

THE EFFECTS OF BEING A “NEIGHBORHOOD DISASTER VOLUNTEER”
ON PSYCHOLOGICAL DISTRESS AND POSTTRAUMATIC GROWTH
AMONG THE SURVIVORS OF THE 1999 MARMARA EARTHQUAKE

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ABSTRACT

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This study aimed to examine the possible effects of being a volunteer in a nongovernmental organization (Neighborhood Disaster Support Project) for psychological distress and posttraumatic growth following the 1999 Marmara earthquake. The predictors of psychological distress and posttraumatic growth were also investigated. Risk factors were examined as pre-earthquake variables (e.g. socio-demographic variables), earthquake variables (e.g. severity of impact), and post-earthquake variables (e.g. being a Neighborhood Disaster Volunteer (NDV) or not, and coping strategies). One hundred survivors (66 Males and 34 females with an age range of 18-59) of the earthquake, who are NDVs and a control group, composed of 100 survivors (66 Males and 34 females with an age range of 18-60) who are not NDVs participated in the study. Furthermore, in order to see the effects of being closer or further to the earthquake epicenter, half of the sample was taken from Glck (epicenter of the quake), and the rest were from İzmit (further from the epicenter). Data was collected 4,5 years after the

earthquake by a questionnaire consisting of three parts. One psychology graduate student and five trained NDVs administered the questionnaire individually. The first part of the questionnaire had items tapping socio-demographic information and earthquake experiences. The second part included items related to the experience of being a volunteer. Finally, the third part contained three scales which assessed the participants' psychological distress (Symptom Checklist-40), coping skills (Ways of Coping Questionnaire), and posttraumatic growth level (Stress Related Growth Scale). The results of factor analysis indicated that earthquake experience could be grouped into two factors, namely severity of impact and perceived life threat. It was found that the respondents had significantly higher perceived life threat than the severity of impact. The factor analysis for coping yielded four factors, which were problem focused/optimistic, fatalistic, helplessness and escape coping approaches. The comparison of the volunteer and non-volunteers samples showed that the non-volunteer sample uses significantly more levels of fatalistic coping. Moreover it was found that women use significantly more levels of helplessness coping. When the impact of the earthquake severity on post traumatic growth levels was investigated, results showed that individuals from Gölcük (epicenter of the quake) had significantly higher growth levels than those from İzmit (further away from epicenter). The results of regression analyses showed that low education level, helplessness approach, and less use of problem solving/optimistic approach were significant predictors of subjects' general distress levels. Being a volunteer, using problem solving/optimistic approach and fatalistic approach appeared as significant predictors of posttraumatic growth. The results were discussed within the psychological distress and growth theories. Furthermore, limitations of the study, implications for psychosocial interventions and future research were discussed.

Keywords: Earthquake, Growth, Coping, Volunteerism, Distress

ÖZ

1999 MARMARA DEPREMİ YAŞAYAN YETİŞKİNLERDE “MAHALLE AFET GÖNÜLLÜSÜ” OLMANIN PSİKOLOJİK STRES DÜZEYİNE VE TRAVMA SONRASI GELİŞİME ETKİLERİ

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Bu çalışmanın amacı, 1999 Marmara Depremi sonrasında bir sivil organizasyonda gönüllü olmanın kişilerin yaşadıkları stress düzeyi ve travma sonrası gelişim üzerindeki olası etkilerini incelemektir. Ayrıca, psikolojik stresin ve travma sonrası gelişimin yordayıcı değişkenleri de araştırılmıştır. Risk faktörleri olarak deprem öncesi değişkenler (betimleyici özellikler), deprem değişkenleri (deprem etkisinin şiddeti ve algılanan tehdit), ve deprem sonrası değişkenler (Mahalle Afet Gönüllüsü -MAG- olmak ya da olmamak, başa çıkma stratejileri) stres ve travma sonrası gelişim düzeyini belirlemedeki yordayıcı değişkenler olarak ele alınmıştır. Çalışma örneklemini, depremi yaşamış 100 MAG (18-59 yaşları arasında 66 erkek, 34 kadın) ve 100 MAG olmayan yetişkin (18-60 yaşları arasında 66 erkek, 34 kadın) oluşturmuştur. Ayrıca deprem merkezine yakın ya da uzak olmanın etkilerini görmek için de örneklemin yarısı

Gölcük'ten (deprem üssü), diğer yarısı da İzmit'ten (deprem merkezinden uzak) alınmıştır. Bilgiler, depremden 4,5 yıl sonra, üç bölümden oluşan bir anket aracılığıyla elde edilmiştir. Anket, MAG olan 5 eğitilmiş anketör ve bir psikoloji yüksek lisans öğrencisi tarafından bireysel olarak uygulanmıştır. Anketin birinci bölümünde sosyo-demografik bilgilerle ve deprem yaşantısıyla ilgili sorular yer almaktadır. Anketin ikinci bölümü afet gönüllüsü olmakla ilgili soruları kapsamaktadır. Üçüncü bölüm ise psikolojik stres düzeyini (Semptom Kontrol Listesi- 40), başa çıkma stratejilerini (Başaçıkma Yolları Ölçeği), ve travma sonrası gelişimi (Strese Bağlı Gelişim Ölçeği) ölçmek için kullanılan 3 ölçeği kapsamaktadır. Uygulanan faktör analizinin sonuçları deprem deneyiminin; deprem etkisinin şiddeti ve algılanan tehdit olmak üzere iki grupta toplandığını göstermiştir. Bunun yanı sıra depremi yaşayanlarda, deprem etkisinin şiddetinden çok depremde algılanan hayati tehlikenin anlamlı olarak daha fazla olduğu bulunmuştur. Başa çıkma stratejileri için uygulanan faktör analizi de bunların problem odaklı/iyimser yaklaşım, kaderci başa çıkma, çaresiz yaklaşım, ve kaçınma olmak üzere dört faktörde toplandığını göstermiştir. Gönüllülerle gönüllü olmayanlar karşılaştırıldığında, gönüllülerin anlamlı olarak daha az kaderci yaklaşım kullandıkları bulunmuştur. Ayrıca kadınların çaresizlik başa çıkma stratejisini erkeklere oranla anlamlı biçimde daha çok kullandıkları ortaya çıkmıştır. Deprem şiddetinin travma sonrası gelişime etkisine bakıldığında ise Gölcük'te (depremin merkezüssü) yaşayanların İzmit'tekilere (merkezden uzak) göre anlamlı olarak daha çok gelişim gösterdiği bulunmuştur. Regresyon analizine göre, eğitim seviyesi, çaresiz yaklaşım ve problem odaklı/iyimser yaklaşım psikolojik stres düzeyini anlamlı olarak yordamıştır. Gönüllü olmak, problem odaklı/iyimser yaklaşım, ve kaderci yaklaşım travma sonrası gelişimin anlamlı yordayıcıları olarak bulunmuştur. Çalışmanın sonuçları psikolojik stres ve gelişim teorileri bağlamında tartışılmış, buna ek olarak çalışmanın yetersiz yönleri, psikososyal müdahaleler ve ileride yapılabilecek çalışmalarla ilgili öneriler sunulmuştur.

Anahtar Kelimeler: Deprem, Gelişim, Başa çıkma, Gönüllülük, Stres

To my father, mother, and husband

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CHAPTER I

INTRODUCTION

There has been enormous number of studies about various kinds of traumatic events, since this thesis concentrates on earthquakes, psychological effects and risk factors will be mainly limited to research findings on earthquakes. This study investigated the possible differences which may be caused by being a Neighborhood Disaster Volunteer in general distress level and posttraumatic growth following the 1999 Marmara earthquake. The factors associated with general distress and posttraumatic growth, were also investigated. Risk factors were examined as pre-earthquake variables (e.g. socio-demographic variables), during earthquake variables (e.g. earthquake severity), and post-earthquake variables (e.g. being a Neighborhood Disaster Volunteer or not, coping strategies). After the general description of trauma and disasters, psychological effects of earthquakes and relevant studies will be examined. Finally general characteristics of the 1999 Marmara earthquake and the Neighborhood Disaster Volunteer organization will be presented.

1.1. Trauma and Disasters

Traumatic events are sudden and devastating events which lead to both negative and positive mental health outcomes. Research indicates that traumatic events are

common in the community. In their study with approximately 6,000 men and women, Kessler et al. (1995) found that for men, the rate of exposure to any trauma in the entire life time was 61% and for women it was 51% (as cited in Green & Kaltman, 2003). There are various kinds of traumatic events such as natural disasters, motor vehicle accidents, life-threatening illnesses, rape or war. Peterson, Prout and Schwartz (1991) described the essential features of traumatic events as serious threat to one's life or physical integrity; serious threat or possible harm to one's children, spouse, close relatives, and friends; sudden destruction of one's home or community; witnessing a serious injury or killing; and learning about a serious harm or threat to a relative or friend (as cited in Michelson, June, Vives, Testa, & Marchione, 1998). These characteristics were also given in the definition of a "traumatic event" by the Diagnostic Statistical Manual of Mental Disorders (DSM-IV). Moreover, the person's response to the event must involve intense fear, helplessness or horror in adults, and disorganized or agitated behavior in children (Benight & Bandura, 2003).

The term disaster is used for the events that cause enormous loss of lives and material goods while causing changes in the functioning of the victims (De La Fuente, 1990). Similarly, Webster's Dictionary defines disaster as "a sudden calamitous event bringing great damage, loss, or destruction" (<http://www.merriam-webster.com>).

Although traumatic events such as life threatening illnesses or rape may influence a single individual, events such as earthquakes or bombing attacks may influence large-scale communities. The disaster literature divides disasters into two types;

those caused by natural forces and those caused by the actions of human beings. Common natural disasters are earthquakes, tornados and floods whereas common man-made disasters are terrorism, technological disasters, or war. Although both kinds of disasters may cause psychological distress, the difference between their psychological consequences is not precise (Scott, Knoth, Quiones, & Gomez, 2003). According to some findings, the uncertainty, unexpectedness and probability of reoccurrence makes natural disasters cause more distress than man made ones (Rubonis and Bickman, 1991). Also, natural disasters are very costly in means of property losses, disaster relief efforts, income loss, and health care costs (Ursano & Fullerton, 1990).

Disasters may change daily life and damage the quality of life and relationships. Unemployment which cause economic difficulties for the person and family may occur as a consequence of a disaster. Moreover, a greater decline in health status is another problem which is associated with disasters (Canino, Bravo, Rubio-Stipeck, & Woodbury, 1990).

To sum up, although some studies declared that natural disasters are more costly in economical or psychological terms, it is an accepted fact that traumatic events either in the form of man-made disasters or natural disasters are very common in the community, and they cause enormous difficulties for the victims.

1.2. Models of Posttraumatic Distress

Cognitive theories of posttraumatic stress are developed relatively more than biological, psychodynamic, and learning theories. Moreover, cognitive theories have the greatest explanatory and predictive power about the posttraumatic reactions. According to the cognitive theories, before the traumatic experience, people have preexisting beliefs and models of the world. Traumatic experience provides new information which is incompatible with the preexisting beliefs. The kind of posttraumatic reactions depends on the success of the effort to integrate new information into preexisting beliefs. If the person can integrate the new information into the preexisting beliefs, successful information processing occurs. However, if the new information can not be assimilated with the preexisting beliefs, pathological posttraumatic reactions occur (Brewin, Dalgleish, & Joseph, 1996). Since Horowitz's (1986) formulation of the stress response is one of the most comprehensive and explanatory model of distress reactions (Brewin et al., 1996), in this section it will be presented separately below.

1.2.1. Horowitz's Social Cognitive Model of Posttraumatic Stress

Horowitz's model was developed to explain the mechanisms of posttraumatic stress. "The stress response "syndrome", as Horowitz terms it, describes normal manifestations following the experience of a traumatic event" (Stroebe & Schut, 1999, p.207). According to the model, the difference between normal and disordered reactions to trauma lies in the intensity and frequency of the reaction, not in the type of it (Stroebe & Schut, 1999).

What is emphasized in this model is the necessity of integration of the traumatic experience with the existing cognitive schema. The traumatic event causes a great amount of external and internal information. Since the new information (such as thoughts, memories, and images) lies outside normal experiences, information-overload occurs (Brewin et al., 1996). Although the trauma related information remains active after a traumatic event, it is unprocessed and is out of awareness of the person. Also, by the psychological defense mechanisms of numbing and denial, the trauma information is tried to be kept in the unconscious at the initial stages following the trauma. During this period two opposite processes occur. While the person tries to be released from the information overload by several defense mechanisms, the trauma related information comes to the consciousness because of the completion principle in the form of intrusions, flashbacks, or nightmares. The completion tendency aims to integrate the trauma related information into the active memory. During this period, because of the conflict between the completion tendency and defense mechanisms, the person oscillates between avoidance and intrusions. Horowitz (1986) described intrusion and avoidance as the most distinctive feature of trauma reactions.

Intrusion is the compulsive re-experiencing of feelings and ideas related with the event, including sleep and dream disturbance and hypervigilance. On the other hand, avoidance signifies a denial process, and includes reactions such as amnesia, inability to visualize memories, and evidence of disavowal (as cited in Stroebe & Schut, 1999, p.207).

According to the completion principle, when the trauma related information is integrated into the “inner-schema of self” through assimilation; oscillation finishes, and then information becomes conscious and the event becomes

processed. On the other hand, when a failure occurs in the information processing, posttraumatic stress reactions occur (Brewin & Holmes, 2003).

In explaining the posttraumatic reactions, Horowitz's theory of stress response emphasized the completion tendency, intrusions, and denial. How a normal reaction can become a pathological reaction is explained with this theory. However the theory has some limitations. First of all, the theory can not answer the question of why some people develop posttraumatic distress reactions while some others do not, after the same trauma. Secondly, the effects of processes such as social support had not been explained in detail. Finally, little emphasis was given to the power of the individual interpretations of the traumatic event (Brewin et al., 1996).

1.3. Negative Psychological Impact of Disasters

Since the focus of this study is the effects of the earthquake, psychological distress will be studied in two parts. Psychological distress after trauma other than earthquakes will be briefly covered in the first part whereas distress after earthquakes will be presented in the second part.

Besides the economic damage, life loss and injury, disasters often cause important psychological problems for communities. Studies about the psychosocial effects of disasters began after the explosion of a ship in Halifax, Canada, 1917. Then with an increasing interest, studies about their impacts have been conducted all around the world (De La Fuente, 1990).

After disasters, post-traumatic stress disorder which is a pervasive anxiety disorder including re-experiencing the trauma, persistent avoidance of trauma related-stimuli or psychological numbing, and symptoms of increased arousal which is not present before the trauma for at least 1 month (American Psychiatric Association, 1995; as cited in Kilpatrick & Williams, 1998), is the most frequently diagnosed disorder. However, problems such as depression, anxiety, psychosomatic complaints, substance abuse, brief reactive psychosis, divorce and domestic violence are other common problems after various kinds of traumatic events.

In an extensive review, Breslau (2002) concluded that most of people have experienced one or more traumatic events that can be experienced to cause PTSD. However, a few of them have developed PTSD. But those who have developed PTSD have a significant risk for other psychological problems such as major depression or substance use.

Researchers found that natural disasters (Canino, Bravo, Rubio-Stipeck, & Woodbury, 1990; Catapano, et al., 2001; Steinglass and Gerrity, 1999), political violence (Goenjian, et al., 2000), physical or sexual assaults (Dunmore, Clark, & Ehlers, 2001), intimate partner violence (Stein & Kennedy, 2001), military training accidents (Eid, 2003), Nazi Holocaust experience (Cohen, Dekel, & Solomon, 2002), motor vehicle accidents (Maes, Mylle, Delmeire, & Janca, 2001), fires (Maes et al., 2001), terrorist attacks (Blanchard, et al., 2004), bomb attacks (Jehel, Paterniti, Brunet, Duchet, & Guelfi, 2003), wars (Hofmann, Litz, &

Weathers, 2003), and death of a loved one (Kaltman & Bonanno, 2003) have serious impact on psychiatric states of the victims. Studies reported that within the initial month following wide range of traumas, significant levels of distress occur in the survivors (Bryant, 2003).

In their meta-analysis of 52 studies, Rubonis and Bickman (1991) found that after disasters the rate of psychological distress was 17% higher in the survivor group than the control group. Also they found that after large-scale community disasters, 7-40% of the sample show some form of psychopathology which decreases with the passage of time.

The issue of the prevalence rate of psychological distress after the trauma has been a matter of debate matter (O'Donnell, Creamer, Bryant, Schnyder, & Shalev, 2003). In trauma literature, two opinions exist about the relationship between disasters and mental health. According to one opinion, psychological distress is usually minor and transient (Eid, 2003; Freedy, Saladin, Kilpatrick, Resnick, & Saunders, 1994). However, other view suggests that distress symptoms can continue to exist for years after the disaster event (Cohen et al., 2002; Favaro, Rodella, Colombo, & Santonastaso, 1999; Goenjian et al., 2000; Wolfe et al., 1999). For instance, highly extreme traumatic experiences such as living in a concentration camp, was found to be significantly associated with a long course of PTSD symptoms. In their study with Italian Nazi concentration camp survivors, Favaro et al., (1999) found that 43% of those survivors suffered from PTSD or major depression more than 50 years after the trauma.

Despite different results, one of the community-based studies reported that lifetime prevalence of PTSD ranges from 1 to 9%. (Kessler et al., 1995, as cited in Green & Kaltman, 2003). Among the survivors of natural disasters, the prevalence rate of posttraumatic stress disorder was found to be between 10-30% (Catapano et al., 2001).

Earthquakes do not only cause destruction of property or economic losses, but also cause deaths and injuries (Goenjian, 1993; Karanci & Aksit, 2000). Worldwide reports indicate that between the year of 1901 and 2004, 969 earthquakes have occurred and they caused 584,442,955 death and 1,483,807 injuries (EM-DAT: The OFDA/CRED, International Disaster Database, 2004).

Unlike most of the natural disasters, earthquakes occur without much prior warning. When their uncontrollability, unpredictability of possible recurrences, and the uncertainty about personal safety, added to the death or injury of loved ones, earthquakes cause high risk for the development of serious psychological problems for the victims (Goenjian et al., 2000; Lai, Chang, Connor, Lee, & Davidson, 2003; Sharan, Chaudhary, Kavathekar, & Saxena, 1996). Besides the individuals, earthquakes have important effects on the entire community. After the earthquakes, there is a high risk for survivors to be acquainted with the victims. Also, because of the continuing media coverage more people can be vicariously exposed to the earthquake (Salcioglu, 2002).

Earthquakes may make people agitated by disruption of their normal functioning; paranoid because of knowing that the earthquakes can reoccur; despondent over the loss of or injury to loved ones; or angered because of the lack of aid (Durkin & Thiel, 1993). Moreover, loss of lives, physical injuries and mass destruction after the earthquakes cause continuing life stressors for the survivors (Benight & Bandura, 2003).

Evidence from several well-designed studies indicates that many earthquake survivors have PTSD or other mental health problems (Chen, et al., 2001; De La Fuente, 1990; Karanci & Rüstemli, 1995; Nolen-Hoeksema & Morrow, 1991; Papadatos, Nikou, & Potamianos, 1990 ; Yang et al., 2003).

One month after a severe earthquake in Marathwada region in Western India, Sharan, Chaudhary, Kavathekar, & Saxena, (1996) found that 59% of the sample had psychiatric disorders such as 23% of them were diagnosed as having PTSD and 21% were diagnosed as suffering from major depression. In one study after the earthquake in Mexico, it was found that 32% of the sample showed PTSD symptoms, 19% showed generalized anxiety, and 13% showed depression ten weeks after the earthquake (De La Fuente, 1990).

Also, among the 1999 Taiwan earthquake victims who were in primary care clinics, 11% showed PTSD and 32% showed partial PTSD three months after the earthquake (Yang et al., 2003). Three to six months after the 1988 Armenian earthquake, Goenjian (1993), found that 74% of the respondents who sought

psychological help met DSM-III-R criteria for PTSD and 22% met the criteria for major depressive disorder. In another study with the survivors of 1999 Taiwan earthquake, it was found that 10.3% of 252 subjects showed full PTSD and 19% of them showed partial PTSD after ten months (Lai, et al., 2003).

Consistent with the literature, studies conducted after the 1999 Marmara earthquake revealed that it caused important psychological problems for the survivors. Three studies conducted by the same group of researchers about the psychological effects of the Marmara earthquake will be discussed below.

In a study conducted with 1000 survivors ten months after the Marmara earthquake, the rates of PTSD and depression were found to be 43% and 31% respectively (Başoğlu, Şalcıoğlu, & Livanou, 2002). As risk factors for psychological distress after the earthquake, results indicated that being female, peri-traumatic dissociation, more intense fear during the earthquake, having been trapped under the rubble, death of a family member during the earthquake, past psychiatric illness, having worked in rescue groups, and lower education were related to psychological symptomatology. They also found that avoidance of trauma reminders, such as buildings, was the most common symptom among the survivors. Relatively similar findings were found in another study with 1027 treatment-seeking survivors fourteen months after the earthquake. The authors found that the rate of PTSD and depression was 63% and 42% respectively (Livanou, Başoğlu, Şalcıoğlu, & Kalender, 2002). These results seem to be close to the results of the treatment seeking survivors of Armenian earthquake which

was 74% for PTSD, as reported by Goenjian (1993). The authors evaluated these high rates as referral bias and proposed that people with more psychological distress may be more likely to seek help. Also, in the study of Livanou et al. (2002), it was found that women were more likely to seek professional help than men and the risk factors for psychological distress as shown in the former study with the Marmara earthquake survivors were replicated.

Another study, conducted with 586 non-treatment seeking Marmara earthquake survivors 20 months after the disaster, reported a PTSD rate of 39% and a depression rate of 18% (Şalcıoğlu, 2002). The authors of these three studies attributed these high rates of PTSD and depression to the high trauma exposure, frequent aftershocks, expectations of future earthquakes, and extensive media coverage of the earthquake. In addition, as a limitation of these studies it was reported that samples were taken from camps or prefabricated housing. Although, results could not be generalized to the whole population, it was stated that findings might reflect the chronic nature of PTSD among survivors with high trauma exposure.

Researchers attributed the wide range of PTSD rates in the studies to the variability in earthquake severity, type of exposure, time elapsed since the earthquake and to the methodological and sampling differences. Although further studies are needed in order to understand the psychological impacts of the earthquakes, it is a fact that earthquakes cause important psychological problems for the survivors (Başoğlu et al., 2002; Şalcıoğlu, 2002).

Evidence from studies indicated that the comorbidity of other disorders with PTSD can be seen in high rates after earthquakes (De La Fuente, 1996; Şalcıoğlu, 2002). According to the studies done with large community samples, 80-85% of the subjects with PTSD have at least one other psychiatric disorder (O'Donnell et al., 2003). In their study with the survivors of the 1999 Taiwan earthquake, Lai et al. (2003) found that subjects with full PTSD had higher rates of major depression, dysthymia, and suicidality than subjects without PTSD or with partial PTSD.

Several researchers found that earthquakes (Chen et al., 2001; Karanci and Rüstemli, 1995; Kato, Asukai, Miyake, Minakawa, & Nishiyama, 1996; Nolen-Hoeksema & Morrow, 1991; Papadatos et al., 1990 ; Sharan et al., 1996; Yang et al., 2003) may lead to long lasting psychological distress in the community. As an explanation for the persistence of the distress symptoms after the earthquakes, some researchers show pervasive trauma reminders. These reminders can be destroyed buildings or houses, loss of family members, relatives or friends, loss of community cohesion, unemployment or financial difficulties. Finally, these kinds of changes may serve as ongoing reminders of the earthquake (Goenjian, et al. 2000). For example, 13 years after the Tangshan earthquake (1976), Zhang & Zhang (1991), found that the earthquake had extensive and long-lasting psychological effects for the survivors. Also, in a study done with Armenian earthquake survivors, 87% of the subjects who were severely exposed, showed PTSD 1,5 years after the disaster. Also 4,5 years after the earthquake, the PTSD rate was found as 73% (Goenjian et al., 2000).

Overall, although more longitudinal studies are needed in order to see the long term impacts of the earthquakes, according to these results survivors seem to need long-term psychological care. Subsequently, it is a fact that earthquakes lead to high rates of psychological problems which may last for years. Indeed, proper long-term psychological care strategies for earthquake survivors should be prepared.

1.3.1 Variable Related to Psychological Distress after Traumatic Events

Since the main focus of the present study is earthquakes, the factors related to psychological distress after other kinds of traumas will be presented only briefly.

There are a variety of factors related to distress following exposure to trauma. For some particular factors there are mixed results. For instance, about the relationship between age and distress, there are inconsistent results in the trauma literature. Although some studies reported that young people tend to be distressed more (Milgram, 1993), some proposed old were more distressed (Şalcıoğlu, 2002; Yang et al., 2003)

In the meta-analysis of Breslau (2002), although some factors change according to the kind of the events, three factors were found to be significant. These were, having a psychiatric history (Acierno, Resnick, Kilpatrick, Saunders, & Best,

1999; Jehel, 2003), history of childhood trauma, and family history of psychiatric disorders.

Also, among the reported factors, being female (Crighton, Elliott, Meer, Small, and Upshur, 2003; Mayou et al., 2002; Stein, Walker, & Forde, 2000; Steinglass and Gerrity 1990;), lower education or IQ (Brandes et al., 2002; Cohen et al., 2002; Ginzburg, Solomon, Dekel, and Neria, 2003), severity of the event (Catapano et al., 2001), perceived threat during the trauma (Mayou et al., 2002; Momartin, Silove, Manicavasagar, 2004), geographical proximity to the disaster event (North, Smith, & Spitznagel, 1994; Blanchard et al, in press), inefficient coping skills, negative life events after the trauma and loss of resources (Bolton, Glenn, Orsillo, Roemer, & Litz, 2003; Dirkzwager et al., 2003; Sutker, Davis, Uddo, & Ditta, 1995) were found as related to psychological distress after trauma. The variation among these factors may be due to different trauma types that were studied and different methodologies utilized in various studies. Although Horowitz's Social Cognitive Model of Posttraumatic Stress is consistent with the studies in the trauma literature about the importance of the severity of the event, the model can not explain the individual factors which will be discussed in the next section.

1.3.2. Multivariate Risk Factor Model for Earthquake Survivors

In order to plan an appropriate intervention after a disaster it is important to know who develops disaster-related psychological problems (Rubonis & Bickman,

1991). According to the Multivariate Risk Factor Model, adjustment after a traumatic event is a process in which factors before, during and after the crisis influence the outcome. The model divides the factors into three phases, namely pre-disaster, during disaster and post-disaster factors (Freedy, Kilpatrick, & Resnick, 1993).

While explaining the situation after earthquakes, multivariate risk factor model uses general stress models and accepts three principles. Firstly, adjustment is a process which can be influenced by factors existing before a disaster, such as gender, during the disaster such as perceived life threat, and after the disaster such as coping strategies. Secondly, features of disaster exposure may interact with certain individual or environmental features in determining adjustment. Lastly, depending on the individual's experiences and resources, a range of adjustment outcomes, from negative to positive is possible (Freedy et al., 1993).

1.3.2.1. Pre-Disaster Factors

Pre-disaster factors that were found to be related to psychological distress after the earthquake are female gender, low level of education, and previous psychological problems.

There is a significant consensus that women experiencing more psychological distress after earthquakes (De La Fuente, 1991; Sharan et al., 1996). Karanci, Alkan, Akşit, Sucuoğlu, and Balta (1999) found that women reported greater distress after

the 1995 Dinar earthquake. They used a 40-item symptom checklist (SCL-40) which has four subscales, namely somatization, depression, phobic anxiety, and hostility/irritability. They found that women scored higher than men on all four scales as compared to men. Although this is what the trauma literature proposes, researchers did not claim that this was due to the earthquake because of the long time between the earthquake and the research (16 months).

Chen et al. (2001) studied 525 survivors who sought psychiatric help in the first month after the 1999 earthquake in Taiwan. It was found that majority of the population showed posttraumatic symptoms and similar to most of the findings, women had more symptoms than men.

Consistent with the trauma literature, sixteen months after the 1992 Erzincan earthquake, Karanci and Rüstemli (1995) found that women had significantly higher scores on somatization, phobic anxiety, and hostility than men. Although, women scored higher on depression than men, the difference was not significantly higher. Also, they reported that evaluations of one's house as insecure for possible future earthquakes was related to high distress.

Unlike gender, debate about the relationship of age with psychological distress has continued. Although most of the findings show that as age increases the probability of psychological distress increases too, there are some results inconsistent with this. Similar to the majority of the results, three months after the Taiwan earthquake, Yang et al. (2003) found that being old is associated with

PTSD symptoms. Also, older age was found as a risk factor for PTSD after the Marmara earthquake (Şalcıoğlu, 2002). Different from these findings, in their study with the survivors of 1999 Taiwan earthquake, Chen et al. (2001) found that middle aged subjects had the most severe psychiatric morbidity, and elderly ones followed them. Similar to the study of Chen et al. (2001), in their study with 1995 Japan earthquake survivors, Kato and friends (1995) found that PTSD symptoms of old people decreased with time. They suggested that the necessity to find a job, restructure their families and to feel more pressure to rearrange their lives lead the young ones to have more distress. Also, they added that previous traumatic events may make old survivors more resilient to trauma.

On the other hand, no significant difference between the total PTSD scores of elderly and young survivors was obtained by Goenjian et al. (1994) 1 ½ years after the Armenian earthquake (1988). However, significant differences among PTSD symptom categories were found. Elderly had significantly lower scores on intrusive symptoms. This may be due to lesser participation of elder people in rescue efforts or due to the age-related memory deficits.

Studies that investigated the impact of IQ and education showed that both lower IQ and education are related with psychological distress. In his study with the 1985 Mexico Earthquake survivors, De La Fuente (1990) found that low education level was related with depression. In a study (Lai et al., 2003) conducted after 1999 Taiwan earthquake, it was found that subjects with lower education were more likely to develop PTSD. The authors suggested that those with lower

education may have poor coping skills which make them more open to the negative impact of the earthquake.

In a study conducted to examine the psychological effects of the November, Düzce 1999 earthquake in Turkey, it was found that lower education predicted the PTSD rates 18 months after the earthquake. Furthermore, consistent with the trauma literature; being female, fear during the earthquake, being closer to the epicenter, loss of friends and neighbors, and living in a tent city predicted the PTSD rates. Participation in rescue efforts was found to be a predictor factor for men, whereas for women living in a rented area was found as a predictor of PTSD. Also, depression was predicted by being closer to the epicenter, death of relatives, and past psychiatric illness (Kilic & Ulusoy, 2003).

A number of studies found that having a prior mental health disorder causes vulnerability for the development of psychological distress after disasters and other traumatic events (De La Fuente, 1990; Nolen-Hoeksema & Morrow, 1991). Consistent with this, history of personal and familial psychological problem was found to be a vulnerability factor for PTSD and depression in two studies conducted with 1999 Marmara earthquake survivors (Basoglu et al., 2002; Salcioglu, 2002). Also, in a study conducted 3 months after the California Earthquake, results showed that survivors with a history of psychological problem were the most likely ones to develop full PTSD (McMillen, North, & Smith, 2000).

Nolen-Hoeksema and Morrow (1991) looked at the impact of having more negative mood before the earthquake and being exposed to stressful situations following the earthquake. In this exceptional pre-post disaster study, consistent with the literature, Nolen-Hoeksema and Morrow (1991) found that survivors of Loma Prieta Earthquake who had more damage had more PTSD symptoms. Also, their results showed that PTSD rates tended to decline over time. Results of the survey showed that students who had more depression, stress symptoms and ruminative style of responding to their symptoms 14 days before the earthquake had more stress symptoms both 10 days and 7 weeks after the earthquake. As an explanation for the effect of ruminative style of thinking, they claimed that rumination may prolong depression both by increasing the effects of negative mood on thinking and by decreasing instrumental behavior of the person.

1.3.2.2 Disaster Factors

Specific variables related to the earthquake period are also found to be related to psychological outcome. These are exposure severity and subjective perceived threat during the trauma. In general the idea is that survivors who are exposed to the trauma more severely (Chen et al., 2001; De La Fuente, 1990; Favaro et al., 1999; Goenjian et al., 1994) and those who perceived high threat (Basoglu et al., 2002; Salcioglu, 2002) tend to develop more psychological distress. In their study with Dinar earthquake survivors, Karanci et al., (1999) found that female survivors who perceived more threat during the earthquake had more distress. In the literature, cumulative evidence indicates that perceived severity of the

earthquake by the survivor rather than the objective severity of the exposure may be related more with psychological distress (Başoğlu et al., 2002).

However, actual severity also is found to be related to distress. Serious destruction of property and house was found as a significant factor related to high psychiatric morbidity after the 1999 Taiwan Earthquake (Chen et al., 2001). Consistent with the literature, Nolen-Hoeksema and Morrow (1991) found that survivors of Loma Prieta Earthquake (1989) who had more damage and destruction had more depressive and PTSD symptoms.

In their prospective study, Goenjian et al. (2000), examined the impact of severity of exposure on the prevalence of PTSD among three groups; people who were severely and who were mildly exposed to the Armenian earthquake and people who were severely exposed to violence, 1.5 and 4.5 years after the disaster events. They found that people who were severely exposed to the trauma had comparable rates of symptoms after 1,5 and 4,5 years. However, the symptoms of those who were mildly exposed to trauma declined over time. They reported that people who were severely exposed to trauma have high risks of developing severe and chronic PTSD.

In their longitudinal study with Newcastle Earthquake (1989) survivors, Carr et al. (1997a) examined the relationship between psychological morbidity and initial exposure to threat, disruption due to the loss, membership in high risk groups (being an owner of small business, injured, displaced, helper in threat situations,

and helper in non-threat situations), the degree of ongoing disruption (e.g., business disruption, financial problems), and other life events during the first 2 years following the earthquake. They measured both trauma related distress by Impact of Event Scale and general psychological morbidity by General Health Questionnaire-12. It was found that except for the injured category, initial exposure to threat had more predictive power in explaining psychological morbidity than being a member in the risk groups. In addition, the degree of ongoing disruption and other life events since the earthquake were also found as predictors of psychological morbidity.

Although there are a few studies about the psychological effects of physical injury caused by earthquake, some studies found that physical injury was related to psychological distress after the event (Jehel et al., 2003). In their study with paraplegic and non-deformed earthquake victims, Zhang & Zhang (1991) found that there is a positive correlation between the degree of injury and psychological distress.

Thus, being female, having lower IQ and education, previous mental health problems, high exposure severity and subjective perceived threat during the disaster were found to be related with the appearance of psychological distress after the earthquakes.

1.3.2.3 Post-Disaster Factors

Post-disaster factors found to be related with psychological distress are particular kinds of coping approaches, negative life events after the trauma and loss of resources (Karanci et al., 1999).

Coping styles have been found to predict traumatic stress after earthquakes. An evidence to the idea that greater use of avoidant coping predicts worse outcomes, came from the study of Carr et al. (1997b) with earthquake survivors. Results showed that avoidance coping contributed to both general and trauma-related morbidity during the first 2 years following the Newcastle earthquake. Moreover, the predictive power of life events after the earthquake on general health and traumatic stress was also examined. Results showed that ongoing disruptions related with the earthquake (e.g., financial problems) significantly contributed to post-traumatic morbidity. On the other hand, life events unrelated to the earthquake, ongoing disruptions and poor social relationships predicted general psychological morbidity.

Consistent with the previous findings, many other studies showed that negative life events following a traumatic event, such as disruption in life (Goenjian et al., 2000) made important independent contributions to the development of PTSD or other distress reactions (Maes et al., 2001). In a study conducted with Dinar earthquake survivors, the results indicated that after the earthquake, for male survivors, the more negative life events a survivor experienced, the more he

became distressed. Moreover, about the coping skills, it was found that the earthquake survivors who used helplessness coping showed more psychological distress (Karanci, et al., 1999).

Also, as another earthquake specific risk factor, the effects of working in rescue groups were investigated. Although there are not so many studies about this issue, two studies conducted after the Marmara earthquake reported that participation in rescue efforts contributed to PTSD (Basoglu et al., 2002; Salcioglu et al., 2002). In order to explain these findings, the authors proposed that rescue efforts involved additional exposure to disturbing scenes of dead or injured people who were under rubbles. Also, they suggested that negative emotions such as feeling of helplessness, anxiety, anger, and guilt may arise during rescue efforts.

Resource loss after earthquakes may take in different forms. Unlike individual traumas such as a life-threatening illness, after earthquakes most of the potential supporters become victims themselves and thus the number of people who can give support decreases. This may cause an important decrease in social support which trauma survivors need deeply. Other than social resource loss, earthquake victims also experience important financial losses.

About the resource loss, in their study with the 1999 Taiwan earthquake victims who were in primary care clinics, Yang et al. (2003) found that financial loss after the earthquake is significantly associated with PTSD symptoms. According to the Hobfoll's Conservation of Resources (COR) theory, social support is one of the

resources that individuals have (Hobfoll, Ritter & Shoham, 1991), and findings about social support showed that it is central for maintaining both psychological and physical well-being (Hobfoll, Freedy, Lane, & Geller, 1990; as cited in Freedy et al., 1993). In addition, Cook and Bickman (1990) found that after a natural disaster, there is an association between the low levels of social support and increased psychological distress (as cited in Freedy et al., 1993). Consistent with this, Caplan (1976) suggested that social support has an important effect for dealing with stressful situations (as cited in Shelby & Tredinnick, 1995). In their study with former peacekeepers, Dirkzwager et al. (2003) found that those who had more severe PTSD symptoms were the ones who had more negative social contacts and had less positive contacts.

Coping has also been examined as a renounced variable that can influence disaster impact. The role of the interpretation of the stressors in the process of stress is very important. This interpretation depends on many factors such as prior experience with the stressor, attitudes toward it, and evaluation of possible consequences of it (Baum, Singer, Baum, 1981). In other words, an event can not be described as stressful universally (Fleming, Baum, Singer, 1984). Coping is another variable that can diminish or increase stress. Therefore, in examining post-disaster period it is important to understand individual coping approaches.

Taking together, risk factors need to be studied more in order to determine the survivors who are at risk of developing traumatic distress after earthquakes.

Finally, proper psychological care policies should be developed to address these risk groups.

1.4. Cognitive Theory of Stress and Coping

The cognitive theory of stress and coping defines stress as a relationship between the person and the environment (Folkman & Lazarus, 1985). Stress occurs, when the person appraises the environment as taxing his or her resources and as dangerous for his or her well-being. The theory emphasizes the meaning of an event which is appraised by the person (Folkman, 1984).

There are two main concepts in this theory, which are appraisal and coping. Within this framework, these two processes are major mediators of stressful relationships between the person and the environment (Folkman, Lazarus, Gruen, & DeLongis, 1986). Appraisal is the evaluation of personal significance of what is happening in terms of threat, predictability, controllability, and meaningfulness of the stressor for own well-being (Fairbank, Hansen, & Fitterling, 1991). When confronted with an event, two kinds of appraisals, namely, primary and secondary, occur. In the primary appraisal, person evaluates the stressor in terms of irrelevant, benign-positive or stressful. On the other hand in the secondary appraisal, one evaluates ones own coping resources and options.

When a situation is appraised as irrelevant in the primary appraisal, the person judges that it has no significance for his or her well-being. A benign-positive

appraisal means that the stressor does not exceed the person's resources and signals a positive outcome for the person. Finally, when an encounter is evaluated as stressful, person makes judgments about how threatening, harmful/loss, or challenging it is. Harm/loss refers to damage that has already been done, threat refers to a potential harm or loss. On the other hand, challenge refers to any opportunity for growth, mastery, or gain (Folkman, 1984).

In the primary appraisal, if the situation is found threatening, the secondary appraisal starts and the person asks him or her self "What can I do?" (Folkman & Lazarus, 1985). In the secondary appraisal, person reappraises the new situation with changed perceptions or coping resources (Folkman, 1984).

To sum up, according to this theory, stressful encounter is not a static event but a dynamic process. In other words, stressful situation is a variable process not a stable event. Cognitive appraisal which consists of primary and secondary appraisal is important in the selection of coping strategies. Also primary and secondary appraisals operate interdependently.

Coping is the other component of the stress process. Lazarus (1993) defined coping as the cognitive and behavioral efforts that a person uses in order to deal with specific external or internal demands which are perceived as exceeding the resources of that person (as cited in Dirkzwager et al., 2003).

The two major functions of coping are to deal with the problem which causes distress and to regulate the emotions. According to these functions, coping styles are divided into two, namely, problem focused coping strategies and emotion focused coping strategies. Through the problem focused ones the person tries to recognize, manage, or eliminate the problem which causes distress. Whereas, by emotion focused coping strategies the person regulates his or her emotional states or change the appraisal of the stressful situation (Amir, Kaplan, Efroni, Levine, Benjamin, & Kotler, 1997; Crighton, Elliott, Meer, Small, & Upshur, 2003; Folkman, Lazarus, Gruen, DeLongis, 1986). Some of the emotion focused coping strategies are avoidance, self-blame, or distancing while problem focused ones are confrontation, planning how to actively respond, or seeking social support (Brand, & Alexander, 2003).

Although problem-focused coping and emotion-focused coping are different processes, both of them are used to gain control over stressful situations. Researchers confirmed that they are related with each other. Furthermore, in the coping literature, it was stated that most of the time the success of problem-focused strategies depends on the success of emotion-focused strategies. That is, if emotion-focused strategies fail, heightened emotions will interfere with the cognitive activity which is essential for problem-focused coping. In other words, emotion-focused coping removes some of the distress, which can interfere with problem-focused efforts (Carver & Scheier, 1994).

The complexity of coping strategies has been a matter of debate for the researchers. Although, some claim that people use one type of coping every time, other studies reported that people consistently use various kinds of cognitive and behavioral strategies in order to manage the complex demands of stressful situations (Fleming, Baum, & Singer, 1984; Folkman, 1984). In other words, people combine problem-focused coping and emotion-focused coping strategies according to the context, the type of the problem they are dealing with, and to their personalities (Solomon, Mikulincer, & Avitzur, 1988). Furthermore, Solomon et al. (1988) stated that “The optimal coping style consists of the largest possible repertoire of coping responses” (p.280). Also, in their study with 100 middle-aged women and men, Folkman & Lazarus (1980) found that people use both types of coping skills in over 98% of the more than 1300 stressful encounters (as cited in Folkman & Lazarus, 1985).

Perceived control, which gives a sense of being able to cope with the stressor effectively, has been investigated in the coping literature (Baum, Singer, & Baum, 1981). According to Lazarus and Folkman, people decide which coping strategy to use based on their perceived control and the degree of threat perceived in the stressor. If a person views the event as out of his or her control, emotion-focused coping is more likely to be used. On the other hand, if the event is viewed within his or her control, problem-focused coping will be preferred (Brand & Alexander, 2003). In their natural experiment with college students who were taking an examination, Folkman & Lazarus (1985) found that problem-focused coping was positively correlated with the degree of control that students felt about the exam.

For instance, parallel with the hypothesis of Foa et al. (1989) which states that perceived controllability is an important factor in adjustment to the traumatic events (as cited in Fairbank et al., 1991); Fairbank et al. (1991) found that prisoners of war with PTSD accepted their war memories as uncontrollable.

Although the impact of the appraisal of the stressor as changeable on coping has not been studied widely, it was reported that people use problem-focused strategies more in situations which were appraised as changeable (Vitaliano, DeWolfe, Maiuro, Russo, & Katon, 1990).

The measurement of coping has been an important issue in the coping literature. According to Folkman & Lazarus (1985), different from trait measures, assessments of coping must be multiple in order to detect the changes in coping over time. There are two different coping assessment approaches, which are “state” and “trait”. According to the “state” approach, coping must be examined within the context of the stressful situation, and to assess coping as a uni-dimensional trait would be an underestimation of the nature of actual coping process (Folkman & Lazarus, 1985). On the other hand, “trait” approach proposes that a person tends to use a specific coping strategy across different stressful situations. Also, in this approach the association between the coping tendency and individual differences gains an important consideration (Ben-zur & Ziedner, 1996).

Folkman and Lazarus developed and later revised the Ways of Coping Questionnaire (WCQ) in order to identify and measure coping strategies. It measures a broad range of cognitive and behavioral strategies that people use in order to cope with external or internal demands in a stressful situation (Folkman et al., 1986).

In the study of Folkman & Lazarus (1985), the questionnaire was given to university students at three different college examination stages: anticipation stage (before the exam), waiting stage (after the exam but before the grades were announced), and after grades were announced. In all three stages, besides coping strategies, stress levels and emotional states were also measured. Across three stages significant changes in coping and emotions were assessed. Researchers obtained eight subscales representing different coping strategies. Among the following scales, other than the first one, all were related to emotion-focused coping strategies. Problem-Focused Coping scale included items such as “I am making a plan of action and following it”; Wishful Thinking had items such as “I wish that I can change what is happening or how I feel”; Distancing had statements such as “ I try to forget the whole thing”; Emphasizing the positive included items such as “I’m changing or growing as a person in a good way”; Self-blame had items such as “ I criticize or lecture myself”; Tension-reduction had items such as “I jog or exercise”; Self-isolation included items such as “I avoid being with people in general”; Seeking social support included items such as “I accept sympathy and understanding from someone”. In line with the coping literature, the results indicated that at least 94% of the students used both types of coping strategies at each of the three examination stages. The study confirmed that both problem-focused and emotion-focused forms of coping were used in stressful situations and people tend to cope with a single stressful encounter

in complex ways. In addition, the results also showed that problem focused coping and emphasizing the positive which is a specific form of emotion focused coping were correlated.

However, later studies demonstrated some slight differences about the subscales of WCQ. For instance, in the study of Folkman & Lazarus (1988) which was conducted to examine the extent to which coping mediated emotions in two age groups, a younger group and an older group, different subscales were found. Confrontive Coping included items such as “tried to get the person responsible to change his or her mind”; Distancing had items such as “went on as if nothing had happened”; Self-Control included items such as “kept others from knowing how bad things were”; Seeking Social Support consisted of items such as “accepted sympathy and understanding from others”; Accepting Responsibility had items such as “criticized or lectured myself”; Escape-Avoidance included items such as “tried to make myself feel better by eating, drinking, smoking, using drugs or medications, etc.”; Planful Problem-Solving had items such as “I made a plan of action and followed it”; and finally Positive Reappraisal included items such as “changed or grew as a person in a good way”. Analysis showed that Confrontive Coping and Planful Problem-Solving serve problem-focused functions. On the other hand, Distancing, Self-Control, Accepting Responsibility, and Positive Reappraisal serve emotion-focused functions. In addition, the remaining scale, Seeking Social Support, serve both functions (Folkman & Lazarus, 1988). The results of the study indicated that in the younger group, positive reappraisal was associated with a decrease in distress level, whereas it was associated with worsened emotion state in the older group. On the other hand, although in the older group there was no association between confrontive coping and

emotion state, in the younger group confrontive coping was associated with increased distress. The study concluded that both problem-focused and emotion-focused forms of coping were associated with changes in emotions. Also, some form of coping such as planful problem-solving may have a positive impact on the emotion state, whereas others such as distancing and confrontive coping may have negative impact, especially in some contexts and in some populations (Folkman & Lazarus, 1988).

The relationship between the coping and the subjective perceptions of the stressful encounter such as controllable, desirable, unexpected, threatening or challenging has been studied by some researchers (Parkes, 1986). In one study (McCrae, 1984), it was reported that subjects who appraised the event as a threat were more likely to use faith, fatalism, and wishful thinking. Also, if the event is appraised as a loss, again they prefer more passive mechanisms of faith and fatalism. On the other hand, appraisal of challenge caused rational action, perseverance, positive thinking, intellectual denial, restraint, self-adaptation, drawing strength from adversity and humor.

To sum up, according to the cognitive theory of stress and coping, coping refers to the person's cognitive and behavioral efforts to manage the internal and external demands of the stressful encounters which are appraised as taxing the person's resources. "Cognitive appraisal and coping are transactional variables, which means that they refer not to the environment or to the person alone, but to the integration of both in a given transaction" (Folkman et al., 1986, p.572). Although coping has two different forms as problem-focused coping strategies and emotion-

focused coping strategies, in general people use a combination of both of them. Also, which coping strategy would be used may depend on the type of stressor or stressor dimensions. People tend to use problem-focused coping strategies more frequently in the situations that they appraise as changeable and controllable. On the other hand for unchangeable and uncontrollable situations, emotion-focused coping is more appropriate (Stroebe & Schut, 1999). Also, several studies confirmed that appraisal and coping mediate between stressful encounter and psychological distress.

1.4.1. Trauma and Coping

“The concept of coping is central to understanding the psychological consequences of traumatic events and, in particular post-traumatic stress disorder (PTSD), whose aetiology is specifically linked to the consequences of defined stressful events.” (Spurrell & McFarlane, 1993, p.194). Furthermore, the positive or negative contribution of coping strategies to one’s adaptation to a stressful situation is an accepted fact in the trauma literature (Amir et al., 1997).

As mentioned earlier, according to Lazarus’s stress theory, stress was accepted as a relational concept, which is seen as a relationship between people and their environment. Psychological stress that trauma survivors experience can be explained by the cognitive theory of stress and coping (Folkman & Lazarus, 1985). The model suggests that what determines the stress level that an individual experiences is the cognitive evaluation of the event and available coping

resources. In other words, how the individual perceives the stressor and gives response to it is very important for his or her psychological well being (Amir et al., 1997; Karanci et al., 1999).

Based upon Lazarus & Folkman's (1984) theory of stress and coping, majority of the studies claimed that certain coping responses such as problem-focused coping efforts are generally adaptive while others, such as emotion-focused coping efforts may be maladaptive after traumatic experiences (Beaton, Murphy, Johnson, Pike, & Corneil, 1999; Solomon et al., 1988).

Solomon, Mikulincer, & Avitzur (1988), measured the PTSD rates of 262 Israeli soldiers who suffered from combat stress reaction, in the 2nd and 3rd years after the war. They also examined the relationship between PTSD, coping, locus of control, and social support. They used the abbreviated version of Ways of Coping Questionnaire which has 44-items in order to measure the soldiers' coping skills. The analysis showed four coping strategies such as problem-focused coping, emotion-focused coping, seeking social support, and distancing. Results demonstrated that high PTSD scores were associated with emotion-focused coping, external locus of control, and insufficient social support. Furthermore, problem-focused coping was found to be inversely related to current PTSD symptoms only in the 2nd year. However, in the 3rd year, distancing coping was found to be related with the PTSD severity. About the locus of control, the study showed it was significantly correlated with PTSD both in the 2nd and 3rd year. However, when the contributions of coping skills and social support to PTSD were

removed, locus of control did not contribute significantly. Also, it was stated that people with internal locus of control reported more emotion-focused coping strategies. Moreover, results indicated a decrease in the association between the severity of PTSD and the resources (coping, locus of control, and social support) between two time points. Authors concluded that the effects of the resources on the PTSD severity declined in the course of time.

In the coping literature, cumulative evidence showed that avoidance type of coping does not work in the favor of individuals (Carves & Scheier, 1994). Several coping studies indicated an association between avoidance coping and PTSD (Carr et al., 1997b). Some argues that high avoidance, especially with high intrusion, prevents trauma survivors from cognitively processing the traumatic experience. As a consequence those with high avoidance remain in a highly aroused state and are psychologically distressed (Harrison & Kinner, 1998).

In his study with military personnel after military training accidents, Eid (2003) found that those who used avoidance coping showed more PTSD symptoms at first weeks. About the lasting impact of the Holocaust, Cohen, Dekel, & Solomon (2002) conducted a study and they found that subjects who used more avoidant coping suffered from more PTSD symptoms. Furthermore, the study of Sutker et al. (1995) is congruent with these findings. In the study conducted with 775 Persian Gulf War returnees, a significant association between avoidance coping and PTSD symptoms was found.

Fairbank et al. (1991) examined the patterns of appraisal and coping across different stressors among former war prisoners with and without PTSD. Authors found significant differences in terms of coping with the war memories between the groups. First of all, it was found that prisoners with PTSD used a greater amount of coping behaviors and used them more frequently than the other group. Consistent with the findings which indicated a strong relationship between psychological problems and inefficient avoidance coping, prisoners with PTSD used wishful thinking, self-isolation, self-blame, and seeking social support more frequently than prisoners without PTSD.

Amir et al. (1997) studied the coping styles of PTSD patients and compared them with an anxiety control group and healthy control group. Findings showed that PTSD patients scored significantly higher than the control groups on the coping style of suppression, and significantly lower on the coping style of replacement. Also, PTSD patients significantly differed from the healthy control group on the coping styles of minimization, help-seeking, reversal, and mapping but not different from anxiety control group. Moreover, results indicated that coping style of suppression was positively and also significantly correlated with the intrusion and avoidance scores.

In their study with former peacekeepers, Dirkzwager and friends (2003) found that peacekeepers who used wishful thinking and accepting responsibility to a higher degree showed more PTSD symptoms. As they expected, they found that peacekeepers who used more planful problem solving strategies had less severe PTSD symptoms. This finding is parallel with most of the findings about coping

which states that emotion-focused coping strategies are associated with more PTSD symptoms.

Consistent with the previous study, in a study conducted to investigate the role of coping strategies as moderators between hassles and psychological/physical well-being in a Japanese sample, Nakano (1991) found that problem-focused coping diminishes the impact of the stressful events on physical well being. Although problem focused coping acted as a moderator, it was found that emotion-focused coping and avoidance acted as stress enhancers. The study concluded that the presence or absence of specific coping strategies was related with the well-being of a person.

In their study with Urban Fire Service Personnel, Beaton et al. (1999) examined the relationship between coping responses and post-traumatic stress level. The coping responses of firefighters were measured by the Coping Responses of Rescue Workers Inventory (CRRWI). Although the inventory was based on the Lazarus and Folkman's (1984) cognitive theory of stress and coping, it contained six different subscales. Secondary Appraisal in the Aftermath had items such as "thinking of the meaning of life after the event"; Behavioral Distraction & Social Support Seeking included items such as "spend more time listening to music, etc."; Cognitive Behavioral Avoidance & Numbing had items such as "put feelings out of mind"; Foster Positive Attitudes included items such as "develop a positive attitude about event"; Cognitive Positive Self-Talk included statements such as "remind myself I am providing help"; and at last Inward Search-

Philosophical Self-Contemplation consisted of items such as “not be bothered by conflicting feelings”. In addition, analyses indicated that only one subscale of the CRRWI which was Cognitive Behavioral Avoidance & Numbing significantly predicted the firefighters’ subsequent changes in post-traumatic stress level at the six-month follow-up after controlling for the baseline posttraumatic stress level. The subscale was associated with significant increase in posttraumatic stress level of the subjects. In addition, it was reported that Cognitive Behavioral Avoidance & Numbing subscale represent maladaptive coping strategies which may lead to mental problems such as posttraumatic stress.

Although most of the findings demonstrated that problem-focused coping was associated with less posttraumatic stress, some research studies contradict this. In their study with trained volunteer firefighters after bushfire disaster in Australia, Spurrell & McFarlane (1993) examined the association between coping strategies and the presence of PTSD. They used a revised version of WOCQ which was developed in a study of students’ examination stress by Folkman & Lazarus (1985). The results indicated that the use of more coping strategies was associated with the presence of a diagnosed disorder such as PTSD, affective disorder or anxiety disorder. Moreover, both problem-focused coping and emotion-focused coping was found to be associated with the presence of PTSD rather than the absence of symptoms.

Consequently, when all these studies are taken into consideration, it is apparent that to make an association between one specific coping strategy and less distress

is not possible. As Folkman et al. (1986) stated “it is important not to value a particular form of coping without reference to the context in which it is used” (p.578).

1.4.2. Coping and Gender

How people cope with stressful encounters varies for each individual. Among the personal variables gender has been an important one which was studied extensively in the coping literature. Research displays two main hypotheses for observed gender differences in coping; the socialization and the role-constraint hypotheses.

According to the socialization hypothesis, coping strategies are stable, learned and environmentally shaped behaviors. The main idea in this hypothesis is that because of the expectations and sex role stereotypes, women and men are brought up and educated to cope differently with similar stressors. In other words, women and men are socialized to cope with same stressors differently. It was hypothesized that women are socialized to seek support from others, and express their emotions openly. On the other hand, men are socialized to be instrumental in their coping efforts, and different from women, are discouraged from seeking emotional support from others. Therefore, the socialization hypothesis predicts that men use more problem-focused coping and women use more emotion-focused coping (Ben-Zur & Zeidner, 1996).

According to the “role constraint” hypothesis, women and men have different social roles. Naturally, this exposes them to different kinds of stressors. Therefore, there is no relationship between gender and different types of coping behavior when man and woman are exposed to the same stressor. In other words, if confronted with the same stressor, it was expected that they would cope in the same way. Furthermore, possible gender differences, should result from the role related opportunities and resources (Ben-Zur & Zeidner, 1996). However, the same stressor can cost men and women in different roles, depending on their socialization. Thus, the two hypothesis needs to be considered together.

After the Persian Gulf War, Ben-Zur & Zeidner (1996) conducted a study with Israeli men and women in order to assess the gender differences in coping behaviors under both war and daily routine conditions. Researchers tested the “role constraint” vs. the “socialization” hypotheses. Inconsistent with both of the hypotheses, results showed that during the war women were more likely to use active, problem-focused coping and also they used more coping activities than men. It was found that men used more emotion-focused coping strategies than women during the war. However, the gender difference in coping changed after the war. It was stated that women used emotion focused coping strategies more than men with daily routine stressors. It was apparent that the results were not consistent with both of the hypotheses. Researchers concluded that coping strategies should be assessed after taking into account the significance and meaning of a specific encounter for both women and men.

In order to test the theory that women use more emotion-focused coping strategies and men use more problem-focused coping strategies, Hamilton & Fagot (1988) compared the coping behaviors of male and female undergraduates. Women subjects reported more overall stress. Results indicated no gender differences in the proportion of problem-solving behavior. Also, for both male and female subjects, frequent events that were not accepted as stressful were coped with by problem solving. On the other hand, events that were reported as the most stressful events were solved with a low proportion of problem-solving behavior.

In their study with 1995 Dinar earthquake survivors, Karanci et al. (1999), investigated the gender differences in psychological distress, coping strategies and social support following the earthquake. The findings revealed that, although both men and women used problem solving/optimistic approach and fatalistic approach most, parallel with the coping literature, men preferred problem solving/optimistic approach more frequently than women do. Men also used helplessness, social support and escape styles less. On the other hand, women tended to use helplessness approach more than men. For both genders, using problem solving/optimistic approach and fatalistic approach most frequently, supports the idea of using problem-focused and emotion-focused coping together. Researchers explained the reason of why men use problem focused coping while women used the other more frequently according to the theory of stress and coping. They suggested that the types of events that men and women face may be different. In other words, men may have to cope with events that require direct action and

problem solving whereas women must handle events that require regulation of emotions.

In their study Bruder-Mattson & Hovanitz (1990) examined the relationship between the coping styles and attributional styles and how these two interact in relation to depression for males and females. Eighty-six female and ninety male undergraduate students completed The Ways of Coping Checklist, Attributional Style Questionnaire, and Beck Depression Inventory. Results demonstrated that for men problem-focused coping was correlated with stable and global attributions for positive events, whereas emotion-focused coping was correlated with internal and global attributions for negative events. For women, it was found that emotion-focused coping was correlated with internal, stable and global attributions for negative events. Moreover, depression was found to have a positive correlation with escape/avoidance coping while it was found to have a negative correlation with problem-focused coping. Also, the study indicated that although both coping and attributions accounted for depression, coping was much stronger in its relationship with depression.

A study done to evaluate the coping strategies as moderators of stress and psychopathology compared the coping strategies of normal and clinical groups and the gender differences in coping styles (Hovanitz & Kozora, 1989). They used the scores on MMPI (Minnesota Multiple Personality Inventory) scales in order to divide the groups as normal and clinical. Subjects, whose scores were within normal limits, took place in the normal group. Analyses showed that the normal group used

significantly more problem-focused coping strategies, as compared to the clinical group. Similar to the majority of other studies, in this study, females used emotion-focused coping significantly more than males. In terms of gender differences, it was found that females were protected by using emotion-focused coping while males were protected by using problem-focused coping. In the end, authors suggested that gender was an important variable affecting the coping styles (Hovanitz & Kozora, 1989).

Matud (2004) investigated the gender differences in stress and coping behaviors. Consistent with many previously mentioned investigations, women reported more somatic symptoms and psychological distress than men. Also, women were found to use significantly more emotional and avoidance coping and significantly less rational and detachment coping compared to men. Men, on the other hand, were found to use more rational and detachment coping and emotional inhibition than women. The results about gender difference in coping supported the socialization hypothesis. Overall, the study concluded that women, compared to men, have more psychological distress, and use emotion-focused coping more frequently.

Since coping process has been very important for posttraumatic recovery, the relationship between gender and coping has to be understood. Moreover, because initial help after a disaster is very crucial for the survivors, preventive intervention programs should be developed before the disasters. In order to develop most suitable programs for men and women, similarities and differences in their coping strategies must be examined carefully.

1.5. Post-traumatic Growth

Traumatic events such as natural disasters, bereavement, chronic illnesses, disabilities, heart attacks, violence, rape, sexual abuse, and combat affect people's lives in many different ways. Although in the trauma literature, negative effects of the traumatic experience have been more emphasized, it is possible that some people experience a range of positive outcomes after various kinds of trauma (Tedeschi & Calhoun, 1996). Positive changes following trauma and adversity have been studied in philosophy, religion, and literature (Tedeschi, Park, & Calhoun, 1998). Recently, psychological studies started to focus on these positive effects of the disasters. Research indicated that nearly two thirds of the people who face various kinds of traumatic events report that they changed in a positive way or experienced positive life events after the traumatic events (Schafer and Moos, as cited in Tedeschi and Calhoun, 1998). In other words, post-traumatic growth means that the person "...have developed beyond their previous level of adaptation, psychological functioning, or life awareness, that is, they have grown" (Tedeschi et al., 1998, p.3).

1.5.1. Models of Post-Traumatic Growth

Theories about the growth emphasize the importance of schema reconstruction (Tedeschi, 1999). According to Janoff-Bulman (1992), people have basic assumptions about the benevolence of the self, personal invulnerability, and the perception of world as meaningful and comprehensible (as cited in Affleck and

Tennen, 1996). These assumptions prevent anxiety. The traumatic event shatters those assumptions and cause important losses so, after the trauma the fundamental beliefs need to be changed and this change may bring the change in main areas of life (Janoff-Bulman, 1992; as cited in Tedeschi, 1999). In other words, the adversity which is brought by the trauma may lose its severity through cognitive adaptations which reconstruct the assumptions about the self, others, and the world (Affleck and Tennen, 1996).

Similar to the idea of Janoff-Bulman, in the social cognitive information processing model of Horowitz (1986), it was suggested that when the traumatic information is suitable for the process, perceived benefits from the trauma can be experienced (Brewin & Holmes, 2003).

In their model, Schaefer and Moos (1992) stated that life crisis have important roles in causing personal growth and supporting adaptation. Three systems such as primary personal (e.g., cognitive ability, motivation, self-efficacy), additional personal (e.g., hardiness, self-control), and environmental systems (e.g., finances, social support) and their interactions are important mechanisms in the model. According to the model, what determines the situation after the traumatic experience was the combination of one's personal, environmental and prior coping resources. Also, the model divided the factors into three according to the timing such as pre-trauma factors, factors during the trauma and post-traumatic factors (as cited in Tedeschi et al., 1998). Since there is another section for the factors related with posttraumatic growth, here the factors will be mentioned very briefly.

Factors before the traumatic event are personal and environmental resources such as demographic factors, socioeconomic factors, self-confidence, resilience, optimism, coping experiences, social and family support, and community resources. Factors during the trauma are about the nature of the trauma such as severity of the trauma, individual's proximity, duration and predictability of the trauma. The third part is about how individuals perceive and choose to cope with the trauma. Consistent with the theory of stress and coping, Schaefer and Moos (1992) suggested that whether person becomes distressed is affected from his or her characteristics, appraisal of the event and coping strategies (as cited in Tedeschi et al., 1998).

According to Tedeschi, Park and Calhoun (1998), what causes the growth is not the trauma but the struggle of the person with the consequences of the traumatic event. "It is through this process of struggling with the adversity that changes may arise that propel the individual to a higher level of functioning than that which existed prior to the event" (as cited in Linley and Joseph, 2004, p.11). In their functional-descriptive model of posttraumatic growth, Tedeschi, Park and Calhoun (1998) emphasized the importance of initial distress, personality characteristics, type of trauma and context of social support. Consistent with the literature of perceived growth which proposed a significant relationship between the perceived life threat and perceived growth, according to the model (1998), for a person to experience posttraumatic growth, the traumatic event must be severe enough to produce significant reconsideration of previously held assumptions. While reconsidering those assumptions, person may gain new perspectives and learn new precious lessons (Tedeschi et al., 1998).

Moreover, several studies (McMillen et al., 1997; Tedeschi & Calhoun, 1996) reported that the severity of the event has been positively related to the reports of posttraumatic growth.

The model (1998) claimed that some personality characteristics such as extraversion, openness to experience, cognitive complexity, and dispositional hope are related to growth. They claimed that people with these characteristics benefit from constructive type of rumination in which the person tries to find meaning in the event while noticing the changes in himself/ herself more (as cited in Tedeschi 1999).

About the type of trauma, the model (1998) claimed that after large-scale disasters such as earthquakes, because of the decreased social support, growth will not be very high as it can be after individual traumas. They declared that there will not be sufficient amount of people who can provide enough support to the survivors. Social support is important because it affects the rumination and the coping behaviors of the person (Tedeschi et al., 1998). Consistent with this claim, Park et al. (1996) found that social support was positively related to stress-related growth.

It is certain that not every person develops post-traumatic growth after a traumatic event. Since this issue had been researched recently, there are not enough findings about the factors related to growth. In the next section, factors found to be related to growth in the literature will be given.

1.5.2. Posttraumatic Traumatic Growth and Variables Related to It

Positive changes following trauma have been reported empirically after violence (Tedeschi, 1999); natural, criminal, and technological disasters (McMillen, Zuravin, & Rideout, 1995); living with AIDS (Siegel & Schrimshaw, 2000); after having heart attacks (Affleck, Tennen, Croog & Levine, 1987), and war (Powell, Rosner, Butollo, Tedeschi and Calhoun, 2003).

The potential of growth from traumatic events is one of the major assumptions of the crisis theory. According to Caplan (1964) who made an important contribution to the crisis theory, after a traumatic event, disequilibrium in the organization of thought and behaviors is experienced by most of the survivors. But this situation creates a potential for returning to the equilibrium state which may sometimes be better and sometimes worse than the pre-crisis levels (Hobbs, 1984). Furthermore, similar to Caplan (1964), Thomas (1909) defined the crisis as “a threat, a challenge, a strain on the attention, a call to new action, which may have the germ of a new organization” (as cited in Hobbs, 1984, p.24). Also consistent with these assumptions, the Chinese symbol for crisis combines the symbols for danger and opportunity (Hobbs, 1984).

By different authors, different terms were used to describe the positive changes following adversities. These are stress-related growth, posttraumatic growth, thriving, blessings, positive by-products, positive adjustment, positive adaptation and perceived benefits (Linley & Joseph, 2004; Siegel and Schrimshaw, 2000; Tedeschi, et al., 1998). Although there are different labels for positive changes following

trauma, they all share the idea that post-traumatic growth is the process of getting and maintaining perceived positive outcomes of a traumatic experience (Siegel and Schrimshaw, 2000).

Three major types of positive changes were described by Schaefer & Moss (1992):

- 1) Increased social resources such as new social support networks and confident relationships or better relationships with family and friend.
- 2) Increased personal resources such as maturity, empathy, assertiveness, and cognitive differentiation.
- 3) Development of new coping resources such as the capability to think logically and regulate affect (as cited in Tedeschi, Park, & Calhoun, 1998).

On the other hand, according to Tedeschi, Park and Calhoun (1998), individuals may experience growth in three domains such as changes in perception of self, changes in interpersonal relationships and changes in philosophy of life.

After various kinds of disasters, most people who gathered benefits, reported changes in perception of the self such as development of greater tolerance, empathy, patience or courage (Affleck & Tennen, 1996; Tedeschi et al., 1998). For instance, in their study with 154 women who were sexually abused when they were children, McMillen et al. (1995) found that almost half of them perceived benefits. The perceived benefits could be divided into four categories as having a sense of being a stronger and a better person, protection of children from being sexually abused, have

a sense of self-protection, and increased knowledge of child sexual abuse and empathy with victims.

In a study done with women living with HIV/AIDS, it was found that more than two thirds of them reported one or more kinds of positive changes that they attributed to the illness (Siegel and Schrimshaw, 2000). One of the reported changes was related with the positive self-changes after the illness. They reported that they felt they were a different, better, stronger, more responsible, and more assertive person (Siegel and Schrimshaw, 2000).

It is apparent that struggling with trauma gives a great amount of information about self-reliance, and makes the person assertive in dealing with the trauma (Tedeschi & Calhoun, 1996).

Also, change in interpersonal relationships, in terms of having stronger and closer relationships is another common domain. As an explanation for closer relationships after trauma, Tedeschi (1999) proposed that people became motivated to talk about their traumatic experience and its consequences with others. This continuing need may make the person more self-disclosing than before. Also, recognizing one's own vulnerability may cause more emotional expressiveness and willingness to accept help from others. In this way, the person may start to use social support more efficiently (Tedeschi & Calhoun, 1996). Also, they may become more intimate and eager to help other people who had similar problems (Tedeschi, 1999).

In a study, McMillen et al. (1997) examined the perceived benefit after natural, technological, and criminal disasters. They found perceived benefits in all three types of disasters both following 4-6 weeks and 3 years. Subjects reported that they became closer to their friends and family after the disasters. In addition, community closeness was also increased with closeness to others. Also, most of them stated that being closer made them more satisfied. Moreover, their results showed that personal growth increases over time.

The third domain in which change occurs is philosophy of life. After disasters, priorities, personal goals, or the meaning of life may change for some people. In their study with heart attack patients both after 7 weeks and 8 years, Affleck et al. (1987) found that patients perceived benefits in their views of life philosophy, values and family relationships, and increased enjoyment of life. They understood the importance of positive health behavior practices for a long life. Also they found that those who perceived benefit seven weeks after the attack had less chance to experience another attack or die during the eight years of the study.

In their study, as mentioned before, Siegel & Schrimshaw (2000) showed that women with HIV/AIDS reported changes in their values of life. They stated that the meaning and the value they placed on life had completely changed after the illness. And this change was reported as a greater appreciation of their lives, time they have left and for little things in life.

After finding meaning in the trauma and its aftermath, the person may feel less distressed, and changes in philosophy of life which will alter the basic assumptions of the person may occur (Tedeschi & Calhoun, 1996).

It is apparent that after various kinds of traumatic experiences, some people may experience positive changes in the perception of self, relationships with others, and philosophy of life. In their study, Shih, Liao, Chan, Duh, & Gau, (2002), examined the effects of working as a nurse after 1999 Taiwan earthquake among 46 nurses. Contrary to the findings, which state that health care workers develop distress symptoms after disasters, authors found that the majority of the sample (42 nurses) derived positive meanings from their rescue experiences. 76% of the sample stated that they recognized the mortality of life and wanted to devote their time, money and energy to people who need them. Developing more caring relationships with others and for their country is also seen in the majority of them. Also, increased knowledge about disaster care and needs of the survivors, giving more value to their job, enhanced self-worth and ability to find the factors that diminish the need for rescue works were reported by the nurses as the things they gathered. In other words, for most of the nurses, this experience reinforced their professional ability and led them to have more positive goals about future.

It is important that perceiving benefits from traumatic experience does not mean that person does not have negative effects. McMillen et al. (1995) found that more than half of the women who were sexually abused and reported benefits, also reported

perception of harm. Thus, growth and distress can be experienced by the same survivor.

In their review of 39 studies, Linley & Joseph (2004) found a prevalence of posttraumatic growth ranged from 3% for bereaved persons to 98% for women with breast cancer. The study concluded that one should interpret the prevalence rates carefully because the random sampling technique has not been used by most of the studies,

Overall, focusing only on the negative consequences of trauma can lead to a biased understanding of posttraumatic reactions. Several studies displayed that a great amount of people experience positive change following various kinds of trauma. In addition, growth literature needs more cross-cultural and longitudinal studies (Linley & Joseph, 2004).

There are consistent results about the gender differences in psychological distress after trauma. Majority of the studies showed that women show more distress after trauma than men. Similar to this, post traumatic growth is also reported more by women than men in most of the studies (Park et al., 1996; Powell et al., 2003; Tedeschi & Calhoun, 1998). However in some studies, growth scores of women were not significantly higher than the scores of men (Güneş, 2001). Thus, further studies are needed to understand the relationship between gender and posttraumatic growth.

In regards to the relationship between age and growth, there are mixed findings. In their study with survivors of former Yugoslavia, Powell, Rosner, Butollo, Tedeschi and Calhoun, (2003) found that younger people reported more growth than older ones. However, in the study of McMillen et al. (1995) with sexually abused women, they found that those who perceived benefit were older.

Research in the growth literature indicated a significant relationship between perceived life threat and growth. It was stated that the more an individual perceived life threat, the more he will experience growth (McMillen et al., 1995; McMillen et al., 1997; Park et al., 1996; Tedeschi and Calhoun, 1996). Consistent with this, in a study conducted with Marmara earthquake survivors 6 months after the quake, a positive relationship between psychological distress and perceived growth was found (Güneş, 2001).

Also about the impact of coping skills, Park et al. (1996) found that there is a significant relationship between acceptance coping, positive reinterpretation and perceived growth. Moreover, studies reported that people who use active coping strategies such as problem-focused approach, can more easily handle the stressful situations (Tedeschi et al., 1998).

About the variables associated with posttraumatic growth, in their review with 39 empirical studies, Linley & Joseph (2004) reported a consistent association between stress-related growth and cognitive appraisal variables such as threat, harm, and controllability; problem-focused, acceptance, and positive

reinterpretation copings; optimism, cognitive processing, and positive affect. In addition, authors concluded that people who reported and maintained posttraumatic growth over time were less distressed than people who did not report stress-related growth.

In their study with the survivors of the Yugoslavia war, Powell, Rosner, Butollo, Tedeschi and Calhoun (2003) found that being a member of a group was a predictor of growth. As an explanation, they stated that membership enabled survivors an opportunity to share traumatic history, world view and collective coping strategies with each other.

1.6. Voluntary Membership in Non-Governmental Organization

Helping can be seen in three diverse forms. In the first form, it happens spontaneously, without a plan, and the contact between the helper and the recipient does not continue. A bystander intervention can be given as an example for this kind of helping (Latané and Darley, 1970, as cited in Synder, 2001). The second form is seen in the actions of obligated caregivers. These people help or service their spouse, child, or other family members because of their marital or blood bonds. The third one is volunteerism in which people look for opportunities to help without any pressure from the environment or family. Different from the first one, volunteerism is planful and sustained. It has some costs to the volunteer in terms of time, energy, or money (Synder, 2001).

According to the functional approach, the satisfaction of the motives and needs of the volunteer is important. Different people may engage in same volunteer groups that aim to meet different needs. The match of the experience gathered in the volunteer work with the motives of the volunteer is important for the intention to continue. Moreover, volunteers whose concerns are served gather more satisfaction (Synder, 2001).

Six motives in volunteerism were identified by Synder and colleagues. Social motive to increase friendship, motive of enhancement in order to enhance self-esteem, motion to express self, motive to enhance career accomplishment to be more successful in professional life, avoidance motivation in order to run away from problems, and motive of learning more about the world (as cited in Piliavin, 2001).

In their study about political participation, Verba, Schlozman, Brady (1995) reported that people who do not participate in any volunteer organization either had lack of motivation, or lack of capacity to volunteer, or lastly they had not been asked for participation (as cited in Martinez & McMullin, 2004). In general volunteers work in organizations. For most of the long-term volunteers, activities done in the organizational structure are accepted as a career and they adopt the goals of the organization as their own goals. Also, volunteering organizations have significant impacts on the performance of the volunteers. Especially the experiences that volunteers have in the organization and the social network among the members are very important resources for them (Grube & Piliavin, 2000).

In order to identify the differences between active volunteers (721) and nonactive members (900) of Appalachian Trail Conference, Martinez & McMullin (2004) conducted a study. Results showed that although both groups felt that making a difference was important to decide being a volunteer, nonactive members were more likely to let concerns for competing commitments such as “demands that volunteer activities would have on a person’s time, money, family and job” prevent them from volunteering (Martinez & McMullin, 2004, p. 122). Although both groups believed that making a difference is important, non-active ones lacked confidence. Also, it was found that efficacy- ability of a person to help or contribute to the organization- and social networks- meeting or knowing other members in the volunteer group- are important factors that determine the willingness to volunteer.

1.6.1. Psychological Effects of Volunteering

Although there are not enough studies about the effects of volunteer work on psychological distress, “most people say that helping others makes them feel good” (Wuthnow, 1991, p. 87, as cited in Musick & Wilson, 2003). Volunteers do not want something material or economical in return of their work. However, helping others may cause various kinds of benefits such as a sense of mission, security, trust, or enhancement of the sense of self in many ways (Musick & Wilson, 2003).

1.6.1.1. Models of Posttraumatic Recovery

As it was mentioned before, although there are various theories such as psychodynamic, biological, and learning theories, cognitive theories, especially the social cognitive theories are accepted as the most powerful in explaining the process of stress and recovery (Brewin, Dalgleish, & Joseph, 1996; Brewin & Holmes, 2003). “Social-cognitive theories primarily focus on the way trauma breaches existing mental structures and on innate mechanisms for reconciling incompatible information with previous beliefs” (Brewin & Holmes, 2003, p.351). In this section Social Cognitive Theory of Posttraumatic Recovery and The Conservation of Resources Stress Model will be presented briefly.

Various kinds of personality variables such as locus of control, self-esteem, hardiness, etc. have been examined by different researchers in order to understand individual differences in coping with stressful life-events. Self-efficacy has been one of the important personality variables studied, which may act as a buffer against stressful events (Cozzarelli, 1993). Consistent with this, according to Benight and Bandura (2003), self-efficacy which is a person’s own belief in his or her capability to manage stressful situations is very important in adjustment to life after the trauma. In addition, Bandura (1997) also accepted that self-efficacy plays a key role both in determining reactions to stress and quality of the coping strategies (Benight et al., 2003).

The social cognitive theory (Benight & Bandura, 2003) proposes that believing in one's own efficacy helps the person to mobilize and support coping efforts and then subsequently decrease stress and anxiety. Self-efficacy functions as a cognitive regulator and individuals who can control what they think may regulate how they feel and behave. Especially, after traumatic events, this cognitive regulator gains importance in the maintenance of psychological well-being (Benight & Bandura, 2003). The social cognitive theory accepts an agentic model of adaptation and change. In other words, people have active roles in their adaptation and being able to manage adversity depends more on personal resources than on environmental factors (Benight & Bandura, 2003).

After natural disasters, stressors in different forms tend to continue. Resilient self-efficacy is necessary to handle recovery efforts (Benight & Bandura, 2003). In a study conducted after Mt. St. Helens erupted, Murphy (1987) found that severity of disaster loss, social support, and perceived self-efficacy were significantly related with the intensity of symptomatic distress after the volcanic eruption. Three years later, it was found that survivors who believed in their capabilities in handling life problems were not chronically distressed.

Furthermore, according to the theory of Benight and Bandura (2003), Hobfoll's Conservation of Resources Stress Model is important. They proposed that the impact of resource loss on distress level is mediated by coping self-efficacy. Also, coping strategies that people use contributes to the model. They stated that people

with high self-efficacy adopt problem solving coping strategy in order to manage the demands of the situation.

According to the COR model which examines personal, social, and environmental factors together, threatened or actual loss of resources (object, condition-social role, energy, and personal) reduces the person's coping capacity, which in turn causes psychological distress. Traumatic events such as natural disasters may cause psychological distress to the extent of how much threat or actual loss they cause. On the other hand, replacement or supplement of these resources increases coping capacity and diminishes psychological distress. The basic idea in the ground of the model is the people's desire to obtain, retain, and protect resources which are valued by the society (Hobfoll, Johnson, Ennis, & Jackson, 2003).

Since natural disasters have important impacts on the availability of the resources, the COR model can be useful in explaining the adjustment to the events after natural disasters. Also, studies showed that the more resource loss due to natural disasters, the more psychological distress occurred (Freedy, Kilpatrick, & Resnick, 1993). A study conducted after Sierra Madre Earthquake (1991) supported the COR model (Freedy, Saladin, Kilpatrick, Resnick, & Saunders, 1994). In order to test the COR model, 229 earthquake survivors were interviewed regarding earthquake related resource loss. The results showed that resource loss was positively associated with the development of psychological distress after the earthquake. About the post-disaster distress relief, COR model emphasizes the importance of prevention. The loss of any resource due to the natural disaster

should be minimized, and also the initial governmental or private relief efforts must concentrate on providing access to the needed resources at first (e.g., food, water, shelter, medical care) (Freedly et al., 1994).

Overall, according to the COR model threatened or actual loss of the resources causes psychological distress, and disasters are potential dangers for resource loss. However, the replacement of lost resources may reduce distress. Also, as it was mentioned, social cognitive theory proposes that people's beliefs in their self efficacy influence how they perceive and cognitively process potential threats (Benight & Bandura, 2003). Thus, recovery programs must give attention to the impact of self-efficacy and the replacement of lost resources.

In some studies it has been shown that being a volunteer makes people healthier. However there is a debate about whether healthier people are more likely to volunteer or volunteering makes people healthier (Chambré, 1987, p.41, as cited in Musick & Wilson, 2003). The literature offers two explanations about how volunteering improves well-being. According to the first one, through volunteering, people gain positive perceptions about themselves and their abilities. Then, their self-esteem increases and they feel and think more positively. In short, being a volunteer enhances psychological resources of the person. The second opinion emphasizes the importance of social resources and is based on the theory of suicide of Durkheim which states that social integration is very important for one's psychological well-being. It is claimed that through increased social integration which is provided by

volunteering, people find enormous opportunities to gather social support and helpful information (Musick & Wilson, 2003).

Undoubtedly, not every person benefits from volunteering at the same level. About the differences, the literature showed that older people may be more positively affected by volunteering than younger people. They based this idea on the increased social support and decreased sense of powerlessness that older people gain by working volunteers. In their study with volunteers, Musick & Wilson (2003) found that older volunteers have less depression whereas there was no association between volunteering and depression for younger volunteers. Also about the effect of the duration of volunteering, results showed that more sustained volunteers have better mental health.

In terms of the effects of participating in a disaster response team, in a study it was found that anxiety levels of the volunteers' decreased and their willingness to accept help and services from others increased (Comfort, 1990 as cited in Rossé, 1993). Also, another study with volunteers reported that emergency preparedness and disaster coping abilities advanced in volunteers (Nehnevajsa, 1989, as cited in Rossé, 1993). Furthermore, giving support to each other, facilitates volunteers' personal efforts to recover after the earthquakes (Rossé, 1993)

Inviting the community members to participate in the health services may give benefits to the participants. In their study, Tanaka, Kunii, Okumura & Wakai (2004) investigated the benefits of refugee participation in health activities during the post-

emergency stage in Tanzania. The health information team (HIT) consisted of refugees who were active in the identification of health needs of other refugees and worked under the supervision of the Tanzanian Red Cross Society. The results showed that the refugees, who participated in HIT, had more responsibility and health consciousness compared to the ones who did not participate. Also, they had a belief that by using their own services and knowledge, they can help to solve other refugees' health problems. As a consequence, they had increased self-confidence about what they can do.

Community participation in various kinds of non-governmental organization such as HIV/AIDS prevention groups or volunteer organizations may enhance the sense of communal effectance in which self-efficacy grows by being a member of an organization. Contrary to the self-efficacy in which personal goals are important, in communal efficacy, the needs of the group determine the goals and targets of the people. In addition, in order to solve their problems or make their plans, members accept the group as the main instrument (Hobfoll, Jackson, Lavin, Johnson, & Schröder, 2002).

Overall, being a volunteer in a non-profit organization may affect the volunteers in a positive way. Several studies reported significant positive changes in the sense of self and the availability of social support. However, the literature needs more comprehensive theoretical models for the mechanisms of volunteering and its effects.

1.7. The Study Event - 1999, Marmara Earthquake

Since, Turkey is located on one of the most active fault lines of the world there is a high probability to experience an earthquake for the Turkish population. In the earthquakes during the 20th century, more than 100.000 people lost their lives in Turkey. The Marmara earthquake with a magnitude of 7,4 on the Richter scale occurred on August 17, 1999 while much of the population was sleeping . It affected the most industrialized area of Turkey and caused 17,127 deaths, 43,953 injuries, and displacement of 250,000 people. The earthquake damaged seriously two big cities of Turkey: Kocaeli and Sakarya (Karanci & Aksit, 2000). Right after the earthquake, both governmental and non-governmental emergency response teams started to rescue victims and respond to their medical and physical needs. However, after a time, the need for more organized and well equipped organizations which can deal with a future large-scale disaster such as an earthquake became well recognized.

1.8. The Neighborhood Disaster Support Project

In Turkey, the majority of the population lives in areas that have high risk for earthquakes. For a successful national disaster management, projects should start from the neighborhood level and increase neighborhoods' capacity to respond. After earthquakes, most victims are rescued by relatives or neighbors within the first hours. However, trying to rescue people without proper training or equipment can give important damages to the victims.

After the 1999 Marmara earthquake, voluntary and non-governmental activities have extensively increased in Turkey (Jalalli, 2002). The Neighborhood Disaster Support Project which is one of those voluntary non-governmental organizations started to work on July, 2000 in the Marmara Region of Turkey. The project was started by The Swiss Agency for Development and Cooperation in cooperation with local partners including provincial governors, civil defense directorates, municipalities, fire departments, professional chambers, universities and non-governmental organizations. The goal of this organization is to improve the community response capability at neighborhood level in order to save lives, especially during the initial 72 hours by efficient training and equipment. Also, another aim is to raise disaster awareness level within the community through nation-wide media campaigns while improving the cooperation with the professional responders. The Neighborhood Organization has two components. The Neighborhood Disaster Volunteers (421 male and 234 female in Kocaeli part) are composed of men and women between the ages of 18-55 who are in a good health, living and planning to stay in the neighborhood for a long term. Also, it is important that volunteers are good team members dedicated to volunteerism. In each neighborhood, there are a maximum 50 volunteers who are trained, equipped and organized to respond immediately. The other component, Neighborhood Disaster Committee, consists of individuals who have specific skills and tasks to guide and improve neighborhood based response capacity.

The target areas of the project are neighborhoods that are disaster prone. The volunteers receive basic training about disaster awareness and prevention, disaster psychology, basic fire fighting and prevention, basic first aid, and basic search and

rescue. These trainings are prepared and taught by professionals specialized in each subject. Moreover, trainings continue with refreshers, advanced training courses, drills and social activities after the basic training programs. The equipment given to each neighborhood is stored in containers (Neighborhood Disaster Support Center) which are placed at a safe and accessible place in the neighborhood. In order to provide communication with the Provincial Civil Defense following a disaster, a two-way radio communication is also established.

The Marmara earthquake was a common traumatic event for neighborhood disaster volunteers. In other words, the earthquake may have caused similar changes in personal, social and business lives of the volunteers. Therefore, posttraumatic growth and general distress level have been examined in this study in order to understand their relationship with being a disaster volunteer in a disaster-prone country.

It was proposed that neighborhood disaster volunteers will have higher posttraumatic growth scores than control group because of two reasons. One of them is sharing their memories, ideas, and feelings about the earthquake with others. The other is that serving other survivors plays an important role in the change process. Like Herman (1992) said “The trauma is redeemed only when it becomes the source of a survivor mission.” Doing something for others and not avoiding from the traumatic event may facilitate the development of posttraumatic growth among NDV volunteers (as cited in, Tedeschi, Calhoun, & Park 1998, p. 207). Furthermore, being a member of a volunteer group can provide a social network and skills and

information to deal with future earthquakes. All these resources can increase the self-esteem and efficacy of volunteers.

Taken all together, reactions of trauma survivors after trauma may vary. In order to understand the reactions comprehensively, both negative and positive ones should be studied in different trauma types. Undoubtedly, not only the features of stressful events but also both the characteristics of the persons and post-trauma factors, and their relationships have to be examined carefully.

To sum up, models of growth and the studies indicated that people can improve after traumatic events. Being a disaster volunteer when integrated with previous earthquake experience can be an opportunity for growth. If they experience growth, they can adjust better to the life after the 1999 Marmara Earthquake.

1.9. Aims of the Study

The aims of the study were to: (1) Investigate the impact of involvement in neighborhood disaster volunteers organization on perceived growth and general distress level among the Marmara Earthquake (1999) survivors (2) Evaluate the dimensionality of stress related growth scale in order to understand the domains of growth experienced by the survivors (3) Examine the predictors of perceived post-traumatic growth and general distress (4) Investigate the impact of geographical proximity to the earthquake center on general distress level and on perceived growth (5) Examine types of coping strategies that earthquake survivors use (6) Investigate

the possible difference in coping strategies between volunteers and non-volunteers

(7) Examine possible gender difference in perceived growth and general distress level. The predictors were based on the Multivariate Risk Factor Model which investigates the predictors as pre-disaster, within disaster, and post-disaster factors. Demographic variables such as gender, age, and education will represent the pre-disaster factors. The within disaster factors are exposure severity, geographical proximity, and perceived threat. Coping behaviors and being a neighborhood disaster volunteer will represent post-disaster factors.

CHAPTER II

METHOD

2.1 Subjects

Two hundred subjects participated in the present study. They were adult survivors of the 1999 Marmara earthquake. Subjects were equally divided into two groups one of which was Kocaeli NDV (Neighborhood Disaster Volunteer) and the other one was a control group which consisted of individuals who were not neighborhood disaster volunteers. In order to examine the impact of the severity of the earthquake, each group was also had participants from two areas differently hit by the quake (sample from Gölcük which is the epicenter of the earthquake and from İzmit which is far away from the epicenter of the earthquake). The gender proportion of the study sample reflected the gender proportion of the NDV organization in which there are about two males for one female. Sixty-six per cent of the volunteers were (n=66) male and 34% were female (n=34). The same gender proportion was applied to the control group. The mean age of the volunteers was 31.91 (SD= 11.09) with a range of 18 to 60. Fifty six per cent of the volunteer participants were married, 34% single, 6% widowed or separated, and 4% engaged. The mean of the years of education for the volunteers was 10.52 (SD= 3,24; min= 5 max= 17). Whereas the mean education years of the female volunteers were 11.15 (SD= 3.11) and of the male volunteers were 10.20 (SD=3.29). In terms of employment status in the NDV group, 74.2% (n=46) of the males and 38.2% (n=13) of female volunteers were employed. For the control group, the mean age was 33.79 (SD= 8.7) with a range from 18 to 49. Fifty eight per cent of them were married, 31% single, 6% widowed or separated, and 5% engaged. The mean duration of education in terms of years for the control was 9.48 (SD= 3,57; min= 0 max= 17). Furthermore the mean education

years of the female controls were 9.32 (SD= 4.10) and of the male controls were 9.56 (SD=3.30). In terms of employment status in control group 80.3% (n=53) of the males and 29.4% (n=10) were employed. The mean household size of the whole participants was 4 with a range between 1 and 9. The socio-demographic characteristics of the sample are presented in table 1.

Table 1. Socio-demographic Characteristics of the Sample

	NDVs	Non-NDVs	Male	Female
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
	Range	Range	Range	Range
<i>Age*</i>	32.86 (9.34) (18-59)	31.91 (11.09) (18-60)	32.21 (10.54) (18-60)	32.72 (9.68) (18-52)
<i>Education in years</i>	11.15 (3.24) (5-17)	10.2 (3.57) (0-17)	9.56 (3.30) (5-17)	9.32 (3.73) (0-17)
<i>Marital status %</i>				
Married	54%	58%	58%	53%
Single	37%	31%	36%	29%
Widowed/Separated	6%	6%	3%	12%
Engaged	3%	5%	3%	6%
<i>Currently Employed</i>				
Yes	62%	63%	77%	66%
No	38%	37%	23%	34%
<i>Previous Quake Experience</i>				
Yes	11%	11%	8%	16%
No	89%	89%	92%	84%
<i>Duration of being an NDV %</i>				
Less than 6 months	17%			
7-12 months	19%			
13-24 months	51%			
15-36 months	12%			
More than 37months	1%			

*t-test results showed no significant difference for age among the volunteers, non- volunteers, females, and males.

2.2 Sampling and Procedure

The volunteers were selected from two regions (Gölcük, İzmit) among the 5 regions (Gölcük, İzmit Center, Yalova, Körfez, and Kartal) where the Neighborhood Disaster Support Project is in progress. Gölcük was the highest damaged region whereas İzmit had the lightest damage in Kocaeli. The sample of volunteers was selected randomly among the volunteer population. The control group was also chosen randomly from the same neighborhoods of the volunteer population. In order to match the gender proportion of volunteers and control groups, 34 females and 66 males were chosen.

Initially, the aims and the procedure of the study were explained to NDV directors, and their consent for the study was obtained. Four and a half years after the Marmara earthquake, data was collected by six NDV volunteers and one graduate student from the Department of Psychology of the Middle East Technical University. They were given training on how to deliver the research instrument as a structured interview and how to administer the questionnaire. Survey instruments were individually administered as structured interviews in the houses, work places and NDV offices. From each household, only one person was selected for the sample NDVs were selected from the list of the NDVs randomly. Then, volunteers were wanted to give a name of a person who has similar demographic variables for the control group. The aims of the study were briefly explained to all subjects. Importantly, confidentiality was emphasized as well as their freedom to quit the survey whenever they wanted to. The entire sample gave their consent to participate. The administration of one questionnaire took approximately one hour.

2.3. Research Instrument

The research instrument had three sections (see Appendix A). The first section presented questions on socio-demographic variables such as gender, age, marital and employment status, education level, and number of household members. Also this part included questions on the survivors' earthquake experiences. In order to examine previous earthquake experience, the following questions were asked: "Did you experience any earthquakes prior to the 1999 Marmara earthquake (0= no, 1= yes); "Did you think that you might die at the time of the earthquake?" (0= no, 1= yes); "Did you think that one or more of your family members might die at the time of the earthquake?" (0= no, 1= yes); "Did you see any dead or seriously injured bodies after the earthquake?" (0= no, 1= yes); "Did someone from your family or close relatives die or get seriously injured due to the earthquake?" (0= no, 1= yes); "Were you trapped under the rubble during the earthquake?" (0=no, 1=yes); "How much property have you lost due to the earthquake?" (0= none, 1= moderate, 2= a great amount), "Did you qualified as a right holder to get a state funded house after the earthquake" (0= no, 1= yes); "How much damage occurred at your home due to the earthquake" (0= not damaged, 1= mildly damaged, 2= moderately damaged 3=heavily damaged), and "Did you receive rent allowance after the earthquake?" (0= no, 1= yes).

The first section had one item which was used to evaluate perceived social support of subjects after the earthquake: "How much support did you get from your family or friends?" (1= none, 2= some, 3= much). In order to evaluate subjects' belief in future control about the negative impacts of earthquakes, the following questions were asked; "According to you, can something be done in order to prevent the negative effects of the earthquakes?" (1 = nothing can be done, 2 = something can be done, 3 = many things can be done); "Have you made any preparation for future earthquakes? (0 =no, 1 = yes) "If you have made, please briefly state ". Also in this part, an open ended question that related to the

effects of the earthquake was included; ‘‘Please briefly state how the earthquake affected your life’’. The responses for these open-ended questions were not used for the present thesis.

The second part of the questionnaire was only designed for the NDV, and included the following questions:

- How long have you been working in this organization?
- Approximately how many hours do you spend in the organization in a month?
- How much do you think is the organization beneficial for the community? (1= not at all, 2= somewhat, 3= very much)
- ‘‘In your opinion, how beneficial is your contribution to the organization?’’ (1= Not at all, 2=A little, 3=Quite a bit, 4=Very much)
- One open-ended question about the effects of working as a volunteer on their lives.

The third section consisted of three scales which assessed the subjects’ psychological distress, coping skills, and stress related growth level.

2.3.1 Symptom Checklist-40 (SCL-40)

The Symptom Checklist, Version 90-R (SCL 90-R), has been used to measure self-reported psychological distress of survivors within the last two weeks before the interview (Derogatis, 1990; as cited in Vassend & Skrondal, 1999) in many studies. It was developed by Derogatis & Clearly (1977) to identify general distress. It has 90 items. In this scale, there are two indexes: the positive symptom total index which gives the total number of the symptoms that a person has within the last two weeks and the global severity index which shows the intensity of symptom stress. In addition, there are subscales of SCL-90-R that reflects somatization, obsessive compulsive thoughts, interpersonal sensitivity,

depression, anxiety, hostility, fear, paranoid ideation, and alienation (as cited in, Karancı & Rüstemli, 1995). It has been used after different kinds of traumatic events such as war (Fairbank, Hansen, & Fitterling, 1991), and environmental disasters (Crichton, Elliott, Meer, Small, & Upshur, 2003).

SCL 90-R was translated into Turkish by Dağ (1990) and its reliability and construct validity has been tested in a sample of Turkish university students. The obtained statistical scores for internal consistency ($r=.97$), test-retest reliability ($r=.90$), and internal consistency of subscales (Cronbach's alpha from .77 to .90) revealed that the scale and the subscales were reliable for the Turkish population (as cited in Güneş, 2001).

Karancı and Rüstemli (1995), after the 1992 Erzincan earthquake abbreviated this scale and took 40 items from the subscales of somatization, depression, anxiety, phobic anxiety, and hostility. After a pilot study, they used it with earthquake survivors. Furthermore, the response format was also changed, and the original five point scale was changed into three point likert-scale (1= never, 2= sometimes, 3= almost always, min= 40, max= 120).

In the present study, SCL-40 was used to assess the degree of distress experienced by the participants over the last two weeks. A three point likert-scale (1= not at all, 2= somewhat, 3= very much) was used. Statistical analyses were performed by using the mean total distress score. Mean score on SCL-40 was obtained by summing up the responses to the items of the whole scale and then dividing it by fourty. The Cronbach alpha reliability coefficient of the whole scale was found to be .92 for the present sample.

2.3.2 Ways of Coping Questionnaire

Ways of Coping Questionnaire (WCQ) addresses a broad range of cognitive and behavioral strategies that individuals use when they encounter an internal and/or external stressful situation (Brand & Alexander, 2003).

WCQ was developed and later revised by Folkman & Lazarus (1985). In the 1980s, the scale consisted of 64 items; 24 items for problem-focused coping strategies, and 40 items for emotion-focused coping strategies (Folkman & Lazarus, 1985). Then, Folkman & Lazarus (1985) added and dropped some items and created a 66-item self-report measure. They also changed the yes-no response format into a 4-point likert scale (0= not used, 1= used a little, 2= used, 3=used so much). When they administered the WCQ to a student sample at three different times, six factors were found. Afterwards they added two other factors, and the scale had eight subscales; one for problem-focused coping strategies, six for emotion-focused coping strategies, and one for mixed problem and emotion focused coping strategies were obtained. These eight subscales of WCQ and their reliabilities were problem-focused coping ($r = .85$), distancing ($r = .71$), positive reappraisal ($r = .65$), seeking social support ($r = .81$), wishful thinking ($r = .84$), self-blame ($r = .75$), self-isolation ($r = .65$) and tension-reduction ($r = .56$) (Folkman & Lazarus, 1985).

In 1986, Folkman et al. administered the scale to 85 married couples. Fifty items revealing eight subscales were found. The subscales were confrontative coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem solving and positive reappraisal (as cited in Sorlie & Sexton, 2003).

Although WCQ has been used in many studies, the difference in factor structures has been invariable. This diversity in factor structure may be caused by cultural differences or the different natures of the stressful events (Sorlie & Sexton, 2003).

In their study with 506 couples who are facing marital problems, Bouchard, Sabourin, Kussier, Wright & Richer (1997) tested the structural validity of the WCQ, using the first-order and second-order confirmatory factor analyses. They examined both the four factor and eight factor models. They reported that the

four-factor model (distancing/avoidance, confrontation/seeking social support, problem-focused coping, and denial) was a better approximation of the WCQ data obtained from couples than was the eight-factor model which was obtained by Folkman & Lazarus (1985) (confrontation, distancing, self control, seeking social support, accepting responsibility, escape/avoidance, planful problem solving, and positive reappraisal).

The Ways of Coping Questionnaire was translated and adapted into Turkish by Siva in 1988. Eight new items about fatalism and superstition that were thought to be relevant to the Turkish culture were added to the Turkish adaptation (as cited in Karancı et al., 1999). The adapted version consisted of 74 items and the Cronbach alpha was found to be .91. Factor analysis revealed eight factors, which were planful problem solving, escape/avoidance, emotional control, growth, fatalistic approach, helplessness, self-blame, and seeking refuge in supernatural forces (as cited in Güneş, 2001).

Later, Karancı et al (1999) used the Turkish version of the WCQ with the survivors of the 1995 Dinar earthquake. In order to make the scale more suitable for their study, two judges who were experienced in disaster research examined the items and then reduced the item number to 61. They changed the response format to a 3 point likert scale (1= never, 2= sometimes, 3= always) for ease of comprehension. After the pilot study, one item was also excluded from the scale because of the difficulty in comprehension. Factor analysis by principal components with varimax rotation was conducted. Items loading below .35 were excluded except one item under Social Support factor which was thought to be theoretically related with the factor. Then, 50 items under five factors were found. The Cronbach alpha reliability of the whole scale was found as .76, and the inter-correlations of the subscales varied between .51 and .78. The Cronbach alpha reliabilities of the five factors were as follows; problem solving/optimistic ($r = .75$), fatalistic approach ($r = .78$), helplessness approach ($r = .69$), social support ($r = .59$), and escape ($r = .51$).

In the study conducted after 1999 Marmara earthquake, gender differences in distress level, coping strategies, and stress related growth were measured (Güneş, 2001). As a result of factor analysis for WCQ, four factors namely problem solving/optimistic ($r = .83$), fatalistic approach ($r = .77$), helplessness approach ($r = .73$), and escape ($r = .55$) were reported.

In the present study, in order to find out the type and frequency of the coping strategies that Marmara earthquake survivors use when they encounter stressful situations related with the earthquake, the 42-item WCQ which was obtained from the study of Karancı et al. (1999) was used. The items were selected according to the criteria of the previous study. In order to examine the factor structure of the scale, a factor loading of .35 was taken as the criterion, and 2 items were excluded from the scale. As the response format, three point Likert scale was used (1= never, 2= sometimes, 3= always). In the present study the mean scores of the subscales were used. The mean scores were obtained by summing up the responses to the items of the subscale and dividing it by item number.

The answers to the 42 items of the WCQ were subjected to factor analysis using principal component analysis (PCA) with varimax rotation. The analysis, with restrictions on the number of factors showed that a 4 factor solution explaining 42% of the total variance produced the clearest result. The first factor was labeled as “problem solving/optimistic coping”, the second factor was “fatalistic approach”, the third factor was labeled as “helplessness approach” and the fourth factor was labeled as “escape” type of coping. The internal consistency of the whole scale was found to be .88. The statistical analysis and factors are presented in the result section.

2.3.3 Stress Related Growth Scale (SRGS)

Park, Cohen & Murch (1996) developed a measure of stress-related growth and studied the variables related with growth. The three kinds of stress-related

positive outcomes as increased social resources (better relationships), increased personal resources (enhanced self-concept), and improved or new coping skills (better problem solving strategies) which were proposed by Schafer and Moos (1992) guided the development of the scale (as cited in Park et al., 1996). A college student population of 506 was used and internal, test-retest reliabilities, and factor analyses were conducted. The students responded to 82 items in respect to their most stressful experience in the past 12 months. Items were on positive changes in social relationships, personal resources, and coping skills. Students responded to the items by using 3 point scales (0= not at all, 1= somewhat, 2= a great deal). Because of the skewed responses, item number was reduced to 50. A number of factor analyses were conducted and in all of them, most of the items loaded the highest on one general factor. Authors reported that the SRGS which consisted of 50 items, reflects an overall stress-related growth. The internal consistency of the scale was $r = .94$, and the test-retest reliability after 2 weeks was $r = .81$. Then the authors conducted a second study with college students who did not participate in the previous study, and with their friends or family members who rated the types of changes in the respective student. After the analyses, it was found that there was a low but significant correlation ($r = .21$) between the students' and their relatives' or friends' answers (Park et al., 1996).

Güneş (2001) adapted the scale into Turkish in order to investigate the perceived benefits for the 1999 Marmara earthquake survivors. SRGS was translated into Turkish by two psychology professors and one clinical psychologist. In order to find the best fitting translation for each item, two psychology lecturers evaluated the translated scale. The item number and the response format did not change (0= not at all, 1= somewhat, 2= a great deal). A principal component analysis with varimax rotation, with an eigenvalue 1.00 as the criterion, to examine the dimensionality of the scale was conducted. As it was found in the study of Park et al. (1996), most of the items loaded the highest on one general factor. Then, although the factor number was forced to three, the result did not change. The Cronbach alpha reliability of the whole scale was found to be .94 (Güneş, 2001)

In the present study, the 50 item SRGS with a 3 point Likert scale (0= not at all, 1= somewhat, 2= a great deal) response format, obtained in Güneş (2001) study was used to assess the positive outcomes of the earthquake experience. Respondents were asked to rate the suitability of the items for themselves on the basis of their earthquake experience. The responses to the 50 items of the SRGS were subjected to factor analysis using principal component analysis with varimax rotation. In the development of the scale, Park et al. (1996) predicted three factors such as personal, social, and coping resources. However, most of the items were loaded on one general factor. Similarly, in the present study, most items loaded the highest on one general factor. Therefore, the mean SRGS scores ($M = 2.41$, $SD = .41$ min=1 max=3) which were calculated by summing up the responses to the items of the SRGS and dividing them by the item number were used in all subsequent analysis. Cronbach's alpha for the total SRGS was found to be .95. The statistical properties of the whole scale will be discussed in the results section.

2.4 Data Analysis

The data from 200 adults were examined through the Statistical Package for Social Sciences (SPSS) programs (Tabachnick & Fidell, 1996). In order to examine the factor structures of the Earthquake Experience and the Ways of Coping Questionnaire, Principal Component Factor Analysis was conducted. Cronbach Alpha reliability coefficients were examined. In order to examine the possible differences caused by the involvement in neighborhood disaster volunteers organization and gender on earthquake experience, coping strategies, stress related growth, and general distress level four ANOVAs were conducted. Furthermore, to examine the responses to the open-ended question on benefits to the NDV's, Cohen's Kappa coefficient was used (Cohen, 1960). Finally, hierarchical multiple regression analyses was conducted, in order to examine the predictors of general distress level, and total PTG.

CHAPTER III

RESULTS

In this part, firstly, the results related to the research instruments will be presented. Secondly, general distress level, perceived stress related growth, and coping strategies of the sample will be given. Finally, the predictors of general distress level and perceived stress related growth will be presented.

3.1. The factor structure of the Earthquake Experience variables

As mentioned in the method section, earthquake experience was assessed by eleven questions (see Appendix A). In order to examine whether they can be grouped into meaningful categories, a factor analysis was conducted. However, before the analysis, the response format of two questions, namely “How much properties have you lost due to the earthquake?” (0= none, 1= a little, 2= moderate, 3= very much, 4= a great amount) and “How heavily was your house damaged due to the earthquake” (0= not damaged, 1= mildly damaged, 2= moderately damaged, 3=heavily damaged) was transformed into two categories. For “How much property have you lost due to the earthquake”, the answers of “none”, “a little”, and “moderate” were coded as 0 while the rest was coded as 1 (“very much”, “a great amount”). Also, for “How heavily was your house damaged due to the earthquake” the answers of “not damaged” and “mildly damaged” were coded as 0, and the rest was coded as 1 (“moderately and heavily damaged”). Subsequently, a factor analysis using principal component analysis (PCA) with varimax rotation was conducted. The initial analysis employing an eigenvalue of 1.00 as the criterion yielded 3 factors explaining 57% of the variance. Further analysis, with restrictions on the number of factors revealed that 2 factors explaining 47% of the variance gave the clearest result. A factor loading of .35 was accepted as the criterion to determine the item

compositions of the factors. Each item was included under the factor in which it had the highest loading. Mean factor scores were obtained by summing up the responses to the items of the factors and dividing them by the number of the items. Five items loaded on the first factor labeled as “severity of impact” with a Cronbach alpha reliability coefficient of .82. Six items loaded on the second factor labeled as “perceived life threat”. Cronbach alpha reliability coefficient for internal consistency of perceived life threat subscale was found to be .62. The internal consistency of the whole scale was found to be .75. Table 2 shows the item composition of the factors, the factor loadings of each item and Cronbach alpha reliability coefficients of the factors.

Table 2. Item Composition of the Two Earthquake Experience Factors, Their Factor Loadings, Percentage of Variance Explained and Cronbach’s Alpha Values.

Item no	Item	Factor Loadings	
		Factor 1	Factor 2
Factor 1: Severity of impact			
Explained variance 32%; Cronbach Alpha =.82			
22.	Did you receive rental allowance after the earthquake? (No= 0; Yes= 1)	.84	.13
20.	How heavily was your house damaged due to the earthquake? (not and mildly = 0; moderately and heavily = 1)	.73	.09
19.	How much property have you lost due to the earthquake? (none, a little, moderate = 0; very much and a great amount = 1)	.77	.21
21.	Did you have right to get compensation after the earthquake? (No= 0; Yes= 1)	.77	.15

Table 2. (continued)

17.	Were you trapped under the rubble during the earthquake? (No= 0; Yes= 1)	.64	.11
Factor 2: Perceived Life Threat			
Explained variance 15%; Cronbach Alpha =.62			
14.	During the earthquake, did you think that you might die due to the earthquake? (No= 0; Yes= 1)	-.08	.85
15.	During the earthquake, did you think that someone in your family might die due to the earthquake? (No= 0; Yes= 1)	.04	.82
13.	Where were you during the earthquake? (İzmit= 0, Gölcük=1)	.15	.50
23.	Did you lose your job due to the earthquake? (No= 0; Yes= 1)	.15	.50
14.	Did you see any dead or heavily injured bodies right after the earthquake? (No= 0; Yes= 1)	.16	.41
18.	Did someone from your family or close relatives die or got heavily injured due to the earthquake? (No= 0; Yes= 1)	.29	.41

3.2. Difference between Neighborhood Disaster Volunteers and non-volunteers and gender in Earthquake Experience

To examine the effects of being a neighborhood disaster volunteer and gender in earthquake experiences, a 2 (Groups: volunteer/not) X 2 (sex) X 2 (earthquake experience: severity of impact, perceived life threat) ANOVA with repeated measures on the last factor was conducted. Results of this analysis showed

significant main effects only for earthquake experience ($F(1, 196) = 192, p < .001$). Neither the main effects for gender and being a volunteer, nor the interaction between gender and volunteering on earthquake experience was significant. Results of this analysis are presented in table 3.

Table 3. Results of Status as a Volunteer by Sex by Earthquake Experience Analysis of Variance

Source of variation	SS	df	MS	F	Sig. of F
Sex	.123	1	.123	1.35	.247
Volunteerism	.069	1	.069	.765	.383
Sex X Volunteerism	.094	1	.094	1.03	.311
Between Error	17.83	196	.091		
Earthquake Experience	9.08	1	9.08	192	.000*
Sex X E.Experience	.003	1	.003	.071	.790
Volunteerism X E.Experience	.007	1	.007	.169	.682
Sex X Volunteerism X E.Experience	.082	1	.082	1.75	.187
Within Error	9.26	196	.047		

* $p < .001$

For the whole sample, severity of impact ($M = .27, SD = .18; \text{min} = 0 \text{ max} = 1$) was reported significantly less than perceived threat ($M = .50, SD = .26; \text{min} = 0 \text{ max} = 1$).

3.3. Effects of being closer to or being further away from the epicenter of the quake in Earthquake Experience

To examine the effects of being closer or further to the epicenter of the quake in earthquake experiences, a 2 (Golcuk/Izmit) X 2 (severity of impact, perceived life threat) ANOVA with repeated measures on earthquake experience factors was conducted. Results of this analysis showed significant main effects both for earthquake experience ($F(1, 198) = 244, p < .001$) and location ($F(1, 198) = 58, p < .001$). Also the interaction effect between location and earthquake experience was significant ($F(1, 198) = 25, p < .001$). Results of this analysis are presented in table 4.

Table 4. Results of Location and Earthquake Experience Analysis of Variance

Source of variation	SS	df	MS	F	Sig. of F
Between Error	13.98	198	.07		
Location	4.09	1	4.09	58	.000*
Earthquake Experience	10.24	1	10.24	244	.000*
Location X E.Experience	1.06	1	1.06	25	.000*
Error	8.29	198	.041		

* $p < .001$

Both earthquake experience factors significantly differ from each other. Perceived threat was found be the most frequently reported ($M = .50, SD = .26$) while severity of impact was the least frequently reported earthquake experience factor ($M = .27, SD = .18$) for the whole sample. Respondents who experienced the earthquake in the epicenter (Gölcük) reported significantly higher scores both on severity of impact ($M = .23, SD = .29$) and perceived threat ($M = .65, SD = .17$) than

those from İzmit (severity of impact $M = .13$, $SD = .24$; perceived threat $M = .35$, $SD = .23$).

According to the results of post-hoc analysis with Tukey Honestly Significant Difference Test (Tukey HSD), Gölcük sample's mean score on perceived threat ($M = .65$, $SD = .17$) is significantly higher than their mean score on severity of impact ($M = .23$, $SD = .29$) and than the İzmit sample's scores both on perceived threat ($M = .35$, $SD = .23$) and severity of impact ($M = .13$, $SD = .24$). Also, İzmit sample reported significantly more perceived threat scores than severity of impact scores ($F(1,198) = 25$, $p < .001$).

3.4 Factor Structure of Ways of Coping Questionnaire (WCQ)

Since the WCQ yielded different factor structures in the literature (Sorlier & Sexton, 2003), a factor analysis was conducted for the present study. The answers to the 42 items of the WCQ were subjected to factor analysis using principal component analysis (PCA) with varimax rotation. The initial analysis employing an eigenvalue of 1.00 as the criterion yielded 11 factors explaining 63% of the variance. Further analysis, with restrictions on the number of factors showed that a 4 factor solution explaining 42% of the total variance produced the clearest result. As the criterion to determine the item composition of the four factors, a factor loading of .35 was taken. Each item was included under the factor on which it had the highest loading. Two items which are presented at the bottom of the table 1 were excluded from further analysis due to not meeting the criterion. Mean factor scores were obtained by summing up the responses to the items of the factors and by dividing them by the number of the items in that factor. Table 5 presents the four factors, factor loadings, and the Cronbach's alpha reliability coefficients. The first factor was labeled as "problem solving/optimistic coping", the second factor was "fatalistic approach", the third factor was labeled as "helplessness approach" and the fourth factor was labeled as "escape" type of coping. The internal consistency of the whole scale was found to be .88.

Table 5. Item Composition of the Four WCQ Factors, Their Factor Loadings, Percentage of Variance Explained and Cronbach Alpha Values

Factors and items	Factor Loadings			
	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1: Problem Solving/optimistic				
(Explained Variance 21%; Cronbach Alpha=.89)				
19. I know what have to be done, so I doubled my efforts	.74	.00	.00	-.13
39. I inspired to do something creative about the problem	.72	.11	.00	.00
22. I standed my ground and fought for problems	.69	.12	.00	-.30
28. I just concentrated on what I Have to do next	.68	.00	.00	-.11
31. I made a plan of action and followed it	.66	.00	-.15	.10
23. I compromised to get something positive	.66	.17	.00	-.16
38. I tried not to act hastly	.64	.21	.00	.00
8. I maintained pride	.60	.12	.00	-.38
41. I tried to be assertive and defended my rights	.58	.00	.00	.12
25. I tried to find new solutions	.56	.00	.25	.00
7. I tried to analyze the problem	.52	.00	.18	-.39
42. I changed or grew as a person	.51	.25	.11	-.21
6. I tried to forget the whole thing	.49	.13	.21	-.28
18. I expressed my feelings to others	.49	.00	.13	.15
21. I asked friends before I took an action	.46	.00	.22	.22

Table 5. (continued)

27. I tried to adapt a new perspective	.44	.00	.31	-.15
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11. I tried to understand the seriousness of situation	.41	.00	.00	-.24
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Factor 2: Fatalistic Approach

(Explained Variance 11%; Cronbach Alpha=.84)

14. I thought that everything in life has a positive side	.17	.71	.00	.00
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37. I believed that God knows the best	.12	.70	.16	.00
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10. I have gone with fate; sometimes I have bad luck	.00	.68	.14	.00
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24. I believed that it was my destiny and it doesn't change	.00	.67	.00	.25
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15. I prayed for help	.24	.67	.00	-.18
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20. I thought that it depended on how it grew	.00	.66	.15	.13
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34. I thought what happened was my fate	.00	.63	.24	.31
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30. I gave money to poor people to escape my trouble	.14	.53	.14	.26
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16. I tried to be happy with what I have had	.36	.49	.00	-.16
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9. I tried to forget the whole thing	.00	.39	.00	-.28
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Factor 3: Helplessness Approach

(Explained Variance 6%; Cronbach Alpha=.79)

17. I could not help thinking about the problem	-.11	.00	.67	.23
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12. I have felt helpless	.00	.00	.65	.00
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2. I have hoped for a miracle	.13	.22	.65	.00
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Table 5. (continued)

13. I expected understanding from people	.10	.17	.61	.00
35. I thought if only I were stronger	.23	.00	.57	.22
1. I turned to work or another activity to make my mind off things	.21	.00	.55	-.28
4. I expected others to help me in solving my problems	.14	.18	.54	.00
26. I wish I had changed what happened	.19	.00	.54	.00
36. I didn't understand my fault	-.13	.19	.42	.33
Factor 4: Escape				
(Explained Variance 4%; Cronbach Alpha=.53)				
33. I thought that I made the problems	.00	.22	.10	.58
40. I realized that I created the problems	.00	.20	.30	.57
32. I stopped fighting	-.12	.13	.19	.54
3. I tried to look on the bright side of the things	-.32	-.29	-.15	.43
Items Excluded *				
5. I tried to make light of the situation	.32	.33	.30	-.23
29. I accepted the next best thing to what I want	.27	.21	.11	.20

3.5. Correlations Among the Subscales of WCQ

To measure the correlations among the subscales of the WCQ, Pearson product-moment correlation coefficients were computed. As can be seen from the table 6, significant correlations among the subscales were found. The correlations among subscales varied between .25 and .37. Problem solving/optimistic approach was significantly and positively related to the fatalistic approach and helplessness approach. Fatalistic approach was found to be significantly and positively related to helplessness approach and escape approach. Moreover, helplessness approach was found to be significantly and positively related to escape approach. A highest correlation was found between fatalistic approach and helplessness approach (.37).

Table 6. Pearson Correlation Coefficients Among Subscales of WCQ.

Subscales	1	2	3	4
1. Problem Solving/Optimistic		.30*	.31*	-.14
2. Fatalistic Approach			.37*	.28*
3. Helplessness				.25*
4. Escape				

*p<.001

3.6. Being a Neighborhood Disaster Volunteers and Gender Difference in WCQ factors

To examine the effects of being a neighborhood disaster volunteer and gender in coping strategies, a 2 (volunteer/not volunteer) by 2 (male/female) by 4 (coping; problem solving/optimistic, fatalistic approach, helplessness approach, escape style) ANOVA with repeated measures on WCQ factors was conducted. Results of this analysis revealed significant main effect for coping ($F(3,588) = 142$,

$p < .001$). Also, sex by coping factors interaction ($F(3,588) = 3.10, p < .05$) and volunteerism by coping factors interaction ($F(3,588) = 8, p < .001$) were found significant. On the other hand, no significant interaction between sex and volunteering on coping strategies was found. Results of this analysis are presented in table 7.

Table 7. Results of Being Volunteer by Sex by Coping Style Analysis of Variance

Source of variation	SS	df	MS	F	Sig. of F
Sex	.00	1	.00	.003	.954
Volunteerism	1.34	1	1.34	3.86	.051
Error	68	196	.347		
Coping	52	3	17	142	.000**
Sex X Coping	1.14	3	.379	3.10	.026*
Volunteerism X Coping	2.92	3	.975	8	.000**
Sex X Volunteerism X Coping	.512	3	.171	1.39	.244
Error	72	588	.123		

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

According to results of the pairwise comparisons with Tukey Honestly Significant Difference Test (Tukey HSD), all types of coping strategies significantly differ from each other. Problem solving/optimistic approach is found as the most frequently used coping style ($M = 2.32, SD = .36$), and fatalistic approach ($M = 2.03, SD = .46$) is found as the second most frequently used coping style. Helplessness approach ($M = 1.74, SD = .43$) was found as the thirdly most used coping strategy whereas escape style of coping ($M = 1.27, SD = .37$) was the least frequently used coping style ($M = 1.27, SD = .37$) for the whole sample.

Considering the interaction between sex and coping, according to the results of Tukey Honestly Significant Difference Test (Tukey HSD), women's mean score on helplessness style of coping ($M = 1.83, SD = .051$) is significantly higher than

the mean score of men's helplessness approach ($M= 1.70$, $SD= .037$, $F(1,198) = 4.06$, $p<.05$). No other gender difference among the coping scores was found. Both males and females use escape coping the least, followed by helplessness, and fatalistic. Also, problem solving/optimistic approach is used most by both females and males. On the other hand in terms of the interaction between volunteerism and coping, the results of the analysis showed that volunteers' mean scores ($M= 1.88$, $SD= .047$) on fatalistic approach is significantly lower as compared to the mean scores ($M= 2.16$, $SD= .047$, ($F (1, 198) = 17.38$ $p<.001$)) of non-volunteers' on fatalistic approach. On the other hand, there was no difference in the frequency of the use of problem solving/optimistic approach, helplessness approach and escape style of coping between volunteers and non-volunteers. Means and standard deviations of the WCQ factors for females and males were presented in table 8; and for volunteers and non-volunteers were presented in table 9.

Table 8. Means and (Standard Deviations) of WCQ Factors for Males and Females

	Problem Solving/ Optimistic	Fatalistic Approach	Helplessness Approach	Escape Approach
Males	2.31a (.036)	2.06b (.039)	1.70c (.037)	1.29d (.032)
Females	2.33a (.044)	1.98b (.054)	1.83e (.051)	1.24d (.045)

*Means with different subscripts are significantly different from each other at .05 significance level.

Table 9. Means and Standard Deviations of WCQ Factors for Volunteers, and Non-Volunteers

	Problem Solving/ Optimistic	Fatalistic Approach	Helplessness Approach	Escape Approach
Volunteers	2.35a (.038)	1.88b (.047)	1.73c (.045)	1.24d (.039)
Non-Volunteers	2.29a (.038)	2.16e (.046)	1.80c (.046)	1.29d (.040)

*Means with different subscripts are significantly different from each other at .05 significance level.

3.7. Gender and Being a volunteer difference in SCL-40

To examine possible gender and being a volunteer difference in general distress level 2 (sex) X 2 (volunteer/not) ANOVA was conducted. Results of the analysis showed neither significant main nor interaction effect. Results of this analysis are presented in table 10. Also means and standard deviations of the SCL-40 for volunteers, non-volunteers, males, and females are presented in table 11.

Table 10. Results of NDV by Sex by SCL-40 Analysis of Variance

Source of variation	SS	DF	MS	F	Sig. of F
Sex	.371	1	.371	3.19	.075
Volunteerism	.012	1	.012	.097	.756
Sex by Volunteerism	.240	1	.240	2.06	.152
Error	22	196	.116		

Table 11. Means and Standard Deviations of SCL-40 total scores for Volunteers, Non-Volunteers, Females, and Males

	Volunteers	Non-Volunteers	Females	Males
	M	M	M	M
	(SD)	(SD)	(SD)	(SD)
SCL-40 Score	1.46	1.45	1.52	1.43
(min=1;max= 3)	(.34)	(.34)	(.37)	(.33)

3.8. Effects of being nearer or further away from the epicenter of the quake on General Distress

An independent samples t-test was conducted to examine possible location difference (Golcuk (near epicenter) = 1, Izmit (further away) = 0) in general distress scores. Results showed no significant differences between the distress scores of the respondents from Gölcük (M= 1.42, SD= .35) and those from Izmit (M= 1.50, SD= .33).

3.9. Factor Structure of the Stress Related Growth Scale (SRGS)

The responses to the 50 items of the SRGS were subjected to factor analysis using principal component analysis with varimax rotation. In the development of the scale, Park et al. (1996) predicted three factors such as personal, social, and coping resources. However, most of the items were loaded on one general factor. Similarly, in the present study, most items had the highest loadings on the same general factor. Therefore, the mean SRGS scores (M = 2.41, SD = .41 min=1 max=3) which were calculated by summing up the responses to the items of the SRGS and dividing them by the item number were used in all subsequent analysis. Cronbach alpha for the total SRGS was found to be .95.

3.10. Being a Neighborhood Disaster Volunteer and Gender Difference in Stress Related Growth Scale

In order to find out the difference of being a neighborhood disaster volunteer and gender in growth experience, a 2 (volunteer/not) by 2 (sex) ANOVA was conducted. Results of this analysis showed that there is no significant interaction effect. Additionally, no main effect was found to be significant. Results of this analysis are presented in table 12 while means and deviations of the SRGS factors for volunteers, non-volunteers, males, and females are presented in table 13.

Table 12. Results of NDV by Sex by SRGS Analysis of Variance

Source of variation	SS	DF	MS	F	Sig. of F
Sex	.039	1	.039	.250	.618
Volunteerism	.306	1	.306	1.93	.166
Sex X Volunteerism	.009	1	.009	.062	.804
Error	31	196	.158		

Table 13. Means and (Standard Deviations) of SRGS total scores for Volunteers, Non-Volunteers, Females, and Males

	Volunteers	Non-Volunteers	Females	Males
	M	M	M	M
	SD	SD	SD	SD
SRGS Score	2.46	2.37	2.43	2.40
(min= 1; max= 3)	(.042)	(.042)	(.048)	(.035)

3.11. Effects of being nearer or further away from the epicenter of the quake and Stress Related Growth

An independent samples t-test was conducted to examine possible location difference (Golcuk (near epicenter) = 1, Izmit (further away) = 0) in stress related growth scores. When the level of growth is considered, it was found that those who live in Gölcük had significantly higher mean ($M = 2.48$, $SD = .382$) scores than the respondents from Izmit ($M = 2.43$, $SD = .402$, $t(198) = 2.51$, $p < .05$).

3.12. Effects of being a Neighborhood Disaster Volunteer

As it was mentioned in the methods section, in order to examine the effects of being a Neighborhood Disaster Volunteer, a number of questions were asked. In response to the question “How much do you think is the organization beneficial for the community?” 3% of the participants told none, 24% some, and 73% a great amount. To the question “In your opinion, how beneficial is your contribution to the organization?” 4% of the participants told none, 6% a little, 26% some and 62% a great amount.

As it was mentioned in the method section, in order to examine the effects of being a Neighborhood Disaster Volunteer, an open-ended question was asked to the volunteers (Appendix A). In response to the question, “How was your life affected by being a volunteer?” a number of different forms of positive change were identified. The responses were classified under four titles as ‘Social Relations’, ‘Personal Strength’, ‘Instrumental Coping Skills’, and ‘Helping’. For this classification, the study of Vazquez, Cervellon, Perez-Sales, Vidales, & Gaborit (in press) which was conducted to examine the positive emotions in earthquake survivors in El Salvador (2001), theories of posttraumatic growth (Tedeschi et al., 1998), and inspection of replies were used. The reports which include the concepts such as ‘increased self-esteem’, ‘increased well-being’, ‘to become stronger’, ‘to become more self-confident’ were labeled as ‘Personal

Strength’. On the other hand reports that mentioned growth in social relationships were classified as ‘Social Relations’. Reports that were reported such as increased knowledge or consciousness about earthquakes or other disasters, to be learned to cope with a possible earthquake or any other kind of natural disaster or accident were labeled as ‘Instrumental Coping Skills’. Lastly, reports mentioned serving others were labeled as ‘Helping’. In order to be able to use this qualitative data, at first, two judges, one of them is an assistant professor in the psychology department and the other is a graduate psychology student rated all the reports independently. Then, the coefficient of inter-judge agreement was calculated according to the study of Cohen (1960), and it was found to be .63.

Since one volunteer may mention more than one side of posttraumatic growth in his/her answer, in the classification process, the subject was included in all growth classes that he/she mentioned. For 92% of the volunteers, being a NDV after the earthquake produced some kind of positive impact. The types of posttraumatic growth situations for neighborhood disaster volunteers are displayed in table 14.

Table 14. Types of posttraumatic growth situations for Neighborhood Disaster Volunteers

Categories	Examples	Percentage
<i>Personal Strength</i>	“I am more self-confident now.”	50 %
	“Panic attacks I have experienced after the disaster, decreased and I became braver.”	

Table 14. (Continued)

<i>Social Relations</i>	“I learned team working.”	40 %
	“I became more social.”	
	“I found the chance to meet many different people.”	
<i>Instrumental Skills</i>	“I gathered knowledge about subjects I did not know before.”	55%
	“I learned how to act during and after an earthquake.”	
<i>Helping</i>	“Psychologically, I feel well. As a human being I am doing my duty by helping others.”	30%
	“It is good to help others”	

3.13. Correlations Among the Variables of the Study

Before the regression analysis, in order to evaluate the predictive value of pre-disaster, within disaster, and post-disaster variables for general distress level and stress-related growth, correlation analysis was conducted. The Pearson Product-Moment Correlations among all these measures are presented in table 15. As can be seen from the table, most of the variables were found to be significantly correlated with the general distress level and stress-related growth level. General distress was found to be significantly and positively correlated with gender (0 = male, 1 = female), fatalistic, helplessness and escape approaches. On the other hand, it was negatively correlated with both education level and problem focused coping. Stress related growth was correlated with within the earthquake experience (loss/impact-perceived life threat), social support, problem focused coping, fatalistic and helplessness approach.

Table 15. Correlation Matrix of General Distress, Stress Related Growth, and Predictive Variables

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Gender		.024	.099	-.425**	.119*	-.040	-.080	.204**	.000	.021	-.089	.142**	-.063	.126*	.035
2. Age			-.101	.006	.417**	-.013	.010	.292**	.047	.139*	-.088	-.104	-.055	.035	.063
3. Education				-.092	-.025	.058	.047	.065	-.071	.066	.107	-.199**	-.088	-.250**	.045
4. Current Employment					-.091	.040	.097	-.058	-.010	-.004	.055	-.050	.050	.002	-.022
5. Previous Eq.						.004	-.109	.168*	.000	.057	.084	.009	-.103	.099	-.007
6. Loss Impact							.319**	.084	-.032	.106	.092	.194**	.015	.043	.216**
7. Life Threat								.230**	-.035	.242**	.182**	.249**	.036	.069	.216**
8. Social Support									.153*	.133	.039	.154*	-.05	.000	.205*
9. Being a volunteer										.041	-.284**	-.098	-.067	.011	.110
10. Problem											.297**	.310**	-.136	-.194**	.468**
11. Fatalistic												.374**	.275**	.140*	.363**
12. Helpless													.250**	.328**	.341**
13. Escape														.261**	.058
14. General Distress															.050
15. Perceived Growth															

** Correlation is significantly at the 0.01 level.

* Correlation is significantly at the 0.05 level.

3.14. Regression Analysis: Predictors of General Distress and Stress Related Growth

Two separate hierarchical multiple regression analyses were conducted to evaluate how well earthquake survivor's demographic characteristics, previous earthquake experience, 1999 Marmara earthquake experience, perceived social support, status on being a volunteer (NDV), and coping strategies predicted general distress level and stress related growth level of the subjects. Discrete variables such as gender (Male= 0, Female= 1), currently employed or not (No= 0, Yes= 1), previous earthquake experience (No= 0, Yes= 1), and being a volunteer (non-volunteer= 0, volunteer= 1) were entered as dichotomous variables. The predictor variables were entered on the basis of a temporal model which examines variables along a time line. In both analyses, predictors were entered in three blocks as shown in table 8. The only difference was, for PTG, mean SCL score was used as a control variable and was entered in the first block. In the first block the variables were sex, age, years of education, current employment, and previous earthquake experience. In the second block perceived life threat and severity of impact were entered as representing within earthquake variables. The third block representing post-earthquake variables included social support, being a member of Neighborhood Disaster Volunteer or not and coping strategies. Table 16 also shows the means and standard deviations of some of the predictor variables.

Table 16. Means and Standard Deviations of Predictor Variables

Variables	M	SD
<i>Block 1(Method =Enter Pre-Disaster Variables)</i>		
Sex (Male=0, Female=1)		
Age	32.39	10.24
Education in years	10	3.44
Current Employment (No=0, Yes= 1)		
Previous Earthquake Experience (No= 0, Yes=1)		
General Distress (SCL-40) (control variable, only for PTG)	58.41	13.7
<i>Block 2 (Method=Enter Disaster Variables)</i>		
Perceived life threat (min.0-max.1)	.50	.36
Severity of Impact (min.0-max.1)	.18	.36
<i>Block 3 (Method=Enter Post-disaster Variables)</i>		
Perceived Social Support (min=1 max=3)	1.98	.57
Being a Volunteer (Volunteer=1, Not=0)		
Problem Solving (min= 1.36 max= 2.83)	2.31	.36
Fatalistic (min= .91 max= 2.73)	2.03	.46
Helpless (min= .90 max= 2.70)	1.74	.43
Escape (min=.81 max=2.44)	1.27	.37

3.14.1. Predictors of General Distress Level (SCL-40)

Hierarchical multiple regression analysis was conducted to examine how well the general distress level of the respondents is predicted from the demographic variables, previous earthquake experience, 1999 Marmara earthquake experience, social support, being a volunteer, and coping strategies. Table 17 displays the unstandardised regression coefficients (β), the standardized regression coefficients (Beta), R^2 , R^2 change after each block of the regression analysis, and the variables that appeared to be significant in the last step for the survivors.

Table 17. Predictors of General distress for Respondents

Variable	Block	R^2	R^2_{change}	B	β
<i>Pre-disaster</i>	1	.103	.103**		
Gender				.105	.146
Age				-.001	-.045
Years of education				-.016	-.165*
Current employment				.050	.072
Previous Earthquake				.098	.090
<i>Disaster</i>	2	.107	.004		
Loss Impact				-.022	-.017
Perceived Threat				.093	.069
<i>Post-disaster</i>	3	.279	.172**		
Support				-.025	-.017
Being Volunteer				.075	.110
Problem Solving/Optimistic				-.296	-.315**
Fatalistic				0.24	.033

Table 17. (continued)

Helplessness	.264	.329**
Escape	.104	.112
Total R²	.28	

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

According to the regression analysis, pre-disaster variables (first block) (R^2 change = .103, $F_{\text{change}}(5,194) = 4.45$, $p < .001$) offered predictive power considering general distress. Post-disaster variables (third block) further accounted for a significant amount of variance in general distress level, (R^2 change = .171, $F(6,186) = 7.36$, $p < .001$). All of the variables explained twenty eight per cent of the variance in distress. In terms of each single variable, in the final analysis, education level, helplessness approach, and problem solving/optimistic approach were found to be significant predictors of general distress level. Education level and problem solving/optimistic coping negatively related to stress level, whereas helplessness approach was positively related to higher levels of distress.

3.13.2. Predictors of Post Traumatic Growth

Hierarchical multiple regression analysis was conducted to examine how well the demographic variables, previous earthquake experience, 1999 Marmara earthquake experience, social support, being a volunteer, and coping strategies predicted the level of stress related growth of the respondents. The predictor variables were entered following the same order as in predicting general distress level. The Table 18 displays the unstandardised regression coefficients (β), the standardized regression coefficients (Beta), R^2 and R^2 change after each block of the regression analysis.

Table 18. Predictors of PTG

Variable	Block	R²	R²_{change}	β	β
<i>Pre-disaster</i>	1	.017	.017		
Gender				-.014	-.016
Age				.002	.070
Years of education				.002	.020
Current employment				-.026	-.032
Previous Earthquake SCL-40 (control variable)				-.074	-.058
<i>Disaster</i>	2	.060	.043*		
Severity of Impact Perceived Threat				-.048	-.033
Support Being Volunteer Problem Solving/Opti mistic				.069	.045
<i>Post-disaster</i>	3	.347	.286**		
Support Being Volunteer Problem Solving/Opti mistic				.062	.120
Fatalistic				.127	.160*
Helplessness				.363	.332**
Escape				.219	.255**
Total R²		.35		.127	.137
				.004	.004

*p<.05, **p<.001

According to the analysis within disaster variables (second block) ($R^2_{\text{change}} = .043$, $F_{\text{change}}(2, 191) = 4.37$, $p < .05$) was significant predictor of the survivors' posttraumatic growth. Post-disaster variables (third block) further accounted for a significant proportion of variance in posttraumatic growth after controlling for the effects of disaster variables ($R^2_{\text{change}} = .286$, $F_{\text{change}}(6, 185) = 13.51$, $p < .001$). Although perceived threat was found as a significant predictor in the beginning, after post-disaster variables were entered, it lost the significant explanatory power on posttraumatic growth. All together the variables explained 25 % of the variance in growth.

When each variable is considered, in the final analysis, being a neighborhood disaster volunteer, problem solving/optimistic approach, and fatalistic approach appeared as significant predictors of posttraumatic growth. All of the significant predictors were found to be positively related with posttraumatic growth. In order to summarize the results, all predictive variables which offered predictive power considering general distress level and stress related growth are presented in table 19.

Table 19. Significant Predictors for all Dependent Variables

<i>Dependent variables</i>	<i>Significant predictors</i>
General Distress (SCL-40)	education level (-) problem solving (-) helplessness coping (+) Total R ² = .28
Stress Related Growth	being volunteer (+) problem solving(+) fatalistic coping (+) Total R ² = .35

CHAPTER IV

DISCUSSION

The main aim of the current study was to examine the impact of being a volunteer after 1999 Marmara earthquake on general psychological distress and posttraumatic growth. Additionally, the predictors of distress and posttraumatic growth were investigated on the basis of a temporal model suggested by the multivariate risk factor model (Freedy, Kilpatrick, & Resnick, 1993). Risk factors were divided into those stemming from three phases; which are pre-earthquake (e.g., gender, age, education in years), within earthquake (e.g., severity of impact, perceived threat), and post-earthquake (e.g., being a volunteer or not, coping skills, social support) phases.

The general finding on psychological distress showed that helplessness coping, lack of problem solving/optimistic coping, and having lower education level were significant predictors. Whereas, for posttraumatic growth, problem solving/optimistic coping, fatalistic coping, and being a neighborhood disaster volunteer were found to be significant predictors.

In this discussion, firstly the main findings of the study will be discussed in separate sections. Subsequently, limitations and clinical implications of the findings and conclusions will be presented.

4.1. Ways of Coping

The factor analysis to the 42 item WCQ revealed that coping strategies can be grouped into four factors. Problem solving/optimistic approach, fatalistic approach, helplessness approach, and escape approach. The Cronbach Alpha reliability coefficient for the whole scale and the four factors were satisfactory. The factor structure and the number of factors of the WCQ seem to vary in different studies (Folkman & Lazarus, 1995; Güneş, 2001). Consistent with this, the factor structure of the WCQ in the present study is slightly different from those reported in previous studies (Folkman & Lazarus, 1985; Karanci et al 1999; Sorlier & Sexton, 2003). Since studies with different samples seem to give different subscales for WCQ, it seems necessary to conduct factor analysis of WCQ for different samples.

Intercorrelations among the subscales of WCQ showed that problem solving/optimistic approach was positively related to the two emotion-focused coping approaches namely fatalistic and helplessness approach. This was not an unexpected result because in the cognitive theory of stress and coping it was stated that the effectiveness of the problem-focused coping depends on the success of emotion focused coping. “...Otherwise, heightened emotions may interfere with the cognitive activity necessary for problem-focused coping.”(Folkman, 1986, p.854). Moreover, this finding supports the idea that people try to cope by using a multiplicity of coping approaches. Using fatalistic approach or escape style of coping may regulate heightened emotions, and help to relax and, thus may in turn enhance problem solving coping efforts.

For the whole sample, the problem solving/optimistic approach was found to be the most frequently used coping style. Whereas, fatalistic approach was found as the second most frequently used coping style. This finding supports the use of multiple kinds of coping strategies when encountered with a stressor. However, the frequent use of fatalistic style may also be related to cultural factors (Karanci et al., 1999). As mentioned in the study of Karanci et al. (1999), survivors may use this kind of coping style because of their Islamic religion. Some items of the items of the fatalistic approach such as “I prayed for help” or “I thought what happened was my fault” have similarities with the faith of Islam. According to the researchers, “...since the faith of Islam is not submissive, a fatalistic coping approach does not necessarily imply being submissive” (Karanci et al., 1999, p201).

In the present study, escape approach was found to be the least frequently used coping style for the whole sample. Since the survivors answered the WCQ by considering how they coped with earthquake related stressors, the use of problem focused/optimistic coping most frequently while the use of escape coping least frequently may suggest that the survivors were trying to cope with the difficulties of the earthquake rather actively .

When the coping styles of the females and males were compared, there was a significant sex difference with respect to the use of helplessness coping style. The results showed that females use significantly more helplessness style than males. This finding is consistent with Gunes’s study (2001) on 1999 Marmara earthquake survivors. Most of the previous studies found that men use more problem focused coping strategies whereas women use more emotion-focused coping. However, in the present study, there was no

significant difference between men and women in problem focused/ optimistic coping. Furthermore, though not significant, females had slightly higher scores on problem focused/optimistic coping. This result may also help to explain why females and males, contrary to expectations did not differ in their distress levels. These results can be explained by the changing gender roles in the Turkish society. At present, there is an increase in the number of women who are well educated and having paid employment, as opposed to being housewives (<http://nkg.die.gov.tr>). Thus, women may have access to resources that give them capacities to use problem focused coping strategies. This issue needs to be addressed in future research.

Regarding the relation between coping strategies and being a NDV, the only difference was on the use of fatalistic coping. Results indicated that volunteers use significantly less fatalistic coping as contrasted with non-volunteer subjects. Moreover, although not significant, volunteers had slightly lower scores in other emotion-focused coping strategies (helplessness and escape approaches), whereas they had higher scores in problem-focused coping. As stated in the study of Karanci et al (1999), appraisal of the situation effects how individuals cope with it. According to the cognitive theory of stress and coping, situations which are appraised as controllable and changeable are more likely to be coped with problem-focused strategies. On the other hand, situations which are appraised as uncontrollable and unchangeable are more likely to be coped with by using emotion-focused coping strategies. Non-volunteers might have appraised the stressful situations as resistant to change and uncontrollable and thus preferred to use emotion-focused coping strategies. On the other hand, volunteers may have appraised the stressful events following the earthquake as changeable and controllable. Thus,

involvement in the Neighborhood Disaster Support Project might have changed the appraisal of earthquake related problems and coping skills of the volunteers. Being a member of the Disaster Volunteers Project may have given the NDV's skills and knowledge to deal with post-earthquake difficulties. However, it is also likely that those with less fatalistic coping have chosen to become volunteers. Thus, it is important to examine religious commitment, and other personality resources, such as self-esteem and optimism of survivors before they join voluntary organizations. It may be possible that individuals with certain characteristics choose to become volunteers. Thus, again we need longitudinal studies.

4.2. Earthquake Experience

Earthquake experience of the present sample was assessed by eleven questions using three point likert scale response options. The results of the factor analysis of responses to those questions showed that earthquake experience can be grouped into two categories namely; severity of impact and perceived life threat. The Cronbach Alpha reliability coefficients of the questions and the two factors were found to be satisfactory.

For the whole sample, perceived life threat factor was found to be significantly higher than the severity of impact. This finding revealed that four and a half years after the earthquake, perceptions of actual loss as reflected by severity of impact might be compensated but subjective threat still lingers. So, the psychological needs of the survivors should be satisfied by proper psychological interventions. Moreover, the respondents who experienced the earthquake in the epicenter of the earthquake

(Golcuk), had significantly higher perceived threat and severity of impact scores than those who experienced the quake further from the epicenter (Izmit). This showed that to experience the quake more severely may cause more long lasting psychological problems (Goenjian et al., 2000). It is again important to conduct longitudinal studies to examine how perceptions of severity and life threat changes over time.

4.3. Psychological Distress

Long-term psychological effects of earthquakes have been studied by many researchers (Basoglu, Salcioglu, Livanou, 2002; Goenjian, et al. 2000; Karanci & Rüstemli, 1995). In order to examine the survivors' current distress level, the Symptom Checklist-40 was used. The mean distress score of the whole sample (58 out of 120) which is not very high revealed that four and a half years after the earthquake, survivors seem to be handling the negative effects of the trauma. Considering the impact of being a NDV, no significant difference was found in means of general distress. It was expected that the volunteers would have lower levels of distress than non-volunteers because of possible increased personal and social resources. However, this expectation was not supported. This may be due to a lack of expected resource gain. However, it is also possible that because the volunteers were continuously trained in rescue operations and were exposed to information and experiences related to earthquakes they may have been further traumatized and distressed. Therefore, not finding a difference between the NDV's and non-NDV's may be reasonable (Guo, Chen, Lu, Tan, Lee, & Wang, 2004). Further studies are needed to examine the stressors and resource gains that volunteers have experienced. Moreover, because the study was cross-sectional and a non-disaster

exposed control group was not used, it is not possible to understand the time course of fluctuations in distress. This needs to be investigated in the future using longitudinal designs.

In the literature, it has been found that women experience and/or report more distress as compared to men. However, in the present study no gender difference emerged for general distress. This finding may reflect changing cultural factors and sex-role stereotypes in the Turkish culture. Women may become more able to cope with the stressors because of their changing roles or men may become more expressive about their emotions and distress. However, because the study was cross-sectional and a non-disaster exposed control group was not used, it is not possible to generalize the results of the present study.

As mentioned previously, the relationship between gender and distress level has been studied in a variety of samples. In line with the literature, the present study found a correlation between being female and distress level. Moreover, consistent with previous studies, as subjects use more emotion focused coping strategies (fatalistic, helplessness, or escape coping style) their distress level increases. On the other hand, subjects' distress level was found to be negatively related to problem solving/optimistic type of coping.

The examination of the predictors of distress for the whole sample revealed that helplessness coping, infrequent use of problem solving/optimistic coping, and having lower education level were significant predictors of the distress level. As previous studies reported, being educated (Acierno, Resnick, Kilpatrick, Saunders, & Best, 1999;

Brandes et al., 2002; Saab, Chaaya, Doumit, & Farhood, 2003) and frequent use of problem solving/optimistic coping (Carr et al., 1997b; Matud, 2004; Karanci et al., 1999) were found to be related to lower distress levels. Education may provide resources for coping and thus make a person more capable of using proper coping skills when encountered with a stressful situation. Knowing that, education was inversely related to psychological distress after the earthquake, it can be concluded that education level of the people should be increased by proper education programs as a government policy (Belek, 2000).

Problem focused coping refers to attempts such as decision-making, problem-solving, or direct action which are used to manage or alter the problem that causes distress (Folkman & Lazarus, 1985). In the literature, much evidence has accumulated showing that the survivors of various kinds of traumatic events who use greater amounts of problem focused coping and less emotion-focused coping have lower levels of distress (Dirkzwager, 2003; Fairbank, et al., 1991). As a possible reason for this, it can be suggested that “...people can begin to feel better when they turn to the problem that is causing distress” (Folkman, & Lazarus, 1988, p.473). Different from problem-focused coping, emotion focused coping aims to regulate the emotional status. In the present study, consistent with the literature, it was found that the more one uses helplessness coping, the more distressed he or she becomes. People who consider the situation as unchangeable and uncontrollable, start to feel helpless, tend to use helplessness coping and as a result they feel distressed (Folkman et al., 1986). In the helplessness approach, individuals find it hard to not to think about the earthquake. Moreover, they hope for a miracle and expect others to help them in solving their problems. Feeling helpless gives

them a sense of lack of control. Taken together, these negative thoughts and feelings seem to make them vulnerable to distress.

The effectiveness of a particular coping strategy depends on the demands of the context. In addition, appraisal is also an important component of the cognitive theory of stress and coping. According to theory and research, when a stressor is appraised as changeable using problem-focused coping causes less distress. On the other hand when the stressor is perceived as unchangeable, using problem focused coping was positively related to distress (Vitaliano et al., 1990). Since coping should be assessed with the assessment of appraisals and emotions, future studies should examine the sample's appraisals and emotions related with the traumatic event. Furthermore, preventive training programs which provide necessary coping skills to struggle with the earthquake related difficulties should be organized especially for the public living in earthquake prone areas.

4.4. Stress Related Growth

Growth following traumatic life events experienced by various kinds of samples has been documented in various studies (Güneş, 2001; Kesimci, 2003; Tedeschi & Calhoun, 1996). Three broad categories in which growth can occur are social, personal, and coping resources (Schafer & Moos, 1992 as cited in Tedeschi & Calhoun, 1998). Thus, in the present study a three factor solution was expected. However, consistent with the studies of Kesimci (2000), Güneş (2001), and Park et al. (1996) factor analysis showed only one factor. Taken together, although there may be various types of growth, the

scale used in the present study yielded only a single factor. Thus, future studies should examine the dimensionality of this construct with other scales, such as the one developed by Tedeschi and Calhoun (1996).

The mean total growth score of the present sample was quite high, 2.4 from a scale of 3 points which means that survivors perceived considerable growth after the earthquake. Considering gender differences in growth scores, no significant difference was found. Consistent with the literature, women tended to report higher levels of stress related growth (Gunes, 2001; Park et al., 1996, Tedeschi & Calhoun, 1996). However, the difference was not statistically significant.

When the growth levels of NDVs and non-volunteers were compared, although volunteers had slightly higher scores, the difference was not statistically significant. As Tedeschi & Calhoun (1999) stated, being a member of a group may enhance perceived growth following a traumatic events. Knowing that, sharing traumatic memories or narratives helps to develop posttraumatic growth, volunteers may have access to conditions facilitating positive effects. Examination of the resources which volunteers gain or lose as different from non-volunteers may enable to understand the impact of being a volunteer. Furthermore, the participants of the present study were all survivors of a devastating earthquake. In the post-quake period massive material and psychological support and psycho-education programs were applied in the area (Basoglu et al, 2002). This widespread attention and support might have led to a post-disaster environment conducive for growth for all survivors and thus being an NDV related only moderately to growth. Furthermore, the present study was conducted four and a half

years after the quake and the effects of being a volunteer may have been stronger in an earlier period of time. However, a future study is needed to examine the relationship between being a volunteer and posttraumatic growth. As mentioned earlier, the sample was divided into two according to their location during the quake, İzmit and Gölcük. The participants who live in Gölcük (epicenter of the earthquake) experienced the earthquake more severely than the ones in İzmit. The results indicated that individuals from Gölcük reported significantly higher levels of growth than the İzmit sample. Since in the literature, there is a significant relation between SRGS and the severity of the traumatic event, this was an expected finding. As mentioned by Tedeschi et al. (1998), being severely exposed to a trauma shatters the assumptions of the survivor, and this enables the person to change them.

Also, in order to understand the effects of being a volunteer, an open-ended question was asked to the volunteers (see appendix A). Ninety two percent of the sample stated that they benefited from being a volunteer. These statements were grouped as personal, social, coping, and helping domains. The responses in these categories ranged between 30% and 55%. Thus, it seems that growth is reported roughly equally in all of these categories.

The answers given to the question ‘How was your life affected by being a volunteer?’ supported that, volunteers’ perceptions of their personal, social, and coping resources have changed after the involvement in the organization. Some sample responses to this question were;

“Now I’m more confident, more courageous. I could be useful in such a disaster. Now I know how to save lives. I learned a lot and shared what I’ve learned with everybody I can reach. In short, MAG attached me to life again.”

“...being helpful to others, share my information about earthquake and disaster knowledge, being confident. Experiencing the pleasure of working in a voluntary institution.”

“I saw how problems get lesser as you share them. I met people from various social groups, and learned from them. Most important of all, I’m very proud of myself because thanks to the training I would be able to save at least one persons life in a disaster situation.”

The responses to the open-ended question seem to support the existence of growth experiences, since these were spontaneously elicited responses by the volunteers.

To sum up, results indicated that although not statistically significant females and volunteers tend to report higher growth scores compared to counterparts. Furthermore, consistent with the literature, individuals who experienced earthquake in the epicenter had significantly higher scores of stress related growth than who were far away from the epicenter of the earthquake.

The factor analysis of the earthquake related questions (see Appendix A) revealed that earthquake experience can be grouped into two categories; severity of impact and

perceived threat. Both of them were positively correlated with perceived growth. Also, results showed that as one's perceived social support increases the level of perceived growth increases, too.

In the examination of the predictors of stress related growth, being a volunteer, using problem solving/optimistic approach and fatalistic approach were found to be significant. The growth literature suggests that problem focused coping, positive reappraisal, and acceptance are positively related with growth. Although the current findings about problem solving/optimistic approach was in line with the literature, the overlapping items of problem solving/optimistic approach and stress-related growth scale, may be taken as a limitation of the present study (such as 'I compromised to get something positive'). In future studies problem solving/optimistic approaches and positive outcomes need to be examined with non-overlapping measures.

Although it is an emotion focused coping, fatalistic approach appeared as a predictor of stress related growth. However, this may be an expectable result because in the theory of posttraumatic growth, change in religious beliefs or spirituality has been suggested. After a traumatic event, believing in fate and hoping help from God may help the person to experience posttraumatic growth. Moreover some items in SRGS such as 'My beliefs about God improved/increased' carry similar themes with some of the items of the fatalistic coping sub-scale of the WCQ. As mentioned previously, according to Tedeschi & Calhoun (1998), people may experience growth in three domains; personal changes, social changes, and spiritual changes. In spiritual changes, people report changes similar to the items of fatalistic coping such as 'I tried to be happy with what I have had' (see

Appendix A, item 14 p). Thus, as it was for problem solving/optimistic approach, overlapping items of fatalistic approach with growth scale may also be the limitation of the current study.

As it was hypothesized, being a volunteer was found to be a significant predictor of posttraumatic growth. So, although volunteers and non-volunteers did not differ significantly in their scores, in a direct comparison, after controlling for demographic and earthquake related variables being a volunteer appeared as a significant predictor. Through sharing traumatic memories and narratives in the volunteer group, volunteers may successfully process the cognitive information related with their earthquake experiences. Another explanation could be related to the social support that volunteers may perceive in the group. In the literature, it was found that a higher degree of perceived social support is significantly associated with lower levels of psychological distress (Dirkzwager et al., 2003). Thus, in the current study by becoming a volunteer, individuals might have perceived higher social support which may have helped in facilitating stress related growth. Moreover, supportive social network may cause more use of active coping strategies (Dirkzwager et al., 2003). However, since the study was cross-sectional and there are no previous studies conducted with volunteers, it is not possible to make a causal inference. Furthermore, in the present study perceived social support was examined by only one question. In addition, the present study lacks information on coping strategies, social support, distress levels, and perceived growth in the period prior to becoming a NDV. Therefore, prospective studies with volunteers, examining the variables in question when they decide to join the voluntary organization using more structured scales on social support are needed.

Overall, using problem focused/optimistic approach, fatalistic approach, and being a volunteer were found as significant predictors of posttraumatic growth. However, more studies examining the relationship between social support, being a volunteer, and coping skills in explaining growth over time, using longitudinal designs are needed.

4.5. Limitations of the Study and Directions for Future Research

The most important limitation of the present study was its cross-sectional design. In order to understand the long-term impacts of being a volunteer on posttraumatic growth, general distress level, and coping skills longitudinal studies needs to be conducted. Moreover, longitudinal studies are needed to examine the process of resource gain/loss for members of a volunteer organization. It is important to compare them with a group of non-volunteers on these factors to see what being a member contributes to survivors.

According to the growth literature, some personality characteristics such as being optimistic, extraversion or being hopeful are related to posttraumatic growth (Park et al., 1996; Tedeschi & Calhoun, 1996). Thus, a causal relationship between being a volunteer and posttraumatic growth is not possible without controlling for the personality characteristics of the volunteers. Unfortunately, results of the present study are inadequate to give any information about what kind of people prefer to be a NDV. People who are optimistic, extraverted and hopeful may be more likely to join voluntary organizations, or being a volunteer may make them more optimistic, extraverted and hopeful. Thus, in order to understand this, future studies should assess the personality

characteristics of the volunteers when they decide to be a volunteer. Only then can we understand the effects of being a volunteer.

Another limitation is that there were few questions related to the extent of involvement in the voluntary organization. In the present study, the only differentiation was done between volunteers and non-volunteers. However, in future studies volunteers should be classified according to their participation in the organization. Thus, the study needs to be replicated with subgroups of volunteers differing in degree of active participation in order to understand the differences caused by involvement. Additionally, the impact of being a volunteer on coping strategies, general distress, and stress-related growth should be examined in volunteers from different organizations, in order to understand how the nature and functions of organizations contribute to well-being.

As mentioned before, perceived social support was assessed by only one question. However, a structured social support scale for all analysis might have provided more reliable results. Also, due to the period of time that elapsed since the earthquake, the distress level of the sample might have been affected from stressful events other than the earthquake. Thus, the present distress levels could not be attributed solely to the earthquake. Similarly, since the assessment of coping was made retrospectively, four and a half years after the event, the assessment may have been influenced by the effect of the current mental state on recall. Moreover, in the present study coping only with earthquake related experiences was assessed. However, it would be better to measure coping as a dynamic process instead of as a static concept. It can be concluded that

future studies should assess coping skills not only for specific encounters but also for general situations.

Taken together, future studies related to voluntary organizations, posttraumatic growth, coping, and stress, should examine the interaction among the pre-existing personality characteristics, resources such as social support, subjective and objective impacts of being a volunteer, and coping strategies longitudinally.

4.6. Clinical/ Policy Implications and Conclusions

Turkey is located in a highly earthquake prone area. It is obvious that many earthquakes might occur in the future. Previous studies showed that major earthquakes lead to psychological problems among the Turkish survivors (Başoğlu et al., 2002; Karanci et al., 1999; Şalcioğlu et al., 2002). In order to help those people, and prevent negative mental health outcomes, mental health intervention programs have been recommended. However, in order to prevent possible psychological problems before the earthquakes happen, some kind of resource gain before the event could be helpful. Knowing that resource gain may diminish the negative effects of traumatic events (Hobfoll et al., 1991), ways to increase personal, social, and coping resources should be examined. Since the present results showed that education level was inversely correlated with psychological distress level, as a government policy, the general education level of the citizens must be increased. This is important for increasing the general development level in Turkey, which can decrease the impact of natural disasters on property loss and human suffering.

As mentioned earlier, according to the results of the present study, being a neighborhood disaster volunteer predicted posttraumatic growth. Thus, people who live in earthquake prone zones should be encouraged to become a disaster volunteer in order to increase their personal (such as self-esteem), and social resources. Moreover, their problem solving/optimistic approach could be increased by training programs on disaster awareness and skills. However, in Turkey, non-profit voluntary organizations are not so common. So, first of all those kinds of organizations should be instituted. Then, the society should be enlightened about the aims and the process of those organizations. Also more studies are needed to understand the coping differences between volunteers and non-volunteers over time and the kinds of individuals who are likely to join voluntary organizations. For example, it will be helpful to encourage people to be involved in the non-profit voluntary organizations to cope effectively with disasters by psychology professionals. Furthermore, since the results showed that the perceived threat of the sample was still high, psychological support programs must be provided to those individuals.

Overall, this study is the first of its kind related with non-profit voluntary organizations after an earthquake. Future studies examining the resource gains of volunteers over time and how the extent and type of commitment to such an organization affects distress and growth needs to be examined.

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APPENDICES

Appendix A

Questionnaire of the Study

İlçe: İzmit ___ Gölcük ___

Anket No: ___

Biz, depremin psikolojik etkileri üzerine bir araştırma yapıyoruz. Deprem yaşayanların depremlerden nasıl etkilendiklerini anlayabilmemiz ve bundan sonra verilecek destek hizmetlerine ışık tutması açısından sizin vereceğiniz bilgiler bizim için çok önemlidir. Vereceğiniz bilgilerin ileride sizin durumunuzda olanlara yararlı olacağını umut ediyoruz.

Araştırmaya katılmak tamamen gönüllüdür. Gönüllü olarak dolduracağınız bu anketi istediğiniz zaman bırakabilirsiniz. Anket formuna isminizi yazmanız gerekli değildir. Vereceğiniz tüm bilgiler saklı tutulacaktır. Bu araştırmaya katıldığınız için şimdiden teşekkür ederiz.

Orta Doğu Teknik

Üniversitesi

Psikoloji Bölümü

Faks 0 312 4632341

Tel 0 312 210 3182

Genel Bilgiler

1. Cinsiyet: 1.Kadın: ___ 2.Erkek: ___

2. Yaşınız: ___

3. Yaşamınızın toplam kaç yılını İzmit/Gölcük'te geçirdiniz? ___

4. Medeni Durumunuz?

1. Evli ___ 4. Dul ___
2. Bekar ___ 5. Boşanmış ___
3. Nişanlı/Sözlü ___ 6. Diğer _____

5. Okuma yazma biliyor musunuz?

Evet ___ Hayır ___

6. Eğitim durumunuz nedir? (son aldığınız diplomaya göre belirtiniz)

- İlkokul ___ Yüksekokul ___
Ortaokul ___ Üniversite ___
Lise ___ Üniversite üstü (Y.Lisans) ___

Çalışma Yaşamı ve Mesleki Konumu

7. Mesleğiniz nedir?

- Ev kadını ___ İşçi ___ Çiftçi ___ Memur ___ Esnaf ___
Tüccar ___ Sanayici ___ Serbest Meslek ___ Asker ___ Bürokrat ___
İşletme Yöneticisi ___ Akademisyen ___ Öğrenci ___ Emekli ___

Diğer _____

8. Şu an çalışıyor musunuz?

Evet ___ Hayır ___

Hayır, ise daha önce çalıştınız mı? Evet ___ Hayır ___

Halen ne iş yapıyorsunuz ? _____

10. Hanenizde siz dahil, toplam kaç kişi yaşıyor? _____

11. Tedavi gerektiren ruhsal bir rahatsızlık geçirdiniz mi? Evet ___ Hayır ___

Deprem Deneyimi

12. 17 Ağustos'taki büyük depremden daha önce başka büyük bir deprem yaşadınız mı?

Hayır___ Evet___ Nerede:_____

Ne zaman (yıl):_____

13. 17 Ağustos depreminde neredeydiniz?

İzmit___ Gölçük___ Diğer___

14. Deprem sırasında ölebileceğiniz aklınızdan geçti mi?

Evet___ Hayır___

15. Deprem sırasında ailenizden herhangi birinin ölebileceği aklınızdan geçti mi?

Evet___ Hayır___

16. Depremde ölmüş ya da ağır yaralanmış birini gördünüz mü?

Evet___ Hayır___

17. Depremde göçük altında kaldınız mı?

Hayır___ Evet___ Kaç saat:_____

18. Depremde aileden veya hısım akrabalarınızdan yaralanan ya da can kaybı olan oldu mu?

Hayır___ Evet___ Ölen kaç kişi:_____

Yaralanan kaç kişi:_____

19. Depremde ne kadar mal kaybınız oldu?

Hiç___ Çok az___ Biraz___ Oldukça çok___ Çok fazla___

20. Hasar tespit durumuna göre evinizde ne kadar hasar vardı?

Hiç___ Hafif___ Orta hasar___ Ağır hasar___

21. Depremden sonra hak sahibi oldunuz mu? Evet___ Hayır___

22. Devletten afet konutu aldınız mı? Evet___ Hayır___

23. Depremden dolayı işinizi kaybettiniz mi? Evet___ Hayır___

24. Deprem sonrasında çeşitli kuruluşlardan (devlet, gönüllü yardım kuruluşları vb) ne kadar destek gördünüz?Çok___ Biraz___ Hiç___

25. Deprem sonrasında ailenizden ve arkadaşlarınızdan ne kadar destek gördünüz?
Çok___ Biraz___ Hiç___

26. Deprem sonrasında korku, sıkıntı ve benzeri ruhsal / sinirsel şikayetler nedeniyle yardım aldınız mı?

Hayır___ Evet___ (Evet ise, kimden?.....)

Depremın sizin yaşamınızdaki etkilerini kısaca belirtiniz.

Önümüzdeki bir yıl içerisinde İzmit-Gölcük'te deprem olmasından ne kadar endişe ediyorsunuz ?

Hiç ----- Biraz ----- Oldukça çok -----

Sizce, deprem zararlarını azaltmak ve hazırlıklı olmak için bir şeyler yapılabilir mi ?

Hiç bir şey yapılamaz _____ Bazı şeyler yapılabilir _____ Çok şey yapılabilir

İleride olabilecek depremler için hazırlık yaptınız mı ?

Evet----- Hayır -----

Cevabınız “evet” ise neler yaptığınızı yazınız

MAG Çalışanları İçin:

27. Kaç aydır MAG'da görevlisiniz? _____

28. Haftada kaç saat MAG'da çalışmaktasınız? _____

29. MAG sizce topluma ne kadar yararlı? Hiç _____ Orta derece _____ Oldukça çok _____

30. Sizce, sizin MAG'ın çalışmalarına yaptığınız katkı ne kadar önemli?

Hiç önemli değil _____ Çok az önemli _____ Orta derecede önemli _____

Oldukça önemli _____

31. Daha önce bir sivil toplum kuruluşunda görev aldınız mı? Evet _____ Hayır _____

Evet ise göreviniz neydi? _____

Mag'da çalışmanın sizin yaşamınızdaki etkilerini kısaca belirtiniz

Aşağıda deprem gibi stresli yaşam olaylarından sonra insanların duygu ve düşüncelerinde meydana gelebilecek bazı değişikliklerle ilgili ifadeler vardır. Depremi ve geçen zamanı düşünerek, her ifadeye yer alan durumun sizin için ne derece geçerli olduğunu uygun seçeneği işaretleyerek belirtiniz.

1	2	3
Bana hiç uymuyor	Bana biraz uyuyor	Bana çok uyuyor

Depremden dolayı:

1.	Bana destek olan kişilerle yeni ilişkiler geliştirdim.	1	2	3
2.	Hayat hakkında yeni bilgiler öğrendim.	1	2	3
3.	Düşündüğümde daha güçlü olduğumu öğrendim.	1	2	3
4.	Başkalarını daha kabul edici oldum.	1	2	3
5.	Başkalarına verebileceğim daha çok şeyim olduğunu öğrendim.	1	2	3
6.	Başkalarının duygu ve düşüncelerine saygı göstermeyi öğrendim	1	2	3
7.	Başkalarına karşı daha iyi olmayı öğrendim.	1	2	3
8.	Hayatımı nasıl yaşamak istediğimi yeniden düşündüm.	1	2	3
9.	Hayatta daha çok şey başarmak istediğimi öğrendim.	1	2	3
10.	Şimdi hayatım daha anlamlı ve doyumludur.	1	2	3
11.	Olaylara daha olumlu bakmayı öğrendim.	1	2	3
12.	Duygularımı ifade etmek için daha iyi yollar öğrendim.	1	2	3
13.	Her şeyin bir nedeni olduğunu öğrendim.	1	2	3
14.	Allah'a olan inancım arttı/gelişti.	1	2	3
15.	Günlük sıkıntıların beni eskiden olduğu kadar çok rahatsız etmelerine izin vermemeyi öğrendim.	1	2	3
16.	Yaptıklarım için daha fazla sorumluluk almayı öğrendim.	1	2	3
17.	Bugün için yaşamayı öğrendim, çünkü yarın ne olacağını hiçbir zaman bilemiyorsun.	1	2	3
18.	Artık pek çok şeyi garanti olarak görmüyorum.	1	2	3
19.	Allah'a güvenim gelişti/arttı.	1	2	3
20.	Kararlarımı vermede çok daha özgür olduğumu hissediyorum.	1	2	3
21.	Başkalarına, hayat hakkında öğretebileceğim değerli şeyler olduğunu fark ettim.	1	2	3
22.	Allah'ın bazı şeylerin olmasına neden izin verdiğini daha iyi anlıyorum.	1	2	3
23.	Zor bir yaşama sahip olan insanların gücünü takdir etmeyi öğrendim.	1	2	3
24.	Kötü bir şey olunca hemen pes etmemeyi öğrendim.	1	2	3
25.	Davranışlarımın sonuçları hakkında daha fazla düşünmeyi öğrendim.	1	2	3
26.	Olanlara daha az kızmayı öğrendim.	1	2	3

27.	Daha iyimser bir insan olmayı öğrendim.	1	2	3
28.	Hayata daha sakin bakmayı öğrendim.	1	2	3
29.	Başkalarının isteği gibi değil de kendim gibi olmayı öğrendim.	1	2	3
30.	Kendimi mükemmel olmadan da kabul etmeyi öğrendim.	1	2	3
31.	Hayatı daha ciddiye almayı öğrendim.	1	2	3
32.	Hemen vazgeçmek yerine problemleri çözmeye çalışmayı öğrendim.	1	2	3
33.	Hayattan daha fazla anlam çıkarmayı öğrendim.	1	2	3
34.	Hayattaki hedeflerimi daha iyileri ile değiştirdim.	1	2	3
35.	Başkalarına nasıl ulaşacağımı ve yardım edebileceğimi öğrendim.	1	2	3
36.	Kendine daha fazla güvenen bir kişi olmayı öğrendim.	1	2	3
37.	Beden sağlığıma garanti gözüyle bakmamayı öğrendim.	1	2	3
38.	Başkaları benimle konuşurken daha dikkatli dinlemeyi öğrendim.	1	2	3
39.	Yeni bilgi ve düşüncelere daha açık olmayı öğrendim.	1	2	3
40.	Anne-babamın yıllar önce neden bazı şeyleri söylediklerini/yaptıklarını şimdi daha iyi anlıyorum.	1	2	3
41.	Başkaları ile daha dürüst bir şekilde iletişim kurmayı öğrendim.	1	2	3
42.	Belirsizlikle daha iyi başa çıkmayı öğrendim.	1	2	3
43.	Dünyada bir etki bırakmak istediğimi öğrendim.	1	2	3
44.	Başkalarından yardım istemenin normal olduğunu öğrendim.	1	2	3
45.	Beni eskiden üzen şeylerin çoğunun, aslında üzölmeye değmeyecek şeyler olduğunu öğrendim.	1	2	3
46.	Kişisel haklarımı savunmayı öğrendim.	1	2	3
47.	Bir başkasıyla daha önceden olan ilişkim daha anlamlı bir hale geldi.	1	2	3
48.	Anne-babamı sadece “ebeveyn” olarak değil birer insan olarak görebilmeye başladım.	1	2	3
49.	Düşündüğümde çok daha fazla kişinin bana değer verdiklerini fark ettim.	1	2	3
50.	Bir topluluğa ait olma ve büyük bir grubun bir parçası olduğum konusunda daha güçlü bir duygu geliştirdim.	1	2	3

Aşağıda zaman zaman herkeste olabilecek bazı şikayetlerin bir listesi vardır. Her birini dikkatlice okuyunuz. Belirtilen durumun, bugün de dahil olmak üzere sizi son onbeş gün içinde ne kadar rahatsız ettiğini “Hiç rahatsız etmedi”, “Biraz rahatsız etti”, “Çok rahatsız etti” şeklinde belirtiniz.

1		2		3	
Hiç rahatsız etmedi		Biraz rahatsız etti		Çok rahatsız etti	
1.	Baş ağrısı	1	2	3	
2.	Sinirlilik ya da gerginlik	1	2	3	
3.	Baş dönmesi ya da baygınlık hissi	1	2	3	
4.	Kolayca kızma ya da sinirlenme	1	2	3	
5.	Göğüs ya da kalp bölgesinde ağrılar	1	2	3	
6.	Sokaklarda ya da açık alanlarda korku hissi	1	2	3	
7.	Halsizlik ya da yavaşlama	1	2	3	
8.	Yaşamınıza son verme düşünceleri	1	2	3	
9.	Depremle ilgili düşünce veya hayaller	1	2	3	
10.	İştahınızın azalması	1	2	3	
11.	Kolayca ağlama	1	2	3	
12.	Kapalı yerlerde korkuya kapılma	1	2	3	
13.	Bir neden olmaksızın aniden korkuya kapılma	1	2	3	
14.	Kontrol edemediğiniz öfkelenmeler	1	2	3	
15.	Evde yalnız kalmaktan korkma	1	2	3	
16.	Olanlar için kendinizi suçlamanız	1	2	3	
17.	Bel ağrısı	1	2	3	
18.	Kendinizi yalnız hissetmeniz	1	2	3	
19.	Karamsarlık hissi	1	2	3	
20.	Her şey için endişeye kapılma	1	2	3	
21.	Her şeye karşı ilgisizlik	1	2	3	

22.	Kalbinizde çarpıntı	1	2	3
23.	Bulantı veya midenizde rahatsızlık	1	2	3
24.	Adale (kas) ağrısı	1	2	3
25.	Uykuya dalmakta güçlük, rahat uyuyamama	1	2	3
26.	Otobüs, tren gibi araçlarla yolculuk etme korkusu	1	2	3
27.	Nefes almakta güçlük	1	2	3
28.	Sizi korkutan yerlerden, şeylerden kaçınma	1	2	3
29.	Bedeninizin bazı yerlerinde uyuşma, karıncalanma olması	1	2	3
30.	Boğazınıza bir şey tıkanmış hissi	1	2	3
31.	Gelecek konusunda umutsuzluk	1	2	3
32.	Ölüm veya ölme düşünceleri	1	2	3
33.	Aşırı yemek yeme	1	2	3
34.	Sabah çok erken saatte isteğiniz dışında uyanma	1	2	3
35.	Çarşı, pazar gibi yerlerde rahatsızlık duyma	1	2	3
36.	Her şeyin bir yük gibi görünmesi	1	2	3
37.	Sık sık tartışmaya grime	1	2	3
38.	Başınıza kötü bir şey gelecekmiş duygusu	1	2	3
39.	Korkutucu düşünce ve hayallere kapılma	1	2	3
40.	Yerinizde duramayacak ölçüde huzursuzluk hissi	1	2	3

Aşağıda insanların sıkıntılarını gidermek için kullanabilecekleri bazı yollar belirtilmektedir. Cümlelerin her birini dikkatlice okuduktan sonra, deprem ile ilgili bu güne kadar yaşadığınız sıkıntıları düşünerek soruları yandaki ölçek üzerinde cevaplayınız. Bu yolları hiç kullanmadıysanız “Hiçbir zaman”, zaman zaman kullandıysanız “Bazen”, çok sık kullandıysanız “Her zaman” seçeneğini belirtin.

1	2	3
Hiçbir zaman	Bazen	Her zaman

1.	Aklımı kurcalayan şeylerden kurtulmak için değişik işlerle uğraştım.	1	2	3
2.	Bir mucize olmasını bekledim.	1	2	3
3.	İyimser olmaya çalıştım.	1	2	3
4.	Çevremdeki insanlardan sorunlarımı çözmemde bana yardımcı olmalarını bekledim.	1	2	3
5.	Bazı şeyleri büyütmeyip üzerinde durmamaya çalıştım.	1	2	3
6.	Sakin kafayla düşünmeye ve öfkelenmemeye çalıştım.	1	2	3
7.	Durumun değerlendirmesini yaparak en iyi kararı vermeye çalıştım.	1	2	3
8.	Ne olursa olsun direnme ve mücadele etme gücünü kendimde hissettim.	1	2	3
9.	Olanları unutmaya çalıştım.	1	2	3
10.	Başa gelen çekilir diye düşündüm.	1	2	3
11.	Durumun ciddiyetini anlamaya çalıştım.	1	2	3
12.	Kendimi kapana sıkılmış gibi hissettim.	1	2	3
13.	Duygularımı paylaştığım kişilerin bana hak vermesini istedim.	1	2	3
14.	“Her işte bir hayır var” diye düşündüm.	1	2	3
15.	Dua ederek Allah’tan yardım diledim.	1	2	3
16.	Elimde olanlarla yetinmeye çalıştım.	1	2	3
17.	Olanları kafama takıp sürekli düşünmekten kendimi alamadım.	1	2	3
18.	Sıkıntılarımı içimde tutmaktansa paylaşmayı tercih ettim.	1	2	3
19.	Mutlaka bir çözüm yolu bulabileceğime inanıp bu yolda uğraştım.	1	2	3
20.	“İş olacağına varır” diye düşündüm.	1	2	3
21.	Ne yapacağıma karar vermeden önce arkadaşlarımdan fikrini aldım.	1	2	3
22.	Kendimde her şeye yeniden başlayacak gücü buldum.	1	2	3
23.	Olanlardan olumlu bir şeyler çıkarmaya çalıştım.	1	2	3
24.	Bunun alım yazım olduğunu ve değişmeyeceğini düşündüm.	1	2	3
25.	Sorunlarıma farklı çözüm yolları aradım.	1	2	3
26.	“Olanları keşke değiştirebilseydim” diye düşündüm.	1	2	3
27.	Hayatla ilgili yeni bir bakış açısı geliştirmeye çalıştım.	1	2	3

28.	Sorunlarımı adım adım çözmeye çalıştım.	1	2	3
29.	Her şeyin istediğim gibi olamayacağını düşündüm.	1	2	3
30.	Dertlerimden kurtulayım diye fakir fukaraya sadaka verdim.	1	2	3
31.	Ne yapacağımı planlayıp ona göre davrandım.	1	2	3
32.	Mücadele etmekten vazgeçtim.	1	2	3
33.	Sıkıntılarımın kendimden kaynaklandığını düşündüm.	1	2	3
34.	Olanlar karşısında “Kaderim buymuş” dedim.	1	2	3
35.	“Keşke daha güçlü bir insan olsaydım” diye düşündüm.	1	2	3
36.	“Benim suçum ne” diye düşündüm.	1	2	3
37.	“Allah’ın takdiri buymuş deyip” kendi kendimi teselli etmeye çalıştım.	1	2	3
38.	Temkinli olmaya ve yanlış yapmamaya çalıştım.	1	2	3
39.	Çözüm için kendim bir şeyler yapmak istedim.	1	2	3
40.	Hep benim yüzümden oldu diye düşündüm.	1	2	3
41.	Hakkımı savunmaya çalıştım.	1	2	3
42.	Bir kişi olarak olgunlaştığımı ve iyi yönde geliştiğimi hissettim.	1	2	3