank (2006) with married breast cancer patients and Pakenham's study (2005) with married multiple sclerosis patients found that married patients had significantly higher PTG than unmarried patients. Since, married people may be living with their families and their children in Turkey, being married may provide social support. Besides, in our collectivist culture, when people are married, their social acceptance may increase in comparison being single. After marriage, people establish a new system and the change in life situation could be a determinant of higher PTG. In Turkish culture, strong emotional ties are encouraged among all family members and their social support may increase (Kağıtçıbaşı, 2006). On the other hand, some studies did not find a significant effect of marital status on PTG (Acarturk & Karancı, 2006; Durak, 2009; Widows, Jacobsen, Booth-Jones & Fields, 2005).

According to Tedeschi and Calhoun (1995), if the survivor's coping strategy is satisfactory to deal with the traumatic situation and if she/he has necessary social support from environment, this may lead to perceptions of posttraumatic growth. O'Leary (1998) reported that individual resources (such as problem focused coping) and social resources (such as social support) have most important role on PTG. Schaefer and Moos (1998) reported that personal factors and environmental factors are determinants of positive outcomes after earthquake victimization. In their model,

one of the personal factors was coping responses and one of the environmental factors was social support.

In the present study, social support, and seeking social support coping were found to be other significant factors in the prediction of PTG. Social support is help or support from other individuals such as family, friends, neighbors, and professionals (DiMattew, & Martin, 2002). Coyne, Aldwin, and Lazarus (1981) argued that social support helps to reduce stress as a social resource. First, family members and friends can provide direct tangible support in the form of physical resources (e.g., lending money and taking care of children). Second, being a member of a social network can provide informational support by suggesting alternative actions that may help to solve the stress-producing problem and to look at his or her problem in a new way. The availability of social support resources from family and friends is important factor to facilitate PTG (Tedeschi & Kilmer, 2005). Consistent with the present study findings, there are some other studies showing the importance of social support on PTG (Carver, 1998; Schulz & Mohamed, 2004; Armeli, Gunthert & Cohen 2001; Dirik & Karanci, 2008).

According to Bonanno, Brewin, Kaniasty & La Greca (2010), social relationships improve after disasters. Survivors often receive social support immediately from their families, relatives, and friends, and so, disaster experience brought them closer together.

According to the Conservation of Resources Theory (Hobfoll, 1989), perceived social support is an important resource and plays a significant role in the level of psychological distress and PTG. In the present study, the mean score of perceived social support was found to be 5.27 for earthquake survivors. Considering

that 7 is the maximum score from MSPSS, a mean score of 5.27 showed that the present sample perceived relatively high levels of perceived social support.

In his Conservation of Resources Theory (COR), Hobfoll (1989) defined psychological stress as a reaction to threat of loss of resources and lack of resource gain after the investment in resources. Like Hobfoll, according to the Coping Theory of Holahan (2000) personal and social resources are needed to deal with stress and lack of resources leads to negative psychological outcomes. In Hobfoll (1989) and Holahan's model (2000), social support is one of the key resources to increase the resilience of individuals.

In addition, the importance of culture was emphasized to determine what the valued resources are (Hobfoll, 2001). There can be differences between collectivist and individualistic cultures. Social support from family is especially important for collectivist culture (Kağıtçıbaşı, 2006). Therefore with the integration of these two assumptions, social support and seeking social support coping can be hypothesized as important resources to facilitate PTG. Furthermore, due to deficits in the availability of professional help, informal social networks may compensate for the needs of the survivors and thus facilitate PTG.

As an explanation for the relationship between social support and PTG, Tedeschi's argument (1999) that people become more motivated to talk about their traumatic experience and their feelings with others seems persuasive after disasters. This continuing need may make the person more self-disclosing than before. When someone recognizes own vulnerability, s/he will be more emotionally expressive and willing to accept help from others. Therefore, the person may start to use social support more efficiently (Tedeschi & Calhoun, 1996).

Religious activities could be thought of as one of the many available resources for extending social networks. For example, going to mosque after earthquake victimization might be a critical way of interacting with other disaster victims, especially for people with high religiousness like people in Kaynaşlı. According to the study of Reynolds (2006), lower levels of religiosity and spirituality were associated with higher levels of social isolation. The participants of the present study were high on religiousness. In the present study, the mean score of religiousness was found to be 4.37 for earthquake survivors. Considering that 5 is the maximum score from Religiousness Scale (Yaparel, 1996), a mean score of 4.37 showed that the present sample perceived relatively high levels of religiousness. But, according to the results of the current study, there was no significant relationship between religiousness and PTG.

So, according to present findings, social support and using problem-focused coping were important resources to increase PTG after disaster victimization. In order to increase possible positive outcomes after disaster victimization, some kind of resource gain after disasters could be helpful. According to the model of the current study perceived social support and using more problem-focused coping as resources were important to show positive outcomes. In order to increase coping abilities, some conditions might be provided. Disaster risk might be appraised as severe (severity of threat), as likely to occur (critical awareness), and something can be done for decreasing risk (response efficacy), and finally individual mayhave some resources (such as social support) then active problem-focused coping will be activated and there will be an intention to act or change behavior.

4.2.2 What Can Be Done to Increase Posttraumatic Growth

a) In order to increase PTG, participants' tendency to use general problem focused coping might be increased. Besides, in disaster training programs professionals may promote active earthquake specific coping behaviors. These programs may involve not only cognitive level, but also promote active behavioral coping responses.

b) Social support, and seeking social support coping were found to be significant factors to increase PTG. In order to increase social support, self-help groups can be used. Social support can be increased by providing social resources such as creating self-help groups. They might be encouraged to see a positive future and hope. Furthermore, effective coping strategies may be enhanced in these individuals. As a cognitive psychology method, cognitive processing and restructuring can be used to facilitate PTG.

c) In order to increase PTG after earthquake victimization, some kind of resource gain after disasters could be helpful. By assessing the situation, resources, weaknesses, strengths and by listening attentively and actively professionals can help victims to increase resources for PTG and to help in using their strengths and in advancing the domains that they are weak. Besides, problem-focused coping, well-being and social support can be increased by using behavioral assignments.

4.3 Hypothesis of the Study

In this section, support for the hypotheses of the current study will be presented.

4.3.1 Hypothesis for Earthquake Preparedness Behavior

1. For pre-earthquake variables: Being older, being married, being male, higher education and income will be related to higher earthquake preparedness behavior. The results failed to support this hypothesis. None of the above given variables appeared significant in the regression analysis.

2. For earthquake related variables: Posttraumatic stress, and severity of earthquake experience will be negatively, and perceived responsibility for being prepared will be positively related to earthquake preparedness behavior. This hypothesis was partially supported. That is posttraumatic stress was found to be negatively and perceived responsibility for being prepared was positively related to earthquake preparedness behavior.

3. For personal resources: Higher outcome efficacy and self efficacy and in terms of coping responses factors, more problem-focused coping, and seeking social support, and lower helplessness coping, and fatalistic coping will be related to higher earthquake preparedness behavior. This hypothesis was partially supported. That is outcome efficacy, problem- focused coping, and seeking social support coping were found to be positively related to earthquake preparedness behavior.

4.3.2 Hypothesis for PTG

1. For environmental system factors: Higher quality of life, social support, and income will be related to higher PTG. This hypothesis was partially supported. That is social support was found to be positively related to PTG.

2. For personal system factors: Being older, being married, being female and higher education, religiousness, and well-being will be related to higher PTG. This

hypothesis was partially supported. That is being married, and well-being were found to be positively related to PTG.

3. For event-related factors: Higher severity of traumatic event, and posttraumatic stress will be related to higher PTG. The results failed to support this hypothesis. None of the above given variables appeared significant in the regression analysis.

4. For earthquake specific coping and cognitive appraisal factors: Higher earthquake preparedness behavior, self-efficacy and outcome-efficacy will be related to higher PTG. This hypothesis was partially supported. That is outcome-efficacy was found to be positively related to PTG. For earthquake specific coping, in the third step of regression analysis, there was a positive significant relationship between earthquake preparedness behaviors and PTG. However, this significant relationship disappeared in the last step after the addition of general ways of coping responses to the equation.

5. In terms of general coping responses factors, more problem-focused coping, and seeking social support, and lower helplessness coping, and fatalistic coping will be related to higher PTG. This hypothesis was partially supported. That is problem-focused coping, and seeking social support coping were found to be positively related to PTG.

4.4 General Conclusion of the Study:

4.4.1 Strengths and Implications

This study is a comprehensive study to examine the factors that may be related to two possible positive outcomes of an earthquake experience, namely earthquake preparedness behavior and PTG after severe disaster victimization. In other words, this study aimed to identify factors related with these possible positive

outcomes. A major strength of the study was that it examined positive outcomes within comprehensive models and thus yielded an understanding of the concepts of earthquake preparedness behavior, and PTG.

Based on the results about the importance of social support and problem-focused coping on positive outcomes after victimization, these variables may be important in guiding education programs for disasters and disaster management. A survivor's ability to return to social life and to their social support networks appeared as important factors. Therefore, they may need to be considered when implementing interventions to maximize PTG, and earthquake preparedness after disaster victimization. Furthermore using problem-focused coping as a resource was important for positive outcomes. In order to help disaster survivors to be more prepared, and to experience more positive outcomes after disaster victimization, it may prove useful to foster problem-focused coping in disaster training programs is recommended.

In order to prevent possible psychological problems before the earthquakes happen, some kind of resource gain before or after the earthquake could be helpful. The result of the current study showed that social factors (perceived social support) and coping (using more problem-focused coping) may increase the positive effects of traumatic event, so in disaster training programs, ways to increase social (such as community groups), and coping resources might be examined.

According to the results of the current study, posttraumatic stress and earthquake preparedness behavior were found to be negatively and significantly related. Disasters and disaster related distress effected survivors' level of earthquake preparedness behavior. Therefore, it may be helpful if individuals and families are prepared for the physical, emotional and financial disruptions that occur after severe

traumatic events. Support services, including community resources are needed to reduce stress and to optimize earthquake preparedness after disasters and other traumatic events. Since posttraumatic stress seems to reduce disaster preparedness, disaster training programs may be started by psycho education programs to reduce posttraumatic stress. After posttraumatic stress reaches an acceptable level, the tasks to increase perceived responsibility, outcome-efficacy, and problem-focused coping may take into account.

The findings of this study can also be used to address the problem of persuading individuals to adopt behaviors for preparing to reduce the risk of possible future earthquakes. It will be useful to increase the belief in outcome-efficacy. In Turkey there is a high risk for earthquakes. For this reason understanding the personal, social and psychological factors is very important to reduce the negative effects of disasters. Preparing for a possible earthquake would reduce the number of life and property loss and decreasing the psychological distress caused by the expectations of future earthquake it will also have a protective effect on the mental health of people.

Turkey is located in a highly earthquake prone zone and it is obvious that many earthquakes may occur in the future. As previously mentioned, some studies showed that major earthquakes lead to psychological problems among the Turkish survivors (Başoğlu et al., 2002; Karanci et al., 1999; Salcioğlu et al., 2002). In order to help earthquake survivors, and prevent negative mental health outcomes, mental health intervention programs have been recommended. On the other hand, in order to prevent possible psychological problems before and after the earthquakes happen, some kind of social, personal, environmental resources gain and learning the use of problem-focused coping in stressful situations could be helpful.

The data were collected from a sample of severe earthquake exposure area, and the present findings suggest the importance of taking into account the positive outcomes, such as PTG. It is important to assess the earthquake preparedness behavior, and posttraumatic growth when considering what kind of intervention options are suitable to offer to survivors with severe earthquake experience and also for screening those who may need more support. There are many factors that can influence the survivors after disaster victimization such as demographic variables, psychological variables, earthquake related variables, coping responses, and other resources. The results of the study provided valuable insights into the ways in which PTG and earthquake preparedness level of earthquake survivors can be improved. The results of the present study offer additional support for Person Relative to Event Model of Mulilis and Duval (1999) to understand earthquake preparedness behavior, and The Life Crises and Personal Growth Model of Schafer and Moos (1992) to understand PTG. The effect of various variables on positive outcomes of survivors is examined. These measures can be adjusted to the needs of each group and individuals will need to be treated in sensitive ways. In these treatment models, such as cognitive behavioral therapy, social support might be increased and using problem-focused coping might be emphasized. Professionals may identify coping skills and encourage the use of them for dealing with the difficulties posed by the disaster. They need to be sensitive to positive changes that survivors experience after disaster victimization and may try to facilitate PTG in more favorable perceptions of self by the help of increment in resources, such as problem-focused coping, well-being, and social support.

The effect of traumatic events depends on the individuals and varies from individual to individual so it is a complex situation to understand. Therefore various

factors may contribute to positive, negative, and the mixture of negative and positive experiences (Calhoun & Tedeschi, 2004; Jang, 2006). The current study included a group of variables that may be associated with possible positive outcomes in survivors who experienced a severe disaster. The effect of personal, such as income; and environmental resources, such as social support; earthquake related variables, such as earthquake specific coping; and coping styles such as problem-focused coping on positive outcomes (earthquake preparedness behavior, and PTG) was shown in the present study. All therapists, psychologist and other specialists must carefully examine these variables, and psychological interventions considering these variables may improve the positive outcomes after a severe disaster experience.

The results of the current study showed the variables related to positive outcomes after disaster victimization. Therapists and other psychologists may focus on these variables such as perceived social support and problem solving coping to facilitate positive outcomes after victimization. For example, in order to increase social support level of earthquake survivors, clinicians maywork with families, neighborhoods, NGO's and community groups. The importance of perceived social support in the adjustment of disaster survivors to daily life and normalization needs to be underlined in family psycho-education programs. Furthermore, training in active problem solving coping skills may empower earthquake survivors and thus may decrease psychological distress, and increase PTG.

4.4.2 Limitations

There are some limitations of this study that needs to be addressed. The most important limitation of the present study was its cross-sectional design. Longitudinal research is needed to examine how variables contribute the development of positive

outcomes after victimization across time. Therefore, this research could not clarify or support totally the relationship between personal and environmental resources, event-related variables, cognitive appraisals and coping responses on positive outcomes after disaster victimization according to a time frame. For example, due to the period of time elapsed since the 1999 Marmara Earthquake, at the time of the study it was not so clear that sources of distress related to earthquake resulted from past earthquake experience or the possibility of a future earthquake.

Although the findings of the present study contributed to the existing literature and provide support for the Person Relative to Event (PrE) Model (Mulilis & Duval, 1997) and Model of Life Crises and Personal Growth (Schaefer, & Moos, 1992), the study has several limitations. Another limitation of the current study was small sample size. If the sample size of the present study is increased, larger variances on positive outcomes after victimization may be explained by more variables.

As another limitation of the present study, the self-report nature of the questionnaires could be marked, since it creates methodological limitations. The results, therefore, may be subject to self-report bias. The possible differences between perceived and actual state of PTG might be taken into account in interpreting the results. Furthermore, actual state of PTG need to be assessed by other report, such as the clinicians', another family member's report and socio economic status indicators.

Selection of sample from Kaynaşlı, Turkey, led to problems of the representativeness of this sample for other earthquake exposed areas. The selection of present sample only from Kaynaşlı brings about generality problems of the present findings to earthquake survivors from other socioeconomic groups in regards

to gender, income, marital status, education level, and employment status and from the big cities.

The degree of earthquake preparedness behavior and to obtain the ratings of the perceived difficulty (self-efficacy) and perceived effectiveness (outcome-efficacy) of obtaining or performing each item was measured by Mulilis-Lippa Earthquake Preparedness Scale (MLEPS). High scores on supply and utilities category of MLEPS may not purely reflect on behaviors only for earthquake preparedness, since "knowing how to operate utilities" may serve another purpose, such as water pipe repair, and "having 4 days supply of dehydrated or canned food" may be indicative of daily food use instead of earthquake preparedness.

As a final limitation of the present study, religiousness was measured by only a behavior scale of religiousness. It seems that there is a ceiling effect on that scale which may be a result of high religiousness level of study population. Therefore, alternative measurement tools which examine this variable in detail might be used in further studies. On the other hand, according to Vachon (2008), religiosity could be assessed by simply asking brief questions, such as one's participation in an organized religious institution and adherence to established guidelines for beliefs and behavior.

4.4.3 Recommendations for Future Research

In terms of recommendations, although the present study included lots of important factors, future studies can measure some other factors that might influence the positive outcomes, such as self efficacy (Calhoun & Tedeschi, 1998b; Tedeschi et al., 1998), introversion- extraversion (Sheikh, 2004), optimism (Calhoun & Tedeschi, 1998b), and hopefulness (Tennen & Affleck, 1998). For example, some

personality characteristics such as being extraverted or optimistic might be related to positive outcomes after disaster victimization. Unfortunately, results of the present study are inadequate to give any information about what kind of people are more open to show positive outcomes. People who are optimistic, extraverted and hopeful may be more likely to return to their social support networks quicker than others. Thus, in order to understand this, future studies mayassess the personality characteristics of the survivors, when they experience a disaster. It also is important to examine predictors of problem-focused coping in order to understand its antecedents.

Longitudinal studies are needed to investigate the exact relationship between variables that were examined in the current study. Besides, using a longitudinal design wherein data are obtained from each subject during at least one follow-up assessment with a sample of diverse population will be more appropriate in order to clarify relationship between disaster related variables, individual and environmental resources, psychological variables and possible positive outcomes after disaster victimization.

The results of the current study showed that, the significant relationship between earthquake preparedness behaviors as an earthquake specific active coping and PTG disappeared in the last step of regression analysis after the addition of general ways of coping responses to the equation. According to Hobfoll, active coping behavior based real PTG is more resistant than other ways of PTG. Therefore, longitudinal studies are needed to investigate the exact relationship between earthquake specific coping behavior and PTG. In this respect, with longitudinal studies, the predictive power of earthquake specific coping on PTG may increase, the longer the time elapsed.

Finally, apart from experiencing a severe disaster it was possible that many of survivors in the present sample had traumatic events in their lives. As a recommendation for future studies, occurrence of other stressful events might be examined with a traumatic event checklist to determine the relationship between other stressful events for earthquake survivors and positive outcomes. Besides, this study has not assessed different types and resources of social supports, because the predictor role of total score of perceived social support was examined on positive outcomes after victimization. Since the effects of traumatic events are progressive in time frame, it may require different types of support in various phases. In order to answer the question about which types of social support is influential in which phase of post-trauma may need further examination. Therefore, it will be valuable to examine the role of different types and source of social support on positive outcomes after disaster victimization in future studies.

The present study can be replicated with other samples after different types of disaster victmization, such as survivors of flood in order to figure out their psychological distress and PTG levels, and understand relationships between resources, PTG and disaster preparedness. Obtaining findings from different samples exposed to different types of disasters, provide more broad-spectrum support for the Person Relative to Event (PrE) Model (Mulilis & Duval, 1997) and Model of Life Crises and Personal Growth (Schaefer, & Moos, 1992).

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APPENDICES

Appendix A: Questionnaire of the Study

✍ **Yaşınız:** _____ **Cinsiyetiniz:** ☐ Erkek ☐ Kadın

✍ **Medeni durumunuz**: ☐ Evli ☐ Bekar ☐ Boşanmış/Dul ☐ Diğer: (Açıklayınız) _____

✍ **Eğitim durumunuz**:

☐ Okuma-yazma biliyorum
☐ İlkokul mezunuyum
☐ Orta okul mezunuyum
☐ Lise mezunuyum
☐ Ön lisans mezunuyum
☐ 4 senelik bir lisans programı mezunuyum
☐ Yüksek lisans mezunuyum
☐ Doktora yaptım

✍ **Mesleğiniz**: _____

✍ **Şu anda çalışıyor musunuz?** Evet ____ Hayır ____

✍ **Yaşamınızın en uzun süresini geçirdiğiniz yer:**
☐ İstanbul, Ankara, İzmir ☐ Diğer şehirler ☐ Kaynaşlı ☐ Diğer İlçeler ☐ Köy

✍ **Kaç yıldır Kaynaşlı'da yaşıyorsunuz?** _____

✍ **Aylık eve giren para miktarı ne kadardır?**

☐ 500 milyondan az
☐ 500 milyon-1 milyar arası
☐ 1 milyar-2 milyar arası
☐ 2 milyardan fazla

✍ **Evinizde sizden başka kimler yaşıyor:**

☐ Eş ☐ Ev arkadaşı ☐ Anne-baba ☐ Büyük anne/baba

☐ Çocuklar (Sizinle yaşayan çocuğunuz varsa yaşlarını en büyükten küçüğe doğru sıralayarak yazınız): _____

Posttraumatic Growth Inventory

Aşağıda kişilerin kendi duygu, düşünce ve görüşleri ile ilgili bazı ifadeler yer almaktadır. Sizden bu maddeleri dikkatlice okuyup her birinde belirtilen ifadelerin sizin için ne kadar doğru veya yanlış olduğunu belirtmeniz istenmektedir. Lütfen uygun seçeneği gösteren numarayı daire içine alınız.

Kesinlikle yanlış:1 Yanlış:2 Ne doğru ne yanlış:3 Doğru:4 Kesinlikle Doğru:5

	Kesinlikle Yanlış	Yanlış	Ne Doğru Ne yanlış	Doğru	Kesinlikle Doğru
1. Güçlü fikirleri olan insanların etkisi altında kalırım	1	2	3	4	5
2. İnsanların genel kabullerine uymasa bile kendi düşüncelerime güvenirim	1	2	3	4	5
3. Kendimi başkalarının önemli gördüğü değerlere göre değil, kendi önemli gördüklerimle yargılarım	1	2	3	4	5
4. Genel olarak yaşamımda duruma hakimimdir	1	2	3	4	5
5. Günlük yaşamın gerekleri çoğu zaman beni zorlar	1	2	3	4	5
6. Gündelik yaşamın çeşitli sorumluluklarıyla genellikle oldukça iyi baş ederim	1	2	3	4	5
7. Hayatı gün be gün yaşar, geleceği pek düşünmem	1	2	3	4	5
8. Bazı insanlar yaşamda anlamsızca dolanırlar, ama ben onlardan değilim	1	2	3	4	5
9. Bazen hayatta yapılması gereken her şeyi yapmışım gibi hissederim	1	2	3	4	5
10. Yaşam öyküme baktığımda, olayların gelişme şeklinden memnuniyet duyarım	1	2	3	4	5
11. Kişiliğimin çoğu yönünü beğenirim	1	2	3	4	5
12. Birçok bakımdan, hayatta başarabildiklerimi hayal kırıcı bulurum	1	2	3	4	5
13. Yakın ilişkileri sürdürmek benim için zor olagelmiştir	1	2	3	4	5
14. İnsanlar benim verici, vaktini diğerleriyle paylaşan biri olduğumu söyleyeceklerdir	1	2	3	4	5
15. İnsanlarla sıcak ve güvenli çok ilişkim olmadı	1	2	3	4	5
16. Bence insanın kendisi ve dünyayla ilgili görüşlerini sorgulamasına yol açacak yeni yaşantıları olması önemlidir	1	2	3	4	5
17. Benim için hayat sürekli bir öğrenme, değişme ve gelişme süreci olagelmiştir	1	2	3	4	5
18. Hayatımda büyük değişiklikler veya gelişimler kaydetmeye çalışmaktan çoktan vazgeçtim	1	2	3	4	5

Religiousness Scale

Aşağıda kişilerin kendi duygu, düşünce ve görüşleri ile ilgili bazı ifadeler yer almaktadır. Sizden bu maddeleri dikkatlice okuyup her birinde belirtilen ifadelerin sizin için ne kadar doğru veya yanlış olduğunu elirtmeniz istenmektedir. Lütfen uygun seçeneği gösteren numarayı daire içine alınız.

Kesinlikle yanlış:1 Yanlış:2 Ne doğru ne yanlış:3 Doğru:4 Kesinlikle Doğru:5

	Kesinlikle Yanlış	Yanlış	Ne Doğru Ne yanlış	Doğru	Kesinlikle Doğru
1. Dini inancımın gereği olan ibadetleri sağlığım elverdiğince yerine getiriyorum.	1	2	3	4	5
2. Dinde yasak edildiğinden içki içmemeye özen gösteririm.	1	2	3	4	5
3.Dinde yasak olduğu için evlilik dışı cinsel ilişki (zinadan) kaçarım.	1	2	3	4	5
4. Kumar oynamak günah olduğu için oynamam.	1	2	3	4	5
5. Rüşvet günah olduğu için kaçınırım.	1	2	3	4	5
6. Dine aykırı olduğu için kimseyi aldatmamaya özen gösteririm.	1	2	3	4	5
7. Dinen doğru sözlü olmak gerektiğinden, doğru söylemeye gayret ediyorum.	1	2	3	4	5
8. Anne-babaya iyi davranmayı Allah emrettiği için anne-babama iyi davranıyorum.	1	2	3	4	5
10. Komşulara iyi davranmak dini bir prensip olduğundan komşularıma iyi davranıyorum.	1	2	3	4	5
11. Dindar olduğuma inanıyorum	1	2	3	4	5

Multidimensional Percevied Social Support Scale

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

1. **Ailem ve arkadaşlarım dışında olan ve ihtiyacım olduğunda yanımda olan özel bir insan (örneğin, nişanlı, sözlü, flört, akraba, komşu) var.**

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

2. **Ailem ve arkadaşlarım dışında olan ve sevinç ve kederlerimi paylaşabileceğim özel bir insan (örneğin, nişanlı, sözlü, flört, akraba, komşu) var.**

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

3. **Ailem (örneğin annem, babam, eşim çocuklarım, kardeşlerim) bana gerçekten yardımcı olmaya çalışır.**

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

4. **İhtiyacım olan duygusal yardımı ve desteği ailemden (örneğin annem, babam, eşim çocuklarım, kardeşlerim) alırım.**

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

5. **Ailem ve arkadaşlarım dışında olan ve beni gerçekten rahatlatan bir insan (örneğin, nişanlı, sözlü, flört, akraba, komşu) var.**

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

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

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

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

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

8. **Sorunlarımı ailemle (örneğin annem, babam, eşim çocuklarım, kardeşlerim) konuşabilirim.**

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

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

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

10. **Ailem ve arkadaşlarım dışında olan ve duygularıma önem veren özel bir insan (örneğin, nişanlı, sözlü, flört, akraba, komşu) var.**

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

11. **Kararlarımı vermede ailem (örneğin annem, babam, eşim çocuklarım, kardeşlerim) bana yardımcı olmaya isteklidir.**

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

12. **Sorunlarımı arkadaşlarımla konuşabilirim.**

Kesinlikle hayır	1	2	3	4	5	6	7	Kesinlikle evet

Who- Quality Of Life Scale

Bu anket sizin yaşamınızın kalitesi, sağlığınız ve yaşamınızın öteki yönleri hakkında neler düşündüğünüzü sorgulamaktadır. **Lütfen bütün soruları cevaplayınız.** Eğer bir soruya hangi cevabı vereceğinizden emin olamazsanız, **lütfen size en uygun görünen cevabı** seçiniz. Genellikle ilk verdiğiniz cevap en uygunu olacaktır.

ÖRNEK: Lütfen kurallarınızı, beklentilerinizi, hoşunuza giden ve sizin için önemli olan şeyleri sürekli olarak gözönüne alınız. Yaşamınızın **son iki haftasını** dikkate almanızı istiyoruz.

Örneğin aşağıdaki örnek soruda, son iki hafta boyunca başkalarından aldığınız desteğin miktarını en iyi karşılayan rakamı yuvarlağa almalısınız. Buna göre, eğer başkalarından çokça yardım aldıysanız, aşağıdaki gibi 4 rakamını yuvarlağa almanız gerekiyor:

	ÖRNEK SORU	Hiç	Çok az	Orta derecede	Çokça	Tamamen
	Gereksiniminiz olan desteği başkalarından alabiliyor musunuz?	1	2	3	(4)	5

ŞİMDİ, Lütfen her soruyu okuyunuz, duygularınızı değerlendiriniz ve her bir sorunun ölçeğinde size en uygun olan yanıtın rakamını yuvarlağa alınız.

		Çok kötü	Biraz kötü	Ne iyi, ne kötü	Oldukça iyi	Çok iyi
1 G1	Yaşam kalitenizi nasıl buluyorsunuz?	1	2	3	4	5
		Hiç hoşnut değil	Çok az hoşnut	Ne hoşnut, ne de değil	Epeyce hoşnut	Çok hoşnut
2 G4	Sağlığınızdan ne kadar hoşnutsunuz?	1	2	3	4	5

Aşağıdaki sorular son iki hafta içinde kimi şeyleri **ne kadar** yaşadığınızı soruşturmaktadır.

		Hiç	Çok az	Orta derecede	Çokça	Aşırı
3 F1.4	Ağrılarınızın yapmanız gerekenleri ne derece engellediğini düşünüyorsunuz?	1	2	3	4	5
4 F11.3	Günlük uğraşlarınızı yürütebilmek için herhangi bir tıbbi tedaviye ne kadar ihtiyaç duyuyorsunuz?	1	2	3	4	5
5 F4.1	Yaşamaktan ne kadar keyif alırsınız?	1	2	3	4	5
6 F24.2	Yaşamınızı ne ölçüde anlamlı buluyorsunuz?	1	2	3	4	5

		Hiç	Çok az	Orta derecede	Çokça	Son derecede
7 F5.3	Dikkatinizi toplamada ne kadar başarılısınız?	1	2	3	4	5
8 F16.1	Günlük yaşamınızda kendinizi ne kadar güvende hissediyorsunuz?	1	2	3	4	5
9 F22.1	Fiziksel çevreniz ne ölçüde sağlıklıdır?	1	2	3	4	5

Aşağıdaki sorular son iki haftada kimi şeyleri ne ölçüde **tam olarak** yaşadığınızı ya da yapabildiğinizi soruşturmaktadır.

		Hiç	Çok az	Orta derecede	Çokça	Tamamen
10 F2.1	Günlük yaşamı sürdürmek için yeterli gücünüz kuvvetiniz var mı?	1	2	3	4	5
11 F7.1	Bedensel görünüşünüzü kabullenir misiniz?	1	2	3	4	5
12 F18.1	Gereksinimlerinizi karşılamak için yeterli paranız var mı?	1	2	3	4	5
13 F20.1	Günlük yaşantınızda gerekli bilgilere ne ölçüde ulaşabilir durumdasınız?	1	2	3	4	5
14 F21.1	Boş zamanları değerlendirme uğraşları için ne ölçüde fırsatınız olur?	1	2	3	4	5

Aşağıdaki sorularda, son iki hafta boyunca yaşamınızın çeşitli yönlerini ne ölçüde **iyi ya da doyurucu** bulduğunuzu belirtmeniz istenmektedir.

		Çok kötü	Biraz kötü	Ne iyi, ne kötü	Oldukça iyi	Çok iyi
15 F9.1	Hareketlilik (etrafta dolaşabilme, bir yerlere gidebilme) beceriniz nasıldır?	1	2	3	4	5

		Hiç hoşnut değil	Çok az hoşnut	Ne hoşnut, ne de değil	Epeyce hoşnut	Çok hoşnut
16 F 3.3	Uykunuzdan ne kadar hoşnutsunuz?	1	2	3	4	5
17 F10. 3	Günlük uğraşlarınızı yürütebilme becerinizden ne kadar hoşnutsunuz?	1	2	3	4	5
18 F12. 4	İş görme kapasitenizden ne kadar hoşnutsunuz?	1	2	3	4	5
19 F6.3	Kendinizden ne kadar hoşnutsunuz?	1	2	3	4	5
20 F13. 3	Diğer kişilerle ilişkilerinizden ne kadar hoşnutsunuz?	1	2	3	4	5
21 F15. 3	Cinsel yaşamınızdan ne kadar hoşnutsunuz?	1	2	3	4	5
22 F14. 4	Arkadaşlarınızın desteğinden ne kadar hoşnutsunuz?	1	2	3	4	5

		Hiç hoşnut değil	Çok az hoşnut	Ne hoşnut, ne de değil	Epeyce hoşnut	Çok hoşnut
23 F17.3	Yaşadığınız evin koşullarından ne kadar hoşnutsunuz?	1	2	3	4	5
24 F19.3	Sağlık hizmetlerine ulaşma koşullarınızdan ne kadar hoşnutsunuz?	1	2	3	4	5
25 F23.3	Ulaşım olanaklarınızdan ne kadar hoşnutsunuz?	1	2	3	4	5

Aşağıdaki soru son iki hafta içinde bazı şeyleri **ne sıklıkta** hissettiğiniz ya da yaşadığınıza ilişkindir.

		Hiçbir zaman	Nadiren	Arasıra	Çoğunlukla	Her zaman
26 F8.1	Ne sıklıkta hüzün, ümitsizlik, bunaltı, çökkünlük gibi olumsuz duygulara kapılırsınız?	1	2	3	4	5

		Hiç	Çok az	Orta derecede	Çokça	Aşırı derecede
U. 27	Yaşamınızda size yakın kişilerle (eş, iş arkadaşı, akraba) ilişkilerinizde baskı ve kontrolle ilgili zorluklarınız ne ölçüdedir?	1	2	3	4	5

Ways Of Coping Questionnaire

Aşağıda insanların sıkıntılarını gidermek için kullanabilecekleri bazı yollar belirtilmektedir. Cümlelerin her birini dikkatlice okuduktan sonra, kendi sıkıntılarınızı düşünerek, bu yolları hiç kullanmıyorsanız *hiç bir zaman*, yani *1*'i, kimi zaman kullanıyorsanız *bazen*, yani *2*'yi, çok sık kullanıyorsanız *her zaman*, yani *3* seçeneğini işaretleyiniz. Katkılarınız için teşekkür ederiz.

	Hiç bir Zaman	Bazen	Her zaman
1. Aklımı kurcalayan şeylerden kurtulmak için değişik işlerle uğraşırım.	1	2	3
2. Bir mucize olmasını beklerim.	1	2	3
3. İyimser olmaya çalışırım.	1	2	3
4. Çevremdeki insanlardan sorunlarımı çözmemde bana yardımcı olmalarını beklerim.	1	2	3
5. Bazı şeyleri büyütmeyip üzerinde durmamaya çalışırım.	1	2	3
6. Sakin kafayla düşünmeye ve öfkelenmemeye çalışırım.	1	2	3
7. Durum değerlendirmesi yaparak en iyi kararı vermeye çalışırım.	1	2	3
8. Ne olursa olsun direnme ve mücadele etme gücünü kendimde bulurum.	1	2	3
9. Olanları unutmaya çalışırım.	1	2	3
10. Başa gelen çekilir diye düşünürüm.	1	2	3
11. Durumun ciddiyetini anlamaya çalışırım.	1	2	3
12. Kendimi kapana sıkışmış gibi hissederim.	1	2	3
13. Duygularımı paylaştığım insanların bana hak vermesini isterim.	1	2	3
14. "Her işte bir hayır vardır" diye düşünürüm.	1	2	3
15. Dua ederek Allah'tan yardım dilerim.	1	2	3
16. Elimde olanla yetinmeye çalışırım.	1	2	3
17. Olanları kafama takıp sürekli düşünmekten kendimi alamam.	1	2	3
18. Sıkıntıları içimde tutmaktansa paylaşmayı tercih ederim.	1	2	3
19. Mutlaka bir çözüm yolu bulabileceğime inanıp bu yolda uğraşırım.	1	2	3

	Hiç bir Zaman	Bazen	Her zaman
20. İş olacağına varır diye düşünürüm.	1	2	3
21. Ne yapacağıma karar vermeden önce arkadaşlarımın fikrini alırım.	1	2	3
22. Kendimde her şeye başlayacak gücü bulurum.	1	2	3
23. Olanlardan olumlu bir şey çıkarmaya çalışırım.	1	2	3
24. Bunun alın yazım olduğunu ve değişmeyeceğini düşünürüm.	1	2	3
25. Sorunlarıma farklı çözüm yolları ararım.	1	2	3
26. "Olanları keşke değiştirebilseydim" diye düşünürüm.	1	2	3
27. Hayatla ilgili yeni bir bakış açısı geliştirmeye çalışırım.	1	2	3
28. Sorunlarımı adım adım çözmeye çalışırım.	1	2	3
29. Her şeyin istediğim gibi olamayacağını düşünürüm.	1	2	3
30. Dertlerimden kurtulayım diye fakir fukaraya sadaka veririm.	1	2	3
31. Ne yapacağımı planlayıp ona göre davranırım.	1	2	3
32. Mücadele etmekten vazgeçerim.	1	2	3
33. Sıkıntılarımın kendimden kaynaklandığını düşünürüm.	1	2	3
34. Olanlar karşısında "kaderim buymuş" derim.	1	2	3
35. "Keşke daha güçlü bir insan olsaydım" diye düşünürüm.	1	2	3
36. "Benim suçum ne" diye düşünürüm.	1	2	3
37. "Allah'ın takdiri buymuş" deyip kendimi teselli etmeye çalışırım.	1	2	3
38. Temkinli olmaya ve yanlış yapmamaya çalışırım.	1	2	3
39. Çözüm için kendim bir şeyler yapmak isterim.	1	2	3
40. Hep benim yüzümden oldu diye düşünürüm.	1	2	3
41. Hakkımı savunmaya çalışırım.	1	2	3
42. Bir kişi olarak olgunlaştığımı ve iyi yönde geliştiğimi hissederim.	1	2	3

Revised And Translated Mulilis Lippa Earthquake Preparedness Scale

1. Depremden hemen sonra kullanmak üzere, aşağıdakilerden hangilerini evinizde kolayca ulaşabileceğiniz bir yere koydunuz, bu hazırlığı yapmak sizce ne kadar zor ve bu hazırlık deprem sonrası için sizce ne kadar yararlı?

Maddeler	**Hazırladınız mı?**	**Ne kadar zor (1-3)**	**Ne kadar yararlı (1-3)**
a. Çalışır durumda bir fener	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
b. Çalışır durumda pilli bir radyo	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
c. Radyo-fener için yedek piller	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
d. İlkyardım seti	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
e. En az 4 gün için yeterli olacak konserve veya kuru gıda	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
f. Dolu ve çalışır durumda bir yangın söndürme cihazı	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
g. Acil durum telefon numaraları listesi	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □

2. Aşağıdaki kapatma vanası ve şalterlerin yerlerini ve nasıl çalıştığını biliyor musunuz, bunu öğrenmek sizce ne kadar zor ve bu bilgi deprem sonrası için sizce ne kadar yararlı

Maddeler	**Biliyor musunuz?**	**Ne kadar zor (1-3)**	**Ne kadar yararlı (1-3)**
a. Su vanası	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
b. Gaz vanası	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
c. Elektrik sigortaları	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □

3. Evinizde bulunan aşağıdaki büyük eşyaları depremde devrilmeyecek şekilde duvara sabitlediniz mi, bu hazırlığı yapmak sizce ne kadar zor ve deprem anı için ne kadar yararlı?

Maddeler	**Sabitlediniz mi?**	**Ne kadar zor (1-3)**	**Ne kadar yararlı (1-3)**
a. Şofben	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
b. Dolaplar	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
c. Yüksek mobilyalar	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
d. Duvara asılı büyük objeler (ayna, resim)	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □

4. Ailece deprem anı ve sonrası acil durum planı yaptınız mı, bunu yapmak sizce ne kadar zor ve ne kadar yararlı?

Maddeler	**Yaptınız mı?**	**Ne kadar zor (1-3)**	**Ne kadar yararlı (1-3)**
a. Deprem sonrası buluşma yeri belirlediniz mi?	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
b. Evde deprem sırasında sığınabileceğiniz güvenli bir yer belirlediniz mi (çelik kapı eşiği ya da demir masa altı gibi)	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □

5. Deprem hazırlığı amacıyla aşağıda belirtilen önlemlerden hangilerini aldığınızı, her bir madde için bu önlemi almanın sizce ne kadar zor olduğunu ve bu önlemi almanın sizce ne kadar faydalı olduğunu belirtiniz.

Maddeler		Ne kadar zor (1-3)	Ne kadar yararlı (1-3)
a. Oturduğunuz yere en yakın sağlık merkezinin yerini biliyor musunuz?	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
b. "Depremlere hazırlıklı olmak" konusundaki yazıları (broşür, kitapçık, gazete vb.) okur musunuz?	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
c. Deprem hazırlığıyla ilgili televizyon ve radyo haberlerini dikkatle dinler ve izler misiniz?	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
d. Deprem hazırlığı ile ilgili kurs veya seminerlere katılır mısınız?	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
e. İlk yardım eğitimi aldınız mı?	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
f. Zorunlu deprem sigortası (DASK) yaptırdınız mı?	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □
g. Binamın deprem güvenliği hakkında yeterli bilgim var	Evet( ) Hayır( ) Emin Değilim( )	Hiç □ Biraz □ Çok □	Hiç □ Biraz □ Çok □

Appendix B: Factor Analysis of Ways of Coping Inventory (WCI)

Factors and Items	Factor Loadings			
	Factor 1	Factor 2	Factor 3	Factor 4
Factor: 1 Problem solving coping **α= .84 Explained Variance= 12.61 %**				
31. I make a plan of action and follow it	**.72**	-.20	.020	.06
39. I inspire to do something creative about the problem	**.70**	-.18	-.20	-.14
28. I just concentrate on what I have to do next	**.67**	.01	-.10	-.03
19. I know what have to be done. so I double my effort to make things work	**.65**	.07	.06	.01
38. I try not to act very hastily or follow my first hunch	**.63**	-.01	-.05	-.13
23. I bargain or compromise to get something positive from the situation.	**.63**	.14	-.20	-.04
25. I come out of with couple of different solutions the problem	**.62**	-.06	.10	.14
22. I stand my ground and fight for what I wanted	**.62**	.19	.03	-.03
27. I try to adopt a new perspective	**.55**	-.05	-.12	.30
6. I try to think calmly and not get angry	**.53**	.31	.02	-.23
41. I try to be assertive and defend my right	**.51**	.17	-.02	-.10
42. I change or grow as a person	**.50**	-.11	-.08	-.30
7. I try to analyze the problem in order to understand it better	**.49**	-.01	-.01	.12
3. I try to look on the bright side of things	**.48**	.29	-.20	-.09
8. I maintain pride and keep a stiff upper lip	**.46**	.27	.27	.26
Factor 2: Fatalistic Approach **α= .82 Explained Variance= 11.24 %**				
37. I believe that God knows the best	.07	**.80**	.00	-.09
34. I think what happens is my fate	.03	**.75**	.15	-.22
14. I think that everything in life has a positive side	.19	**.74**	.21	.05
24. I think that it is my destiny and it does not change	-.03	**.71**	.21	-.13
15. I pray for help	-.03	**.70**	-.03	.06
10. I go along with fate; sometimes I just have bad luck	-.15	**.69**	.12	-.12
30. I give money to poor people to escape my trouble	-.19	**.57**	.31	-.11
26. I wish that I can change what has happened	.07	**.52**	.00	.08
20. I think that it depends on how it develops	-.07	**.50**	.13	-.09
2. I hope for a miracle	-.10	**.45**	.27	-.11
Factor 3: Helplessness/Self Blaming Approach **α= .63 Explained Variance= 8.65 %**				
17. I can not help thinking about the problem	.01	.06	**.69**	-.11
36. I do not understand my fault	.07	-.03	**.64**	-.06
12. I feel helpless	-.01	.05	**.62**	-.09
35. I think if only I were stronger	.14	-.11	**.61**	-.02
40. I realize that I bring the problem on myself	-.06	-.13	**.56**	-.14

5. I make light of the situation; I refuse to get too serious about it	.19	-.04	**.52**	.04
33. I think that I make the problems	-.05	.14	**.48**	-.11
9.I try to forget the whole thing	.11	-.15	**.47**	.27
Factor 4: Seeking Social Support				
α= .51 Explained Variance= 5.12 %				
4. I expect others to help me in solving my problems	.25	.02	.15	**.65**
18. I express anger to the person(s) who cause the problem	.09	.27	.00	**.59**
13. I expect understanding from people to whom I express my feelings	.15	-.16	.11	**.54**
21. I ask friends before I make and action	.07	-.21	.09	**.45**
α= .81 Total Explained Variance= 37.6%				
Excluded Items				
1. I turn to work or another activity to take my mind off	.17	-.20	-.07	-.07
16. I try to be happy with what I have	.11	-.11	-.14	.12
32. I quit fighting	.28	-.04	-.37	.22
29. I accept the next best thing to what I want	.16	.10	.14	.03
11. I try to understand the seriousness of the situation	-.04	-.01	.30	.17

Appendix C. Demographic Characteristics of the Participants, Used in the Present Study

AGE	MALE	Current study	FEMALE	Current study	TOTAL
25-29	878		891		1769
30-34	846		842		1688
25-34	***1724***	***32***	***1733***	***37***	***3457***
35-39	791		785		1576
40-44	722		755		1477
35-44	***1513***	***30***	***1540***	***34***	***3053***
45-49	656		605		1261
50-54	470		478		948
45-54	***1126***	***23***	***1083***	***26***	***2209***
55-59	383		406		789
60-64	277		286		563
55-64	***660***	***9***	***692***	***8***	***1352***
	5023	**94**	**5048**	**105**	

APPENDIX D

TURKISH SUMMARY

Bu çalışma, 1999 Düzce Depremi'ni yaşayan kişilerin depreme önlem alma davranışı miktarlarını ve travma sonrası gelişim düzeylerini yordayan faktörleri incelemek için gerçekleştirilmiştir. 1999 Düzce Depremi'nin ortaya çıkardığı muhtemel bu iki olumlu sonucu incelemek üzere çeşitli faktörlerin rolleri Kaynakların Olaya Göreceliği Modeli (Mulilis & Duval, 1997) ve Yaşam Krizleri ve Kişisel Gelişim Modeli (Schaefer, & Moos, 1992) çerçevesinde incelenmiştir. Depreme önlem alma davranışını incelerken Kaynakların Olaya Göreceliği Modeli (Mulilis & Duval, 1997), travma sonrası gelişimi incelerken ise Yaşam Krizleri ve Kişisel Gelişim Modeli (Schaefer, & Moos, 1992) baz alınmış ve bazı ilgili modellerden yapılan eklerle bunların geçerliliği araştırılmıştır. Yetişkinlerin betimleyici özellikleri, depreme maruz kalma düzeyleri, kullandıkları başa çıkma stratejileri, önlem almanın algılanan zorluğu, önlem almanın algılanan yararlılığı, sorumluluk, sosyal destek ve dinsel inanç miktarı değişkenlerinin depreme önlem alma davranışını ve travma sonrası gelişimi yordama becerileri ölçülmüştür.

1. Literatür Özeti

Diğer doğal afetler gibi depremler de geniş kitleleri etkilemekte ve psikolojik sıkıntılara yol açmaktadır. Uzun zamandır psikoloji bilimi depremlerin olumsuz etkilerini çalışmakla beraber, bu tür olumsuz yaşam olaylarının bazı olumlu sonuçlar da

doğurabileceğine dair görüşler yeni yeni ortaya atılmaktadır (Calhoun, Cann, Tedeschi, & McMillan, 2000; Hobfoll, 1988; Schaefer & Moos, 1992). Afetlerin psikolojik ve fiziksel zararlarını azaltmak için depreme önlem alma yöntemlerini uygulamak bu olumlu muhtemel sonuçlardan birisidir. Ayrıca Travma Sonrası Stres Bozuklugunun (PTSD) bir "antitezi" olarak bilinen (Tedeschi, Park, & Calhoun, 1998, p.3) Travma Sonrası Gelişim (TSG) literatürde travmanın diğer bir pozitif sonucu olarak ele alınmaktadır.

Depremler en yaygın olarak rastlanan afet türü olmakla beraber, Türkiye de 1999 yılında 2 büyük depremi ardarda yaşamıştır. 17 Ağustos 1999 tarihinde Kocaeli'de gerçekleşen 7.4 şiddetindeki depremi takiben, 12 Kasım 1999'da Düzce'de 7.2 şiddetinde başka bir deprem gerçekleşmiştir (Government Crisis Center, 1999a). Bu depremler neticesinde çalışmanın yapıldığı Düzce'nin Kaynaşlı ilçesinde büyük yıkım meydana gelmiş ve binaların %90 ı yıkılmış ya da ağır hasar almıştır.

Afetlerin psikolojik etkileriyle ilgili yapılan çalışmalara bakıldığında bu çalışmaların genelde alkol problemleri (Adams & Adams 1984; Smith, North, Mc Cool, & Shea, 1990) depresyon (Palinkas, Downs, Petterson, & Russell, 1993; Smith, North, Mc Cool, & Shea, 1990), saldırganlık (Adams & Adams 1984), kaygı bozuklukları (Smith, North, Mc Cool, & Shea, 1990), ve travma sonrası stres bozukluğu (Bonanno, Brewin, Kaniasty, & La Greca 2010; Nolen-Hoeksema & Morrow, 1991; Norris, Smith, & Kaniasty 1999; Palinkas, Downs, Petterson, & Russell, 1993) gibi olumsuz sonuçlara odaklandığı görülmektedir. Bu psikolojik sorunlar içerisinde afetlerin sonrasında en çok rastlanan başlık travma sonrası stres bozukluğudur (TSSB). Çeşitli çalışmalar afet sonrası TSSB oranının ortalama %30 olduğunu göstermektedir.

Afetlerin olumsuz psikolojik etkileriyle ilgili yapılan bir çok çalışmanın yanı sıra yakın zamanda afetlerin olumlu etkileri üzerine yapılan çalışmalara da rastlanmaktadır.

Bu çalışmada depreme önlem alma davranışı ve travma sonrası gelişim afet sonrası yaşanabilecek muhtemel olumlu sonuçlar olarak ele alınmıştır. Depreme önlem alma davranışı, yaşanabilecek muhtemel bir depremin yaratacağı zararları azaltmak için alınabilecek, deprem çantası hazırlamak, eşyaları sabitlemek ya da ilkyardım eğitimi almak gibi bir takım önlem alma davranışlarını içermektedir.

Bu çalışmada depreme önlem alma davranışını incelemek amacıyla Kaynakların Olaya Göreceliği Modeli (Mulilis & Duval, 1997) baz alınmıştır. Depreme önlem alma davranışlarının problem odaklı başetme yönteminin kullanılma alışkanlıklarının aktive edilmesiyle artıcağını öne süren bu model, kişinin, kişisel başetme kaynaklarını yeterli, olayın yarattığı riski ise uygun ölçüde algılarsa problem odaklı davranacağını ve depremlere önlem alacağını bildirmektedir. Bu modele göre kişinin önlem alma becerisini yüksek görmesi ve önlem almanın deprem zararlarını azaltacağına olan inancının yüksek olması kişisel kaynaklar olarak değerlendirilirken, depremin gerçekleşme ihtimali ve vereceği muhtemel zararlara ilişkin algı "olay değişkeni" olarak ele alınmıştır. Bunların arasındaki orantı problem odaklı başetme ve dolayısıyla depreme önlem alma davranışına yol açacaktır (Mulilis & Duval, 1997).

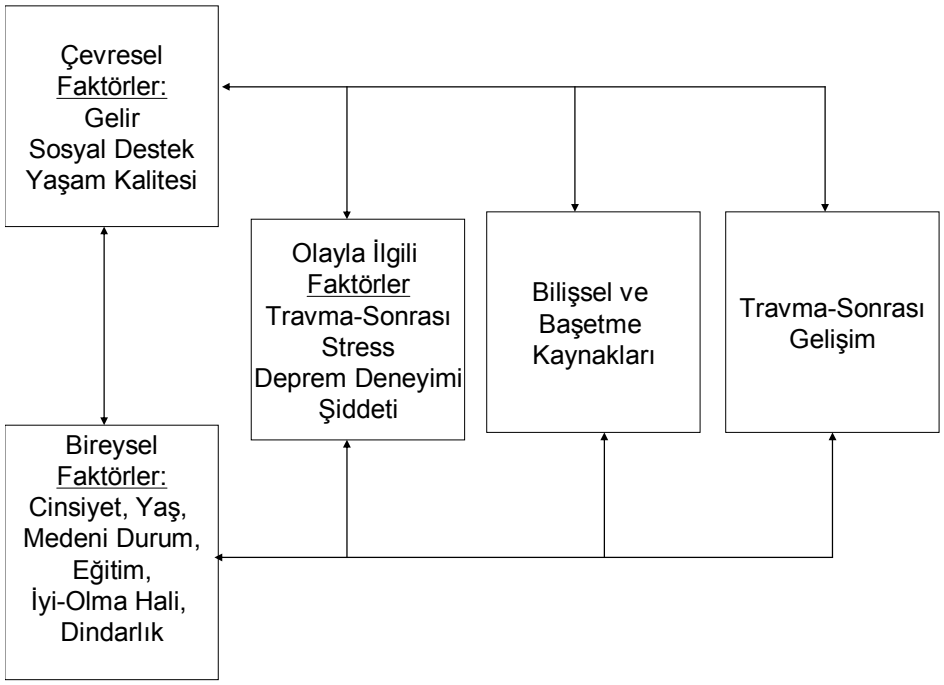
Depreme önlem alma davranışını yordayan faktörlerle ilgili yapılan çalışmalara bakıldığında önemli bulgulara rastlanmakta. Sosyo demografik değişkenler ele alındığında, artan yaş (Sattler, Kaiser, & Hittner 2000), erkek olmak (Russell, Arms, & Bibby 1995), yüksek hane geliri (Russell, Arms, & Bibby 1995; Edwards, 1993; Sattler, Kaiser, & Hittner, 2000; Fisek, Müderrisoğlu, Yeniçeri, & Özkarar, 2002), halihazırda çalışıyor olmak (Russell, Arms, & Bibby 1995; Kasapoglu & Ecevit, 2003), evli olmak (Russell, Arms, & Bibby, 1995), evde okul çağı çocuğu bulunması (Russell, Arms, & Bibby 1995; Edwards, 1993), ve eğitim düzeyindeki artışın (Russell, Arms, & Bibby 1995;

Edwards, 1993; Rustemli & Karanci 1999) depreme önlem alma davranışını olumlu yordamakta olduğu bulunmuştur.

Başetme stratejileri ile depreme önlem alma davranışları arasındaki ilişkiye bakıldığında problem odaklı başetmenin depreme önlem alma davranışlarını azaltırken, kaderci başetme ve çaresizlik-kendini suçlama başetme stratejilerinin azalttığı tespit edilmiştir (Lindell & Perry, 1992; McCLure, Walkey, & Allen, 1999). Diğer taraftan depreme önlem alma davranışının faydalı olacağı konusundaki inançtaki artışla, önlem olmanın zorluğu konusundaki inancın düşüklüğü ise yine depreme önlem alma davranışıyla olumlu ilişki içindedir (Paton, Smith, & Johnston, 2005). Depreme önlem alma davranışını yordama gücünün yüksek olduğu düşünülen diğer bir değişken olan sorumluluk ile ilgili çalışmalara bakıldığında, kişisel sorumluluktaki artışın önlem alma davranışlarını arttırdığı bulunmuştur (Karancı, Aksit, & Dirik, 2005; Sumer, Karancı, Berument, & Gunes, 2005).

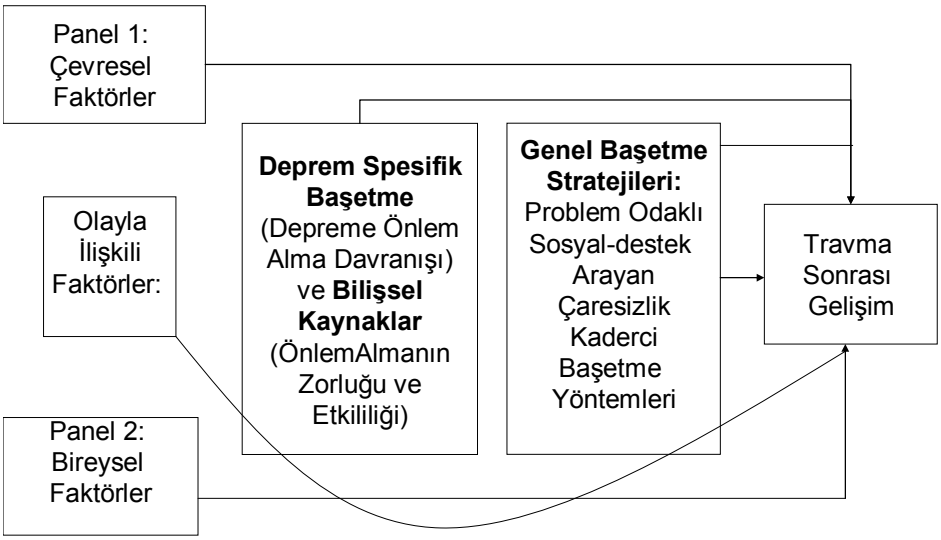
Bu çalışmada afet sonrası ortaya çıkması muhtemel diğer bir olumlu sonuç olarak travma sonrası gelişim kullanılmış ve incelenmiştir. Friedrich Nietzsche'nin "öldürmeyen, güçlendirir" sözünü hatırlatan bu kavram ilişkilerdeki, başetme yöntemlerindeki, yaşam felsefesindeki, kişisel güçteki, dinsellikteki ve tinsellikteki gelişimi içerir (Tedeschi, Park, & Calhoun, 1998). Bu çalışmada travma sonrası gelişimi test ederken Yaşam Krizleri ve Kişisel Gelişim Modeli (Schaefer & Moos, 1992) seçilmiştir. Diğer modellere göre daha kapsamlı olan bu model, çalışmamızda yapılan eklerle aşağodki şekilde revize edilmiştir. Bu modele göre travma sonrası gelişim çevresel, bireysel, bilişsel ve başetme kaynaklarıyla olayla ilişkili faktörlerin etkisiyle ortaya çıkmaktadır. Model aşağıdaki gibidir (figür 1).

Figür1: Yaşam Krizleri ve Kişisel Gelişim Modeli (Schaefer & Moos, 1992)



Bu çalışmada Schaefer ve Moos'un modeline Hobfoll'un (2001) bir argümanı eklenerek model revize edilmeye çalışılmıştır. Hobfoll'a göre, afet sonrası düşüncelerde ortaya çıkan olumlu değişimler şayet bir eyleme dönüşmezse bu gelişim bir yanılsamadır ve gerçek travma sonrası gelişim için aktif problem odaklı bir eyleme ihtiyaç duyulmaktadır (Hobfoll, 2001). Bu ekten sonra model aşağıdaki şekilde revize edilmiştir. Bu çalışmada Hobfoll'un sözünü ettiği problem odaklı aktif başetme davranışı depreme önlem alma davranışı olarak alınmıştır. Bu ekten sonra model aşağidaki şekilde fomülize edilebilir (Figür 2).

Figür 2: Hobfoll'un katkısı



Travma sonrası gelişim konusunda yapılan bilimsel çalışmalar Schaefer ve Moos'un modelini ve ona eklediğimiz Hobfoll argümanını destekler niteliktedir. Yapılan çalışmalar sosyal desteğin (Elci, 2004; Karancı ve Erkam, 2007; Tang, 2006), hane içi gelirin (Linley ve Joseph 2004 ve Hobfoll, 2001), yaş ve cinsiyetin (Linley ve Joseph 2004), dindarlığın (Milam, 2004), travma sonrası stresin (Tedeschi, Calhoun ve Cann, 2007; Hobfoll, 2002), önceki deneyimin şiddetinin (McMillen, Smith ve Fisher, 2001) ve problem odaklı başetmenin (Göral, Kesimci ve Gençöz, 2006; Karancı ve Acarturk 2007) travma sonrası gelişimi anlamlı yordadığını göstermektedir.

Sonuç olarak, bu çalışmanın amacı ağır deprem deneyimi olan bir örneklemin depreme önlem alma davranışı ve travma sonrası gelişim miktarlarını belirleyen faktörlerin incelenmesi ve ilgili 2 modelin test edilerek geliştirilmesidir.

2. Metod

2.1 Ölçüm Araçları

Veriler üç bölümden oluşan anket aracılığı ile toplanmıştır. Anketin birinci bölümü katılımcının betimleyici özelliklerini incelemeye yönelik maddelerden oluşturulmuştur. İkinci bölüm, kişinin geçmiş deprem yaşantısı ve depremle ilgili sıkıntılarını, önlem alma sorumluluğu algısını ve önlem alma veya almama nedenlerini ölçen maddelere ayrılmıştır. Anketin üçüncü bölümü sekiz farklı ölçekten meydana getirilmiştir. Bu ölçeklerden Başaçıkma Yolları Ölçeği ile katılımcıların kullandıkları başa çıkma stratejileri, Geliştirilmiş Mulilis-Lippa Depreme Hazırlık Ölçeği (Revised and Translated Mulilis-Lippa Earthquake Preparedness Scale, MLEPS) ile katılımcıların depreme hazırlık seviyeleri, hazırlanmanın zorluğu ve yararlılığı ile ilgili algıları, Dindarlık Ölçeği ile dini inanç düzeyleri, Sosyal Destek Ölçeği ile sosyal destek miktarları, travma sonrası stres belirtileri ile depremle ilişkili sıkıntı düzeyleri, Psikolojik İyi Olma Ölçeği ile algıladıkları iyilik halleri ve Yaşam Kalitesi Ölçeği ile halihazırda yaşam kalitelerini nasıl değerlendirdikleri ölçülmüştür.

2.1.1 Demografik Bilgi Formu

Katılımcıların yaşı, eğitimi, cinsiyeti, eğitim durumu, hane geliri, halihazırdaki çalışma durumu gibi verileri elde etmek üzere uygulanmıştır.

2.1.2 Başetme Yolları Ölçeği

Folkman and Lazarus (1988) tarafından geliştirilen 66 maddelik Başetme Yolları Ölçegi'nin, Karancı ve ark. (1999) tarafından kısaltılmış olan 41 maddelik formu hastaların ne tür başetme yolları kullandıklarını belirlemek için kullanılmıştır. Duygu

odaklı başetme stilleri ve problem odaklı başetme stillerini, çesitli boyutlarda ölçmeyi amaçlayan Başetme Becerileri Ölçegi, Folkman ve Lazarus tarafından (1980) geliştirilmiştir. Ölçek 74 maddeden oluşmaktadır. Türkçe adaptasyonu Siva tarafından 1991 yılında yapılmış iç tutarlılık katsayısı .90 olarak bulunmuştur. Gençöz, Gençöz ve Bozo (2006) ölçegin "duygu odaklı başetme", "problem odaklı başetme" ve "sosyal destek arama" olmak üzere 3 üst boyuttan oluştuğunu vurgulamış ve bu boyutların psikometrik özellikleri güvenilir ve geçerli bulunmuştur.

2.1.3 Travma Sonrası Gelişim

Travma sonrası gelişimi ölçmek için Tedeschi ve Calhoun (1996) tarafından geliştirilen 21 maddelik Travma Sonrası Gelişim Ölçeği kullanılmıştır. Tedeschi & Calhoun (1996) tarafından travma sonrası bireylerdeki olumlu değişiklikleri değerlendirmek üzere geliştirilmiş Travma Sonrası Gelişim Ölçeği, 21 maddeden ve kişilerarası ilişkilerin gelişmesi, yaşamda yeni olanaklar, yaşama minnet duyma (yaşamın değerini anlama), kendini daha güçlü hissetme, ve ruhsal (manevi) gelişim olarak adlandırılan 5 alt ölçekten oluşan bir ölçektir. Türkiye'de otistik çocuklarının ebeveynlerinde travma sonrası gelişimle ilgili bir araştırmada ölçek adapte edilmiştir (Elçi, 2004). Bu çalışma sonunda madde toplam korelasyonu düşük olan bir madde atılmış Cronbach's alpha değeri ise .88 bulunmuştur. Dirik (2006) romatizma hastalarıyla yaptığı çalışma için ölçegin tekrar bir gözden geçirmesini yapmıştır. Bu araştırmada ölçegin Dirik (2006) tarafından gözden geçirilen versiyonu kullanılmıştır. Ölçeğin tüm puanının kullanıldığı bu çalışmadaki Cronbach değeri .73'ken örneklemin TSG ortalaması 5 üzerinden 3.22'dir.

2.1.4 Yaşam Kalitesi Ölçeği

Yaşam Kalitesi Ölçegi (WHOQOL-BREF) Dünya Sağlık Örgütü tarafından geliştirilmiş, 26 maddeden ve fiziksel sağlık, psikolojik sağlık, sosyal ilişkiler ve çevre alt alanlarından oluşan bir ölçektir. Türkçeye adaptasyon çalışması Fidaner ve ark. (1999) tarafından yapılmıştır. Ölçeğin bu çalışmadaki Cronbach değeri .88'dir.

2.1.5 Geliştirilmiş Mulilis-Lippa Depreme Hazırlık Ölçeği

Şakiroğlu tarafından 2005 yılında çevirilen ve adapte edilen ölçek depreme önlem alma davranışlarını, depreme önlem almanın algılanan zorluğunu ve depreme önlem almanın algılanan yararlılığı 5 kategoride puanlar. Bu kategoriler, deprem çantası, sigorta ve vanalar, sabitleme, deprem planları ve bilgi dir. Bu çalışmada, ölçeğin hazırlık bölümü Cronbach değeri .78, zorluk bölümü Cronbach değeri .86 ve yararlılık bölümü Cronbach değeri .80'dir.

2.1.6 Dindarlık Ölçeği

Yaparel (1996) tarafından geliştirilmiş Dindarlık Ölçegi'nin davranış boyutunu ölçen 10 maddesi kullanılmıştır. Daha önce Dirik ve Karancı (2006) tarafından da kullanılan 10 maddelik ölçeğin bu çalışmadaki Cronbach' değeri .91'dir.

2.1.7 Sosyal Destek Ölçeği

Hastaların sosyal destek algıları Zimet ve ark., (1988) tarafından geliştirilen Çok Boyutlu Algılanan Sosyal Destek Ölçegi kullanılarak ölçülmüştür. Zimet ve arkadaşları tarafından 1988 yılında geliştirilen ölçek, kişinin arkadaşlarından, ailesinden ve yaşamındaki diğer önemli kişilerden aldığı sosyal desteğin düzeyini değerlendirmeyi amaçlamaktadır. Ölçegin orjinal formunda iç tutarlılık katsayısı .79 ile .98 arasında değistiği, 2-3 aylık periyotlarla ölçülen test-tekrar test güvenirliğinin .72 ile .85 arasında değistiği bulunmuştur. Ölçegin Türkçe adaptasyonu Eker ve Arkar (1995) tarafından

yapılmış, daha sonra Eker, Arkar, ve Yaldız (2000) adaptasyon çalışmasını yapmıştır. Psikiyatrik hastalar, hasta ziyaretçileri ve normal örneklemde ölçek uygulanarak ölçegin psikometrik değerleri test edilmiştir. Ölçegin iç tutarlılık katsayısı .80 ile .95 arasında değişmektedir. Ölçeğin tüm puanının kullanıldığı bu çalışmadaki Cronbach değeri .89'dur.

2.1.8 Psikolojik İyi-Olma Hali Ölçeği

Ölçek 1989 yılında Ryff tarafından geliştirilmiş ve 2004 yılında Imamoğlu tarafından Türkçe'ye çevrilmiştir. Ölçek katılımcıların psikolojik iyi-olma halini ölçmek için kullanılmıştır. Ölçeğin tüm puanının kullanıldığı bu çalışmadaki Cronbach değeri .73'dür.

2.1.9 Travmatik Stres Semptom Ölçeği (TSSÖ)

Ölçek afet sonrası stres belirtilerini ölçmek amacıyla 17 travma sonrası stres bozukluğu ve 6 depresyon belirtisinden oluşturulmuştur (Basoglu et. al., 2001). Bu çalışmada 4'lü Likert ölçeği kullanılarak puanlanan TSSÖ'nün ortalaması 1.84 Cronbach değeri ise .89'dur.

2.2 Katılımcılar

Çalışma örneklemi Kaynaşlı'da yaşayan 199 yetişkinden (18-73 yaşları arasında 105 kadın ve 94 erkek) oluşmaktadır. Katılımcılar yaş, cinsiyet ve oturdukları evin özelliği (deprem evi ya da değil) temel alınarak seçilmiş ve veri toplanırken ev ziyaretleri kullanılmıştır. Katılımcıların özellikleri aşağıdaki tabloda verilmiştir. Kaynaşlı 1999 Düzce Depremi'inde büyük zarar görmüş, binalarının %85'i yıkılmış ya da ağır hasar almış, 316 kişi deprem nedeniyle yaşamını yitirirken, 543 kişi yaralanmıştır. Ziraat Bankası, PTT, 5 tane cami, Kaynaşlı İlkokulu ve Lisesi, Belediye

ve Kaymakamlık Binaları, Hastane ve diper tüm resmi kurum binaları da yıkılan ve ağır hasar gören yapılar arasındadır.

		N	Yüzdelik Oran	Ortalama	*S.s*	Ranj
Yaş				34.81	12.6	(18-73)
Cinsiyet	F	105	52.7			
	M	94	47.3			
Medeni durum	Evli	149	74.9			
	Bekar	47	23.6			
	Boşanmış	3	1.5			
Çalışma durumu	Evet	111	55.8			
	Hayır	88	44.2			
EvdeÇocuk	Evet	147	73.9			
	Hayır	52	26.1			
Gelir	<500mil.	22	11.1			
	500mil-1mil.	125	62.8			
	1mil.-2mil	42	21.1			
	>2 mil.	10	5			

3. Sonuçlar

Çalışmanın sonuç bölümünde, depreme önlem alma oranları ile önlem almanın algılanan zorluk ve faydalılık miktarları, önlem alma ve almama nedenleri belirlenmiş, bunlara ilaveten depreme önlem alma ve travma sonrası gelişim miktarlarını yordayan faktörleri tespit etmek için regresyon analizleri yapılmıştır. Yapılan regresyon analizi sonuçları, önlem almanın algılanan yararının, sorumluluğun, travma sonrası stres tepkilerinin azlığının ve problem odaklı başetmenin depreme önlem alma davranışı ile; evli olmanın, problem odaklı başetmenin, iyi olma halinin, sosyal destek arama ve sosyal desteğin travma sonrası gelişim miktarı ile anlamlı olarak ilişkili olduğunu ortaya koymuştur. Yapılan regresyon analizinde, yukarıdaki bulgulara ek olarak, genel

problem odaklı başetme becerilerinin, depreme özel aktif başetme davranışlarına nazaran travma sonrası gelişimi daha etkili yordadığı bulunmuştur.

3.1 Depreme Önlem Alma Davranışı

Yapılan regresyon analizi sonuçları Kaynakların Olaya Göreceliği Modeli'ni (Mulilis & Duval, 1997) destekler niteliktedir. Sonuçlar önlem almanın algılanan yararının, sorumluluğun, travma sonrası stres tepkilerinin azlığının ve problem odaklı başetmenin depreme önlem alma davranışı ile anlamlı olarak ilişkili olduğunu ortaya koymuştur. Depreme önlem alma maddeleri, bunların zorluğu ve yararlılığı ile ilgili puanlar aşağıda sunulduğu şekildedir.

3.1.1 Deprem Çantası

Maddeler	Hazırladınız mı?	Ne kadar zor (1-3)	Ne kadar yararlı (1-3)
Çalışır durumda bir fener	2.08 (.98)*	1.15 (.41)	2.85 (.41)
Çalışır durumda pilli bir radyo	1.66 (.93)	1.24 (.46)	2.59 (.62)
Radyo-fener için yedek piller	1.69 (.95)	1.21 (.44)	2.72 (.57)
İlkyardım seti	1.77 (.95)	1.27 (.49)	2.83 (.45)
En az 4 gün için yeterli olacak konserve veya kuru gıda	1.76 (.94)	1.31 (.52)	2.77 (.51)
Dolu ve çalışır durumda bir yangın söndürme cihazı	1.43 (.82)	1.41 (.64)	2.75 (.57)
Acil durum telefon numaraları listesi	1.84 (.98)	1.19 (.43)	2.79 (.51)

3.1.2 Sigorta ve Vanalar

Maddeler	Biliyor musunuz?	Ne kadar zor (1-3)	Ne kadar yararlı (1-3)
Su vanası	2.71 (.69)*	1.27 (.50)	2.80 (.46)
Gaz vanası	2.19 (.95)	1.28 (.48)	2.82 (.44)
Elektrik sigortaları	2.86 (.50)	1.18 (.43)	2.88 (.38)

3.1.3 Sabitleme

Maddeler	Sabitlediniz mi?	Ne kadar zor (1-3)	Ne kadar yararlı (1-3)
Şofben	2.53 (.83)*	1.31 (.49)	2.85 (.37)
Dolaplar	1.81 (.97)	1.48 (.61)	2.81 (.41)
Yüksek mobilyalar	1.70 (.93)	1.47 (.60)	2.81 (.43)
Duvara asılı büyük objeler (ayna, resim)	1.86 (.96)	1.31 (.51)	2.77 (.47)

3.1.4 Deprem Planları

Maddeler	Yaptınız mı?	Ne kadar zor (1-3)	Ne kadar yararlı (1-3)
a. Deprem sonrası buluşma yeri belirlediniz mi?	1.42 (.79)*	1.25 (.50)	2.69 (.54)
b. Evde deprem sırasında sığınabileceğiniz güvenli bir yer belirlediniz mi (çelik kapı eşiği ya da demir masa altı gibi)	1.71 (.93)	1.33 (.58)	2.74 (.51)

3.1.5 Bilgi

Maddeler	Yaptınız mı?	Ne kadar zor (1-3)	Ne kadar yararlı (1-3)
Oturduğunuz yere en yakın sağlık merkezinin yerini biliyor musunuz?	2.94 (.30)*	1.18 (.43)	2.89 (.38)
"Depremlere hazırlıklı olmak" konusundaki yazıları (broşür, kitapçık, gazete vb.) okur musunuz?	2.94 (.30)*	1.18 (.43)	2.89 (.38)
Deprem hazırlığıyla ilgili televizyon ve radyo haberlerini dikkatle dinler ve izler misiniz?	2.47 (.85)	1.20 (.47)	2.75 (.50)
Deprem hazırlığı ile ilgili kurs veya seminerlere katılır mısınız?	2.77 (.62)	1.29 (.94)	2.80 (.48)
İlk yardım eğitimi aldınız mı?	1.70 (.90)	1.42 (.65)	2.90 (.98)
Zorunlu deprem sigortası (DASK) yaptırdınız mı?	1.65 (.92)	1.54 (.98)	2.84 (.46)
Binamın deprem güvenliği hakkında yeterli bilgim var	1.59 (.90)	1.57 (.98)	2.75 (.55)

3.1.6 Deprem Hazırlığı Yapmama Nedenleri

Katılımcıların depreme hazırlık yapmama nedenleri incelendiğinde kaderci başetmeyi düşündüren "Önlem alsak da, Allah yazdıysa olur" maddesi depreme önlem almayanların en çok işaretledikleri madde olmuştur.

Hazırlık Yapmama Nedenleri (KAYNAŞLI)	Percentages
1. Önlem alsak da, Allah yazdıysa olur	47.1
2. Oturduğum eve güvenmem	44.2
3. İhmalkarlık	39.4
4. Yeterli paramın olmaması	29.8
5. Ne yapılabileceğini bilmemem	24
6. Kendi evim olmaması	12.5
7. Bu evde geçici süreyle oturmam	7.7
8. Yeterli zamanımın olmaması	3.8
9. Deprem olacağını düşünmemem	3.8

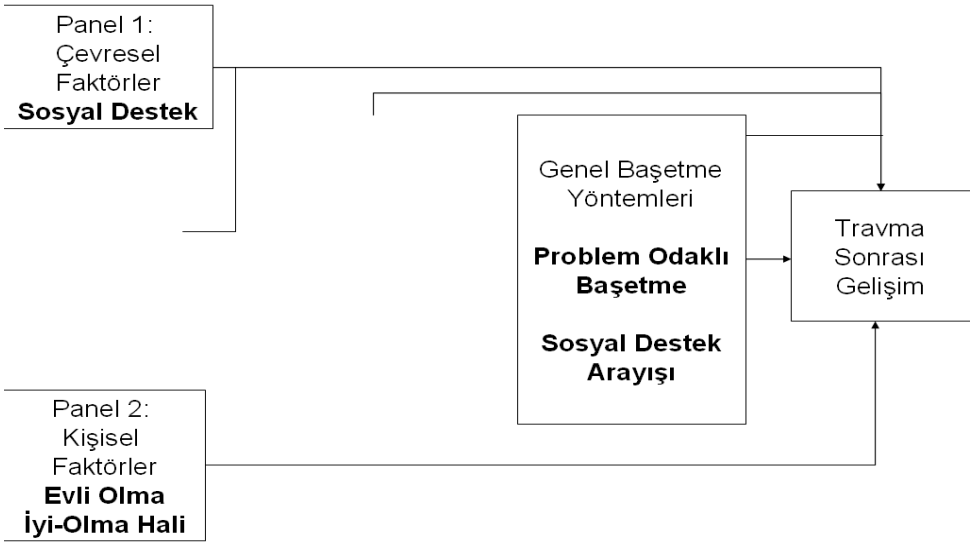
3.1.7 Deprem Hazırlığı Yapma Nedenleri

Katılımcıların depreme hazırlık yapma nedenleri incelendiğinde ise, başta aileleri olmak üzere kendilerini ve ailelerini koruma isteğinin en önde gelen neden olduğu dikkat çekmektedir.

Hazırlık Yapma Nedenleri	Kaynaşlı
1.Ailemi korumak için	71.2
2.Kendimi güvende hissetmek için	60.6
3.Bilim adamları uyardığı için	28.8
4.Evime güvenmediğim için	19.2
5.Çevremdekiler önlem aldığı için	13.5

3.2 Travma Sonrası Gelişim

Yapılan regresyon analizi sonuçlarına göre evli olmanın, problem odaklı başetmenin, iyi olma halinin, sosyal destek arama ve sosyal desteğin travma sonrası gelişim miktarı ile anlamlı olarak ilişkili olduğunu ortaya çıkmıştır. Regresyon analizi sonucunda travma sonrası gelişimde toplam açıklanan varyans %50.9 olmuştur. Bu çalışmada Schaefer ve Moos'un modeline Hobfoll'un argümanını katarak oluşturduğumuz modelde regresyon sonuçlarına göre olaya bağlı faktörler ve depreme özel aktif başetme yöntemlerinin çıkarılması uygun olmuştur. Depreme özel aktif başetme yöntemleri travma sonrası gelişimi anlamlı şekilde yordarken, denkleme genel başetme yöntemlerinin girmesi ile etkisini kaybetmiştir. Denenen modelin regresyon analizi sonucunda ortaya çıkan son hali, olaya bağlı faktörler ve depreme özel aktif başetme yöntemlerinin çıkarılasından sonra şu şekilde olmuştur:



4. Değerlendirme, Sınırlılıklar ve Öneriler

Araştırılan değişkenler üzerinde geniş kapsamlı ve sistematik bir bakış elde edebilmek için modellerin test edilmesi önerisi daha önceleri vurgulanan bir unsurdur (Mc Millen, 2004). Bu araştırmada depreme önlem alma davranışını incelerken Kaynakların Olaya Göreceliği Modeli (Mulilis & Duval, 1997), travma sonrası gelişimi incelerken ise Yaşam Krizleri ve Kişisel Gelişim Modeli (Schaefer, & Moos, 1992) kullanılmıştır. Schaefer ve Moos'un modeline, Hobfoll'un ilgili argümanları eklenerek oluşturulan yeni model, travma sonrası gelişim'in nelerle ilişkili olduğunu geniş ve kapsamlı bir bakış açısıyla anlamak için geliştirilmiştir. Çalışmanın sonuçlarına göre, önlem almanın algılanan yararının, sorumluluğun, travma sonrası stres tepkilerinin azlığının ve problem odaklı başetmenin depreme önlem alma davranışı ile; evli olmanın, problem odaklı başetmenin, iyi olma halinin, sosyal destek arama ve sosyal desteğin travma sonrası gelişim miktarı ile anlamlı olarak ilişkili olduğunu ortaya koymuştur

Çalışmanın depreme önlem alma konusundaki bulguları, Kaynakların Olaya Göreceliği Modeli'ne (Mulilis & Duval, 1997) kısmi destek sağlamaktadır. Özellikle problem-odaklı başetme ve depreme önlem almanın faydalı olacağına dair inancın depreme önlem alma davranışını anlamlı ve pozitif yordaması modele önemli bir destek sağlamıştır. Öte yandan depreme önlen alma konusundaki kişisel yetkinlik algısı ile önlem alma derecesi arasında bir ilişki bulunmaması modelin yarattığı beklentinin dışında kalmakla beraber, bu sonuç, önlem alma davranışlarının herkes tarafından uygulanabilir kolay alınır önlemler olmasından kaynaklanmış olabilir.

Çalışmanın önemli bulgularından bir tanesi de kişilerin depreme önlem alma ve almama nedenlerini belirlemesidir. Deprem yaşamış kişilerden depreme önlem

almadığını düşünenlerin yaklaşık yarısının bunun nedeni olarak kaderci bakışlarını göstermeleri (önlem alsak da Allah yazdıysa olur) ve depreme önlem aldığını düşünenlerin hemen hepsinin ailesini koruma amaçlı bunu yaptığını bildirmesi önemli bulgulardır.

Çalışmanın travma sonrası gelişim konusundaki bulguları Yaşam Krizleri ve Kişisel Gelişim Modeli'ne (Schaefer, & Moos, 1992) büyük bir destek sağlarken, ona yaptığımız Hobfoll'dan eklere kısmi destek sağlamaktadır. Travma sonrası gelişim, kişisel, bireysel ve başetme kaynaklarıyla ilişkilidir. Depreme özgü başetme stratejileri ilk tahlilde Hobfoll'un da dediği gibi travma sonrası gelişimi olumlu etkilerken, genel başetme yöntemleri özellikle de genel problem-odaklı başetme denkleme girdiğinde bu etkisini yitirmiştir.

Travmatik yaşam deneyimlerinden etkilenme derecesi kişiden kişiye farklılık gösterir. Çesitli faktörler olay sonrasında bireylerde olumlu, olumsuz ya da hem olumlu hem olumsuz sonuçlar yaşanmasına neden olabilmektedir (Calhoun & Tedeschi, 2004; Jang, 2004). Olumlu sonuçları artırmak için travma sonrası gelişimi aktive eden faktörleri iyi bilmek ve kullanmak gerekir. Bireysel kaynaklar (yaşam kalitesi, dindarlık, hane geliri), çevresel kaynaklar (aileden, arkadaştan ve önemli diğer kişiden alınan sosyal destek), olayı algılama (olaya ilişkin algılanan tehdit, geçmiş deneyimin şiddeti ve bıraktığı etkiler), bilişsel işlemleme- baş etme (problem odaklı ve sosyal destek arayan başetme) gibi değişkenleri içeren çok boyutlu bir değerlendirme, yapılacak müdahalenin içeriğini şekillendirmelidir.

Deprem yaşamış kişilerin kullandıkları başetme yolları ve elde ettikleri sosyal destek travma sonrası gelişimin önemli yordayıcılarıdır. Problem odaklı başetmeyi kullanan deprem yaşamış kişiler daha fazla travma sonrası gelişim yaşamaktadırlar. Büyük bir deprem deneyimi yaşamış kişilere uygulanacak psikolojik müdahalelerde

kişilerin kullandıkları başetme yollarını ve algıladıkları sosyal destek düzeylerini dikkate almak müdahalenin etkinliğini belirleyecektir. Bu konuda daha geniş örneklemlerle ve farklı travma grupları ile yapılacak ampirik çalışmalar verilecek olan profesyonel yardımın içeriğini oluşturmada önemli kolaylıklar sağlayacaktır.

Daha sonraki çalışmalara yol göstermek açısından, bu çalışmada değinilmeyen diğer önemli kaynak değişkenlerin de ele alındığı çalışmalar ileride yapılacak çalışmalarda önerilebilir. Bunlara örnek olarak A Tipi kişilik, kendini yeterli görme (Calhoun & Tedeschi, 1998b; Tedeschi et al., 1998), içedönüklük dışa dönüklük (Sheikh, 2004), yeni deneyimlere açık olma (Tedeschi, & Calhoun, 2004; Aldwin, & Levenson, 2004), ve umut dolu olma (Tennen & Affleck, 1998) verilebilir.

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