

FACTORS RELATED TO PSYCHOLOGICAL RESILIENCE AMONG
SURVIVORS OF THE EARTHQUAKES IN VAN, TURKEY

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ABSTRACT

FACTORS RELATED TO PSYCHOLOGICAL RESILIENCE AMONG SURVIVORS OF THE EARTHQUAKES IN VAN, TURKEY

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Exposure to natural disasters is common, with millions of people affected annually. Traumatic events including disasters may result in a wide range of psychological consequences in adults. They may evoke negative outcomes in exposed individuals including posttraumatic stress (PTS) reactions. However, in recent years, the field of trauma studies has fuelled interest in positive changes following adversity including growth and resilience. The present study aimed to investigate psychological resilience in the survivors of the two destructive earthquakes in Van, Turkey in 2011 causing more than 600 casualties. This study utilized mixed-methods research design in which the qualitative and quantitative strands were conducted sequentially to explore psychological resilience in a deeper and broader sense. In the qualitative study, 51 earthquake survivors in Van were interviewed in order to explore perceptions of psychological resilience. Analyses revealed that belief in God/religiousness, economic resources, social networks/relationships, health, and positive personality characteristics were the

most pronounced factors that were perceived by survivors as associated with resilience. The quantitative study aimed to identify factors associated with psychological resilience as defined by low levels of PTS and high levels of resilience as measured by stress-coping ability in a sample of 360 survivors. The findings showed that psychological resilience was influenced by a multitude of pre-, within-, and post-disaster factors. Overall, the study showed that psychological resilience is a multifactorial construct. The results were discussed in line with previous literature, and information was provided on implications of the findings for clinical practice and applied field, and future studies.

Keywords: psychological resilience, survivors, natural disasters, earthquakes, Turkey

ÖZ

VAN, TÜRKİYE DEPREMLERİNİ YAŞAYANLARDA PSİKOLOJİK DAYANIKLILIK İLE İLİŞKİLİ ETKENLER

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Doğal afetlere maruz kalma yaygındır ve her yıl milyonlarca insan afetlerden etkilenmektedir. Afetler gibi travmatik olayların yetişkinlerde çeşitli psikolojik sonuçları olabilmektedir. Maruz kalanlarda travma sonrası stres (TSS) reaksiyonları gibi olumsuz sonuçları ortaya çıkarabilmektedirler. Ancak, yakın zamanda, travma çalışmaları alanı olumsuz yaşantılar sonrasında gelişme ve dayanıklılık gibi olumlu değişimlere yönelik ilgi de artmıştır. Bu çalışma 2011 yılında Van, Türkiye’de yaşanan ve 600’den fazla hayat kaybına neden olan iki yıkıcı depremi yaşayanlarda psikolojik dayanıklılığı araştırmayı amaçlamıştır. Bu çalışmada psikolojik dayanıklılığın daha derin ve daha geniş şekilde incelenebilmesi için nitel ve nicel aşamaların arka arkaya gerçekleştirildiği karmaşık-yöntemli araştırma deseni kullanılmıştır. Nitel çalışmada, psikolojik dayanıklılık algısının incelenmesi için Van’da depremleri yaşayan elli bir kişi ile görüşmeler yapılmıştır. Analizler Tanrı inancı/dindarlık, maddi kaynaklar, sosyal ağlar ve ilişkiler, sağlık ve olumlu kişilik özelliklerinin psikolojik dayanıklılık ile

en çok ilişkili algılanan etkenler olduğunu ortaya koymuştur. Nicel çalışmada ise depremleri yaşayan 360 kişiden oluşan bir örnekleme düşük TSS belirti düzeyi ve stres ile baş etme becerisi ile ölçülen yüksek dayanıklılık düzeyi ile tanımlanan psikolojik dayanıklılık ile ilişkili etkenlerin belirlenmesi amaçlanmıştır. Bulgular psikolojik dayanıklılığın afet öncesindeki, sırasındaki ve sonrasındaki çoklu etkenler tarafından etkilendiğini göstermiştir. Genel olarak, sonuçlar psikolojik dayanıklılığın birçok etkene bağlı bir yapıya sahip olduğunu ortaya koymuştur. Sonuçlar önceki yazın ile birlikte tartışılmıştır ve bulguların klinik uygulamalar ve uygulamalı alan ile gelecek çalışmalar için yansımalarına yönelik bilgi sunulmuştur.

Anahtar kelimeler: psikolojik dayanıklılık, afetzedeler, doğal afet, deprem, Türkiye

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CHAPTER 1

INTRODUCTION

The present study is an attempt to examine psychological resilience among survivors of the 2011 earthquakes in Van, Turkey. This chapter aims to provide an introduction to the context of the study, presenting a review of the literature on disasters and psychological resilience. The chapter begins with an overview of natural hazards and disasters with a focus on their definition and prevalence. Disasters around the globe and specifically in Turkey are outlined. This is followed by a presentation of the characteristics of the context for the present study, the recent 2011 Van earthquakes, and characteristics of Van in order for readers to understand the context in which the earthquakes took place. The second section of this chapter focuses on possible psychological effects of traumatic events including natural disasters on exposed individuals. In this section, firstly adverse psychological effects of traumatic events including posttraumatic distress and a more severe form, posttraumatic stress disorder, are presented. Next, a discussion on a relatively recent paradigm shift in psychology from negative to positive effects is presented. Among positive effects, posttraumatic growth and resilience are outlined. Since the major focus of the current study is psychological resilience, it is elaborated in the next section in detail with a specific focus on conceptualizations of resilience in the literature, methods and tools to assess resilience, model and theories of resilience, and factors found to be associated with resilience in empirical studies. A detailed literature review on psychological resilience is presented based on existing approaches and empirical findings. The section ends with a detailed presentation of the scope and the aims of the present study and its relative importance and expected contributions for literature and for field applications.

1.1 Natural Disasters

Natural hazards occur suddenly and frequently and exposure to natural hazards is quite common, with millions of people affected each year. A natural hazard is defined as a “natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage” (United Nations International Strategy for Disaster Reduction [UNISDR], 2009). The terms “hazard” and “disaster” are often used interchangeably in the literature; however, they are often treated as referring to different phenomenon and the distinction is quite difficult. A hazard may be regarded as a predisaster situation characterized by some risk of disaster because of a situation of vulnerability that the human population placed itself in (Alexander, 1993, p. 7). UNISDR (2009) defined disaster as “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources”; it was also commented that descriptions of disasters often involve a combination of three factors: exposure to a hazard event, present conditions of vulnerability, and insufficient capacity or measure to cope with the hazard event and its potential negative consequences. In the past decades, a number of large-scale natural disasters resulted in considerable losses and disruptions throughout the world. Some of these disasters resulting in large death tolls and economic losses were the Marmara Earthquake in 1999, Indian Ocean Tsunami in 2004, Hurricane Katrina in 2005, Cyclone Nargis in Burma in 2008, Sichuan Earthquake in China in 2008, Haiti Earthquake in 2010, and Russian Heat Wave in 2010.

According to the 2010 World Bank and United Nations report *Natural Hazards, UnNatural Disasters: the Economics of Effective Prevention*, natural hazards resulted in 3.3 million deaths (82,500/year) and a total economic loss of \$2.3 trillion USD Dollars between the years of 1970 and 2010. The report declared that earthquakes, droughts, floods, and storms are the four deadliest categories of

natural hazards around the world. In 2012, 357 natural disasters were registered in EM-DAT: the International Disaster Database (Guha-Sapir, Hoyois, & Below, 2012). According to the annual report by the team, although the average annual frequency was lower than observed in the last ten years, from 2002 to 2011 (394) and represented a decrease in associated human impacts of disasters, these disasters still exerted massive human and economic impacts in 2012. A total of 9,655 people were killed worldwide (annual average 2002-2011: 107,000) and 124.5 million people became victims (annual average 2002-2011: 268 million) and contrary to other indicators, economic damages increased above average (US\$ 143 billion) with an estimated US\$ 157 billion economic damage.

Both disasters and related factors are sufficiently complex, defying an easy classification of disasters; however, disasters can be basically grouped as sudden impact and slow onset (creeping) disasters (Alexander, 1993). Another distinction commonly made in the literature is between human-made and natural disasters. Human-made disasters include intentional human acts such as terrorism or technological accidents resulting from human error (Ursano, Fullerton, Weisaeth, & Raphael, 2007). Natural disasters are further classified into subgroups (Guha-Sapir et al., 2012): geophysical (earthquake, volcano, mass movement-dry), meteorological (storm), hydrological (flood, mass movement-wet), climatological (extreme temperature, drought, wildfire), and biological (epidemic, insect infestation, animal stampede). In a review of 160 studies sampling over 60000 disaster survivors, Norris et al. (2002a) concluded that 55% of the survivors reported being exposed to natural disasters, 34% to technological disasters, and 11% to mass violence. Among natural disasters, earthquakes were the most frequently reported disaster type. Although the distinction between these types of disaster is common, making a distinction between human-made and natural disasters is becoming increasingly difficult because human beings are also usually actors in the etiology and the consequences of natural disasters (Ursano et al., 2007). For example, poor construction practices may magnify the damage and loss in earthquakes. Still, human-made/technological disasters might influence exposed populations more markedly compared to natural disasters (Galea, Nandi,

& Vlahov, 2005), and human-made disasters have been shown to cause more frequent and more persistent psychiatric symptoms and distress (Ursano et al., 2007). In a large Turkish sample from three different cities, Karanci et al. (2012a) showed that 28.1% of the sample reported natural disasters as the most influential traumatic event in their lives. Mass violence is the most disturbing type of disasters, as Norris et al. (2002a) documented that 67% of the survivors exposed to mass violence were severely impaired compared to 39% of those exposed to technological disasters and 34% of those exposed to natural disasters. Nevertheless, Norris, Friedman, and Watson (2002b) also documented that a higher mean aggregate severity was yielded for natural disasters in developing countries when compared to either type of disasters in developing countries and “the destruction caused by natural disasters nearly always has—or is perceived to have—a human element” (p. 245).

1.1.1 Natural Disasters in Turkey

Natural hazards are commonly experienced in Turkey due to the area’s climate, and geological and topographical characteristics. According to the National Disaster Archive of Turkey (Republic of Turkey Prime Ministry Disaster & Emergency Management Presidency [AFAD], 2014), a total of 5584 natural hazards occurred between the years 1900 and 2013. The most frequently experienced types of natural hazards in the country were reported to be earthquakes, landslides, floods, and rock falls, respectively. Between 1900 and 2013, a total of 253 earthquakes have occurred in Turkey. Based on the earthquake zoning map prepared by the Republic of Turkey, Ministry of Public Works and Settlement (1996), Turkey is located on active fault lines; 96 percent of the total area of Turkey lies within the earthquake zones with different degrees of threat and 98 percent of all population lives in these areas. Moreover, the ratio of individuals living in the first or second degree earthquake zones (based on the expected acceleration ratios of $\geq 0.4g$ and $0.3g-0.4g$, respectively) to the total population is estimated to be around 70 percent. These figures strikingly point out to the fact that Turkey is a country that is highly prone to earthquakes.

Large-scale natural disasters threaten Turkey as they may result in great losses and negatively affect the social and economic life. Among the other types of natural hazards in Turkey, earthquakes have led to the largest number of casualties and injuries among the other types of hazards (AFAD, 2014). Between 1900 and 2013, 94100 people were killed and 78808 people were injured due to destructive earthquakes in Turkey. In terms of disaster mortality, Turkey ranked 8th in 2011 among the top ten countries (Guha-Sapir, Vos, Below, & Ponserre, 2012). In addition to the extensive number of injuries and loss of life, earthquakes also impact the economy. As an example, 2010 Elazığ Earthquake caused an estimated total loss of 5.4 million dollars (Daniell, 2011). A larger earthquake in the Marmara region in 1999 caused a higher economical loss in numbers: 3.38-7.89 billion dollars (Daniell & Vervaeck, 2012).

The most destructive natural disasters in terms of the extent of life loss which took place in Turkey were the 1999 Marmara earthquakes and the 1939 Erzincan earthquake (AFAD, 2014). The 1939 Erzincan earthquake is the worst natural disaster in Turkish history in terms of the registered death toll. This earthquake resulted in 32,962 deaths. The 1999 Marmara earthquake had a magnitude of 7.4 on the Richter scale and resulted in 17,480 deaths and 43,953 injuries. These figures additionally point out to the susceptibility of the Turkish population to the effects of earthquakes.

1.1.1.1 The 2011 Van Earthquakes and the Context

The high susceptibility of Turkey was also reflected in the recent destructive earthquakes in Turkey, which are the main focus of the present study, that occurred in the Eastern Anatolia Region in Van. Van has its borders with the cities of Ağrı, Bitlis, Siirt and Hakkari and The Republic of Iran. It is the sixth big city in Turkey; it covers a land area of 19,069 km² corresponding to 2.5% of Turkey's land. The largest lake (Van Lake) of Turkey lies within the city borders.

The first earthquake (Mw=7.2) took place on October 23, 2011 at 10.41 GMT in Tabanlı, Van. According to AFAD (2011), 604 people died and 222 people were

injured. The earthquake ranked 5th worldwide in 2011 among the top 10 natural disasters by number of deaths (Guha-Sapir et al., 2012). CEDIM Forensic Earthquake Analysis Group (Daniell et al., 2011) released a detailed report on the event. According to the report, there were disruptions in telecommunications, electricity, natural gas system and water services and the Van-Erciş road was also reported to have been damaged in the form of road collapse and cracking. It is estimated that the earthquake caused economic losses around 1 billion to 4 billion Turkish Liras, and this represent 17 to 66% of Van's total provincial gross domestic product. 12.5% of the buildings in Erciş and Van city center were damaged beyond repair and 10.6% of them were slightly damaged and repairable (KOERI, 2011).

Soon after, a second earthquake with ML=5.6 on November 9, 2011 at 19.23 GMT struck Edremit, Van. 40 people were reported dead and 30 people were injured. 25 buildings were collapsed and 23 of them were inhabited at the time. However, the two of those buildings were hotels and many people staying in these hotels lost their lives. Table 1.1 lists the extent of damage following the Van earthquakes.

Table 1.1 The extent of the damage following the Van earthquakes (AFAD, 2013)

	<i>N</i>
Life losses	644
Injuries	1,966
Number of housing units	
- Destroyed	38,515
- Moderately damaged	11,159
- Lightly damaged	57,156
Total	106,830
Number of business premises	
- Destroyed	2,807
- Moderately damaged	3,834
- Lightly damaged	8,644
Total	15,285

According to a report by The Internal Displacement Monitoring Centre (2012), the Van earthquakes led to displacement of more than 250,000 people. There were extensive governmental and non-governmental efforts to provide survivors health services, food, temporary and permanent accommodation. More than 5000 search and rescue workers and more than 2000 health professionals were transferred to the affected region and 11 mobile hospital units and 37 mobile kitchen complexes were built for survivors in addition to 76,008 tents, 310 prefabricated houses and 3,794 Mevlana houses (prefabricated houses designed by Turkish Red Crescent which allow accommodation for up to 4 people) in the aftermath of the earthquakes, according to the data from the AFAD web site (2013). A total of 29,486 containers (accommodating 175,070 survivors) were distributed in Van city center and Ercis. The government began building 17,471 permanent housing units in five different sites of Van city center and in two sites in Ercis immediately after the earthquakes for individuals and families who lost their houses.

With all facts considered, the earthquakes in Van seem to have exerted large scale influences on the area and individuals living in it. Susceptibility of Van city to the negative effects of earthquakes may be, at least partly, due to the region's pre-existing vulnerability. According to 2009 definition of Human Development Index (HDI), the region's HDI is 0.630 and it is among the least developed cities in Turkey. The region's HDI is equivalent to Bhutan, Solomon Islands, India or Congo (Daniell et al., 2011). According to data from State Planning Organization which is currently the Republic of Turkey Ministry of Development, Van is also among the ten least developed cities in the country (Baday Yıldız, Sivri, & Berber, 2010; Dincer, Ozaslan, & Kavasoglu, 2003). The rank was 75th amongst 81 cities in 2011 (Republic of Turkey Ministry of Development, 2011). Van is also among the top three cities with high unemployment rates (17.2%; national average: 11.9%) and has an employment rate of 37.3% (national average: 43%) (TUIK, 2011).

The population of Van increased substantially from 1965 (266,840) to 2012 (1,051,975) (TUIK, 2012). The major factors leading to observed population increase in Van were substantially higher crude birth rates in Turkey's eastern regions (about 23%; national average: 16.7%) (TUIK, 2012) including Van, business due to Iraq war and intensive trading with Iran (Daniell et al., 2011), and forced displacement occurring in Eastern and Southeastern Anatolia regions (Kurban, 2012). According to available data from Address Based Population Registration System (TUIK, 2009), the average household size (i.e., persons per household) in Van was reported to be 7.07 (6.36 in urban areas and 7.99 in rural areas). Approximately 16% of Van's population consists of residents of vulnerable age groups (>65 years old or <5 years old) (TUIK, 2012). Van is also characterized by low educational attainment of its citizens. About one third of the population has graduated from either high school (24%) or university (10%), whereas more than half of the population (61%) has educational attainment below high school.

The population distribution in Van's rural and urban areas observed in late 1980s became more balanced in early 2000s (TUIK, 2010); the population in rural and urban areas has become more evenly distributed in recent years (TUIK, 2012). Nevertheless, Van's urban population (52%) was still lower than the general population in Turkey (77%) whereas the percent of population in rural areas (48%) is more than double of the rate in general population (23%) (TUIK, 2012). Furthermore, Van is characterized by high rates of outmigration. Rates of outmigration increased more than double from 30.28% in 2007-08 period to 72.27% in 2010-11 period (TUIK, 2011). Strikingly, net migration rate in the city has substantially increased from -9.01% in 2007-08 period to -46.67% in 2010-11 period, the latter figure probably reflecting the impact of the earthquake on the migration trend.

In sum, the two earthquakes which stroke Van in 2011 had negative impacts on individuals and community in general. These impacts were probably magnified by the pre-existing vulnerability in the region in the form of low human

development rates, high rates of unemployment, low educational attainment and high rates of outmigration. Natural disasters are known to both negatively and - though not much recognized compared to negative effects- positively influence psychological states of the survivors. The negative psychological impact of the earthquakes on the survivors was documented by Tuna, Parin, and Tanhan (2012) in their study on 379 households in Van. Survivors reported sleep problems such as inability to fall asleep and nightmares, cognitive problems such as recurrent flashbacks and intrusive thoughts about the earthquake experience, emotional problems such as anhedonia, and physical and behavioral problems such as loss of appetite, agoraphobia, and aggression due to the effects of the 2011 Van earthquakes. The following section explores possible psychological effects of natural disasters on survivors.

1.2 Psychological Effects of Natural Disasters on Survivors

Natural disasters are potentially traumatic events and may result in a range of psychological outcomes in their aftermaths. This section provides information on possible psychological effects of natural disasters on survivors with an extended focus on resilience which is the main focus of the current study. Firstly, negative outcomes including posttraumatic distress and posttraumatic stress disorder (PTSD) are described. This section ends with a discussion on a shift toward positive effects in psychology, outlining posttraumatic growth and resilience briefly. The upcoming section is devoted to address psychological resilience comprehensively.

1.2.1 Traumatic Events and Posttraumatic Distress

Adverse psychological outcomes following disaster experiences are extensively studied by researchers because of the potential that natural disasters carry to become traumatic events for individuals exposed to the effects of them. American Psychiatric Association [APA] (2013) defines an event (or events) as traumatic in the fifth edition of its Diagnostic and Statistical Manual of Mental Disorders (DSM) if “a person was exposed to one or more event(s) that involved death or

threatened death, actual or threatened serious injury, or threatened sexual violation”. The current criteria also specifies that the event (or events) were experienced in one or more of the following ways: (1) the event was experienced by the person, (2) the event was witnessed, in person, as it occurred to someone else, (3) the person learned about an event where a close relative or close friend experienced an actual or threatened violent or accidental death, and (4) the person experienced repeated or extreme exposure to distressing details of an event.

The most frequently experienced traumatic events were found to be serious physical illness, bereavement, terrorism, and natural disasters, in a meta-analytical review by Vishnevsky, Cann, Calhoun, Tedeschi, and Demakis (2010). The lifetime prevalence rates of traumatic events are relatively high. In a large sample from three provinces (Ankara, Erzincan, Kocaeli) in Turkey, 84.2% of the participants reported to have experienced at least one traumatic events in their lifetime; the most common events were natural disasters, unexpected death of a close one, and a serious accident, fire or explosion (Karanci et al., 2012a). Another study from the United States showed that the lifetime prevalence rate for experiencing a traumatic event was 69%, with tragic death being the most common (Norris, 1992).

It is widely accepted that exposure to potentially traumatic events such as earthquakes might have negative psychological consequences such as post-traumatic stress reactions. These include anxiety, flashbacks about the event, unwanted intrusive thoughts, avoidance of reminders, fear, anger, sadness, and problems of memory, concentration, sleep, and appetite (Karanci, 2005). In one of the early studies on psychological effects caused by earthquakes in Turkey, Karanci and Rustemli (1995) showed that phobic anxiety, panic, and fear reactions were predominantly observed in survivors of the 1995 Erzincan earthquake which had resulted in over 500 casualties.

The experience of traumatic events is also associated with a variety of mental disorders. Widely-used international classification of mental disorders such as the

International Classification of Diseases (ICD) by the World Health Organization and the DSM by the APA includes trauma-related diagnoses. In the recently published DSM-5 (APA, 2013), a new section on trauma- and stressor-related disorders has also been added to group and classify disorders in which an adverse event preceded the onset of symptoms (Friedman, 2013). This section includes a severe form of posttraumatic disorder, PTSD, and also acute stress disorder, reactive attachment disorder, disinhibited social engagement disorder, adjustment disorder, and other specified and unspecified trauma- and stressor-related disorder. DSM-5 also introduced a preschool subtype of PTSD for children aged six years or younger. In DSM-5, PTSD was classified for four symptom clusters including twenty symptoms. Two specifications are noted including delayed expression and a new category, a dissociative subtype of PTSD. On the other hand, version 11 of ICD (ICD-11) is currently being developed by the World Health Organization and is scheduled for approval in 2015 (Maercker et al., 2013). In ICD-11, a separate group of disorders specifically associated with stress was proposed rather than including these among anxiety disorders as in ICD-10 and DSM-IV. A new category, complex PTSD, was also proposed to account for extensive post-traumatic stress reactions arising from severe and prolonged stressors which usually involve repeated negative events. Another new category was prolonged grief disorder in which intensely painful and disabling responses to bereavement are observed. Also, adjustment disorder was described in terms of specific symptoms and acute stress reactions were classified as non-pathological responses to exceptional stressors. More importantly, symptom requirements for PTSD became tighter; the diagnostic criteria refocused on three core elements, non-specific symptoms that are parts of other disorders were removed, functional impairment was included as a symptom requirement.

Trauma-related diagnostic categories, particularly PTSD following disasters and other traumatic experiences has long been the subject of research since the category was defined in DSM-III (APA, 1980). A recent review on 1,642 abstracts and articles about psychological impacts of natural disasters showed that PTSD is the most-studied impact after a disaster (Warsini et al., 2014). The four

symptom clusters of PTSD in DSM-5 are re-experiencing, avoidance, negative alterations in cognition and mood, and alterations in arousal and reactivity. The diagnostic criteria for PTSD, stipulated in the DSM-5 (2013), may be summarized as:

Criterion A: Exposure to a traumatic event.

Criterion B: Intrusion symptoms (one or more symptoms). These include recurrent, involuntary, and intrusive distressing memories or recurring distressing dreams related to the event(s), dissociative reactions such as flashbacks, intense or prolonged psychological or physiological reactions to internal or external cues related to the event(s).

Criterion C: Persistent avoidance (one or more symptoms). This involves avoidance of distressing memories, thoughts, or feelings associated with the traumatic event(s) or avoidance of external reminders that arouse these memories, thoughts, or feelings.

Criterion D: Negative alterations in cognitions and mood (two or more symptoms). These involve inability to remember an important aspect of the event(s), persistent and exaggerated negative beliefs or expectations about oneself, others, or the world, persistent and distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others, persistent negative emotional state, diminished interest/participation in activities, feelings of detachment or estrangement from others, or persistent inability to experience positive emotions.

Criterion E: Marked alterations in arousal and reactivity (two or more symptoms) including irritable behavior and angry outbursts, reckless or self-destructive behavior, hypervigilance, exaggerated startle response, problems with concentration, or sleep disturbance.

Criterion F: The disturbance lasts more than 1 month.

Criterion G: The disturbance is associated with clinically significant distress or impairment or functioning in major areas of life.

Criterion H: The disturbance cannot be attributed to medical conditions.

Research on PTSD has consistently shown that it is quite common following potentially traumatic events. Prevalence estimates of lifetime PTSD was 5-7% in childhood and adolescence, 7-9% in emerging adulthood, and 6-12% in adulthood among samples from large studies in the United States using DSM-III-R or later criteria for diagnosis, as reported in a review about prevalence of PTSD (Nugent, Brown, Stratton, & Amstadter, 2014). The estimates in US studies were generally slightly higher than the estimates in non-US studies. In addition, rates of PTSD in both US and non-US studies were higher in samples exposed to extensive traumas including war, political conflict, terrorism, and mass violence. This review of both nationally representative surveys and meta-analytic studies in USA reported an increased risk for developing the disorder among individuals with prior history of trauma or individuals having an experience of interpersonal and/or assaultive trauma. Moreover, although men were twice as likely to experience traumatic events, women were twice as likely to experience PTSD (Nugent et al., 2014).

Epidemiological studies of PTSD have shown that disaster severity and level of exposure to disaster-related stressors such as injury or loss, rather than the type of disaster, were associated with PTSD. Some prevalence estimates of PTSD ranged between 2.4% and 33.6% for a wide of range natural disasters including tsunamis, hurricanes, earthquakes, and bushfires (Nugent, Brown, Stratton, & Amstadter, 2014). In a systematic review of PTSD following disasters, Neria, Nandi, and Galea (2008) concluded that among specific risk groups, there were fairly consistent estimates of PTSD that can be expected during the first year after exposure. The prevalence of the disorder among individuals directly exposed to disasters ranged between 30% and 40% while the range of PTSD rates in the general population was expected to be between 5% and 10%. In addition, 10% to

20% of rescue workers were positive for PTSD symptomatology. In a recent study with 2080 survivors one year after the 2008 Wenchuan earthquake (Jin, Xu, Liu, & Liu, 2014), the prevalence estimate for probable PTSD was 40.1% based on the DSM-IV criteria. In this study, 58.7% of the participants reported that they suffered from at least one re-experiencing symptom; 47.4% reported three or more avoidance symptoms; and 49.4% suffered from two or more arousal symptoms. The rates for PTSD among earthquake survivors following the devastating Marmara earthquakes in 1999 were around 40 percent (Başoğlu, Şalcıoğlu, & Livanou, 2002; Yıldız & Göker-Kuruoğlu, 2004). In the study by Yıldız and Göker-Kuruoğlu (2004), major depressive disorder was the most prevalent comorbid diagnosis (74.3%).

Studies aiming to elucidate the biological underpinnings of PTSD show that even physical brain structures, bodily functions or genes may be altered in PTSD. Neuroimaging studies have shown that post-traumatic stress relates to structural or functional changes associated with PTSD, particularly in regions of hippocampus, amygdala, anterior cingulate cortex, insula, and medial prefrontal cortex (Sun et al., 2013). Sun and colleagues (2013) also found alterations in brain white matter microstructure within two days of experiencing a traumatic event. They suggested that this change may be associated with genetic susceptibility and a possible pre-existing vulnerability factor for the development of PTSD following exposure to trauma. Moreover, exposure to a potentially traumatic event may induce epigenetic DNA methylation changes which produce physiological changes among PTSD-affected individuals (Uddin et al., 2010).

In addition to PTSD reactions and PTSD, individuals who are exposed to traumatic events may suffer from continua of symptoms of PTSD, depression, anxiety, and other psychiatric problems such as major depressive disorder, generalized anxiety disorder, and panic disorder (Norris et al., 2002a). In their review of the empirical literature between 1981 and 2001 on psychological effects of disasters, Norris and colleagues (2002a) also emphasized that major depression and anxiety have been shown to be very common following traumatic events along with

nonspecific distress including demoralization, perceived stress and negative affect and health concerns including sleep problems, increase in the use of drugs, alcohol and cigarettes.

In sum, traumatic events are commonly experienced and may evoke a range of negative outcomes in exposed individuals including posttraumatic stress (PTS) reactions and also PTSD, a diagnosis for more severe and enduring forms of PTS. The next section aims to present the flipside of the coin: positive outcomes that may be observed after traumatic events such as natural disasters.

1.2.2 A Paradigm Shift from Trauma to Positive Effects: Growth and Resilience

Despite the theme of negative changes and outcomes following adversity, the possibility of positive change has also been highlighted throughout human history. From the famous Japanese proverb “Fall seven times, stand up eight” to Nietzsche’s popular dictum “What doesn’t kill me makes me stronger” and to famous Italian poet Dante Alighieri’s writing his loss of epic love in *The Divine Comedy*, the value of suffering and the positive aftermaths of adversity has long been apparent in the literature, philosophy, and religions.

Tedeschi and Calhoun (2004) pointed out that psychology, medicine and related disciplines traditionally focused on typical negative psychological reactions after traumatic experiences. Although the widespread assumption that traumas cause disorders is not totally invalid, they may also offer a possibility for good and “the general understanding that suffering and distress can be possible sources of positive change is thousands of years old” (p. 2). This perspective resulted in the use of “potentially traumatic events (PTEs)” to be advocated in disaster-related research instead of traumatic events since a wide range of outcomes can be evoked following adversity (Bonanno, 2004).

Scientific interest in positive changes following adversity was sparked in the late 1980s and the early 1990s after a handful of studies reported positive changes in

populations such as rape survivors, male cardiac patients, bereaved adults, and combat veterans (Joseph & Butler, 2010). For example, positive changes were also evidenced when Nolen-Hoeksema (2000) asked individuals who had lost a close one whether they found anything positive in the experience. The responses of people who said they had grown or found something positive were clustered around the themes of reprioritizing one's life and goals, positive personality changes such as becoming more tolerant, more sensitive, more patient and more loving towards others, realizing personal strengths, realizing the importance of interpersonal relationships, confronting and resolving family conflicts, and losing the fear of death.

Over the last decade, the field of trauma studies has fuelled interest in post-traumatic growth (PTG). PTG is defined as the “positive psychological change experienced as a result of the struggle with highly challenging life circumstances” (Tedeschi & Calhoun, 2004, p. 1). A number of other terms have also been developed for naming the construct of positive changes following trauma and are used interchangeably; these are stress-related growth, adversarial growth, positive adaptation, positive changes, positive by-products, benefit finding, perceived benefits, thriving, flourishing and growth following adversity (Linley & Joseph, 2009). Research indicates that along with various types of traumatic events, PTG is also reported following earthquakes (Cieslak et al., 2009; Karanci & Acartürk, 2005). Tedeschi and Calhoun (2004) proposed a functional descriptive model in which a metaphorically seismic event leads to PTG. The event shakes the fundamental schemas, beliefs and goals of the individual. Automatic and later more deliberate ruminations following the event leads to schema change and then narrative development which in turn results in PTG. The widely used instrument for the assessment of PTG, Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), measures five dimensions of the concept which are greater appreciation of life, warmer and intimate relationships with others, recognizing new possibilities, a greater sense of personal strength, and spiritual change.

Resilience is another emerging area of study which has become popular in trauma field during the last decade. It is defined by Bonanno (2004, p. 20) as “an ability of adults in otherwise normal circumstances who are exposed to an isolated or potentially highly disruptive event, . . . , to maintain relatively stable healthy levels of psychological and physical functioning”. As stated by Martin Seligman more than ten years ago, “the major psychological theories now undergird a new science of strength and resilience” (Seligman, 2000, p. 5). Resilience has long been studied in the field of psychology with culminating interest, and wide prevalence of disasters makes investigating resilience in both natural and technological disaster contexts necessary. The focus of resilience studies has been shifting from chronic adversity to traumatic events (Agaibi & Wilson, 2005). It has been recognized that resilience in the face of trauma may be very different from resilience in the face of normative adversity such as chronic poverty, violence or family dysfunction (Davey, Eaker, & Walters, 2003). In the past decade, researchers have devoted extensive efforts to understand resilience in the context of natural disasters around the globe including hurricanes, earthquakes, floods, and so forth. It has been also recognized that disasters promote change and new possibilities and returning to previous physical, social and psychological states usually cannot be achieved (Manyena, O’Brien, O’Keefe, & Rose, 2011). Manyena et al. (2011) defined resilience in disaster context “as the intrinsic capacity of a system, community or society predisposed to a shock or stress to ‘bounce forward’ and adapt in order to survive by changing its non-essential attributes and rebuilding itself” (p. 419). The authors suggested that the notion of ‘bouncing back’ in the face of adverse events did not encapsulate the change processes accompanied by disasters.

Resilience and growth are the two positive outcomes which may be observed following traumatic events. However, a closer look at both concepts shows that the association between resilience and posttraumatic growth is not clearly understood and whether they are similar or different experiences is not decided upon in the literature. In the past decade, Tedeschi and Calhoun (2004) suggested that PTG is transformative, however resilience is not; and the traumatic

experience might not be challenging to resilient individuals. In samples of adolescents exposed to terror, and citizens and army personnel following the second Lebanon War, Levine, Laufer, Stein, Hamama-Raz, and Solomon (2009) found that resilience and PTG were inversely related concepts. However, Lepore and Revenson (2006) addressed PTG as a particular form of resilience. Recovery, resistance, and reconfiguration were mentioned as three facets of resilience; and PTG was conceptualized as a possible outcome for individuals going through reconfiguration resilience. Nishi, Matsuoka, and Kim (2010), on the other hand, showed that relating to others, new possibilities, and personal strength aspects of PTG was positively correlated with resilience as assessed by the Sense of Coherence scale in a sample of motor vehicle accident survivors. Similarly, Amering and Schmolke (2009) viewed resilience as a driving force for recovery and asserted that “resilience as the mental capacity to resist adversities is directly linked to the recovery process” (p. 26). Nevertheless, Westphal and Bonanno (2007) also argued against linking together resilience and PTG. Discussing the limitations and weaknesses in Hobfoll et al.’s (2007) paper on PTG, they postulated that equating PTG with resilient outcomes or considering resilience as inferior to PTG has been a notable problem in most studies on PTG, including Hobfoll et al.’s study. Moreover, a full range of possible responses and outcomes following a potentially traumatising event has been considered as limited when PTG was portrayed as the optimal response. According to Westphal and Bonanno, resilient outcomes typically provide little need or opportunity for posttraumatic growth. Based on the definition of resilience by Bonanno (2004), resilience and posttraumatic growth have been distinguished on relevant trajectories of functioning. It was suggested that in contrast to individuals exhibiting the resilience trajectory (i.e., having relatively mild and short-lived disruptions and stable trajectory of healthy functioning across time), individuals exhibiting recovery trajectory (i.e., having moderate to severe psychological symptoms initially that decline gradually over time) after a potentially traumatic event were more likely to experience and to report posttraumatic growth (Bonanno, 2005). In addition, Westphal and Bonanno (2007) suggested that

resilient outcomes were less likely to be associated with search for meaning as in PTG, because the tendency to struggle after a traumatic event seemed to be at lower levels for resilient individuals. In sum, the relationship between the two concepts is not clearly delineated but still, both offer a positive perspective to understand psychological outcomes of disasters.

Individuals who are exposed to disasters may suffer from general psychological distress and more severe forms of it such as PTSD and other psychopathologies. Still, some individuals exhibit relatively more effective coping for the adverse effects of disasters and adapt to change created by such potentially traumatic events. Psychological resilience may act as a buffer against these negative effects; therefore, it is important to understand what psychological resilience is and how it is manifested. Focus of the present study is resilience, especially psychological aspects of resilience. The following section presents a review of literature on psychological resilience through presentation of definitions, models/theories, empirical findings and elaborates the concept in detail.

1.3 Psychological Resilience: A Paradigm for Adapting to Adversity

1.3.1 Definitions and Conceptualizations of Psychological Resilience

Defining and conceptualizing resilience has long been the cause of a considerable debate both in theory and in practice (Luthar, Cicchetti, & Becker, 2000). Resilience is derived from the word '*resilio*' which means 'to jump back' in Latin language (Klein, Nicholls, & Thomalla, 2003). It is defined in various ways in different contexts including physical, ecological, social, community, and individual contexts (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). The term is used in various disciplines of science; for example, in civil engineering and metallurgy, to calculate the capacity of materials to return to their original position following distortion or suffering a load (Sztejfman, 2010). UNISDR (2009) defined resilience as

the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Over the last two decades, researchers have begun investigating resilience across a range of contexts. This new focus included definitions and operationalizations of resilience in family (e.g., Walsh, 1996, 2003), health (e.g., ‘body image resilience’, Rudd, 2014), community (e.g., Djalante & Thomalla, 2011), military (e.g., Reivich, Seligman, & McBride, 2011), academic (e.g., Martin, 2013; Martin & Marsh, 2009), business and organizational (e.g., Hamel & Valikangas, 2003), and sports (e.g., Machida, Irwin, & Feltz, 2013) contexts.

In psychology, while the devastation and plight of children during World War II set the stage for the resilience paradigm (Werner, 2000; as cited in Masten, 2014), the resilience paradigm emerged in the 1970s from findings from studies investigating the risk for psychopathology, and a political agenda associated with discontent with prevailing deficit models in psychology (Amering & Schmolke, 2009). The conceptual and empirical understanding of resilience developed since the 1980s, primarily in the fields of developmental psychology, psychopathology, and pedagogy with the seminal work of early researchers. Micheal Rutter (1979, 1987), Emmy Werner (Werner & Smith, 1992) and Norman Garmezy (1985, Garmezy & Rutter, 1983) were affected by the WWII in different ways and played leading roles in the rise of resilience science (Masten, 2014).

The primary focus in early studies of resilience was the personal qualities of children that enabled them to thrive in the face of adversity and risk factors associated with increased probability of various problems and disorders. Emmy Werner conducted groundbreaking studies on children in Kauai, Hawaii (Werner, Bierman, & French, 1971; Werner & Smith, 1977). In these studies, it was found that despite conventional wisdom that high-risk children develop mental and physical health problems, many children exposed to risk factors were resilient in their adult life, developing into caring and confident adults. The pioneering study

by Garmezy (1971) on children of parents with schizophrenia also provided a foundation for understanding resilience, emphasizing the existence of “protective factors” which help individuals to ameliorate the negative impact of adversity. Similar to Werner’s findings, the important finding in the study was that although the risk of developing schizophrenia was increased in those children, the majority did not develop the disorder. In fact, they had good peer relations, academic achievement and successful work histories (Garmezy, 1971, p. 114). These studies were revolutionary in the sense that it focused on individuals who overcame difficulties rather than individuals who succumbed to adverse effects. Extension of this protection by some factors in childhood age into adulthood has also appeared in more recent publications. Cyrulnik (2005), a child psychiatrist and one of the important figures in the development of the resilience paradigm, described that children with stressful experiences can overcome the impact of childhood trauma and grow into secure and creative adults. Similarly, the Swiss family and systemic psychotherapist Rosemarie Welter-Enderlin pointed out research on resilience showing the evidence that negative experiences in childhood do not always shape the person in a negative way in her/his later life in a resilience conference in Zürich in 2005 (Schmolke, 2005).

During the early waves of resilience research, resilient individuals were labeled as “invulnerable”, “hardy” or “invincible” (Werner & Smith, 1992). However, these terms implied a fixed nature of the resilience concept. It also implied that the individual is incapable of being negatively affected (Garmezy, 1993), and the risk evasion was absolute and unchanging although a developmental progression is evident in positive adaptation to exposure to adversity (Luthar et al., 2000). On the origins of the concept of resilience, Earvolino-Ramirez (2007, p. 73) noted that

The origins of the concept of resilience stem from the early psychiatric literature that examined children who appeared to be invulnerable to adverse life situations. Over time, the term “invulnerable” was replaced by the term “resilience”, and a new area of theory and research was born.

Following the lead by early researchers, a great deal of research emerged in the later decades, and resilience inquiry flourished. Research on resilience expanded its focus and included multiple adverse conditions such as socioeconomic disadvantage and associated risks, urban poverty, community violence, maltreatment, parental psychopathology, chronic illness, and catastrophic life events (Luthar et al., 2000).

Richardson (2002) pointed out that resilience inquiry did not emerge from a grounded theory, rather it emerged from the identification of characteristics of individuals, mostly young people, living in high-risk environments. Three waves of resilient inquiry were identified by Richardson (2002). In the first wave, identification of resilient qualities, assets and protective factors which facilitate positive adaptation of individuals in the face of adversity was the focus of research. It searched for an answer to the question “What characteristics mark people who will thrive in the face of risk factors or adversity as opposed to those who succumb to destructive behaviors?” (p. 308). The second wave related to the processes of attaining resilient qualities described in the first wave. Resilience became defined as a process of coping with adversity, change, or opportunity. This change in the inquiry was also emphasized by Luthar et al. (2000) who mentioned that the focus of resilience has changed in the early 1990s with a shift from the search for factors protecting individuals from stressors to the search for processes through which individuals overcome stressful experiences. Later, third wave of “innate resilience” emerged with an aim to discover motivational forces within individuals and groups that drive them toward self-actualization and resilient reintegration from disruptions and to create experiences fostering the activation and utilization of the motivational energy. These waves were also evident in the field of developmental resilience, as discussed by Masten (2007). The contribution of the initial waves provided clues to “hot spots” and gave rise to the fourth wave of integrating research “focused on integrating the study of resilience across levels of analysis, across species, and across disciplines” (Masten & Obradovic, 2007, p. 23). This wave has been considered to carry the potential to bring the past research into the future through integrative studies.

Cutuli and Masten (2009) emphasized that in general, resilience research has focused on three distinct situations: (1) good functioning despite adversity (“stress resistance”), (2) returning to previous levels of good functioning following exposure to adversity (“bouncing back”), and (3) achievement of new levels of positive or normal adaptation following improvement of adverse conditions (“normalization”).

In psychology, the focus of resilience paradigm is on the individual. Fletcher and Sarkar (2013) emphasized that “it is the study of psychological resilience that seeks to understand why some individuals are able to withstand – or even thrive on – the pressure they experience in their lives” (p. 12). Numerous definitions and conceptualizations regarding resilience appear in the literature; despite most of the definitions are based on concepts of ‘adversity’ and ‘positive adaptation’ (Fletcher & Sarkar, 2013). Positive coping, persistence, adaptation, and long-term success despite adverse circumstances are often considered to be synonymous with resilience (Winfield, 1994). Some other definitions also appear in the literature. For example, Lösel (2005) defined resilience in terms of processes of protection, repair, and regeneration in analogy to biological processes. Amering and Schmolke (2009) asserted that resilience was used to imply the power to resist, mental elasticity and regaining the former mental stability following a stressful period or event in clinical psychology and psychotherapy. Kelley and Pransky (2013) equated psychological resilience with inner health and asserted that “innate resilience...is the essence of a balanced, healthy state of mind evidenced by the logic of fundamental principles that appear to account for all human experience” (p. 2). Nevertheless, there is seemingly no consensus between researchers on the definition of resilience.

Table 1.2 lists some of the commonly cited definitions in the psychology literature. Looking at the definitions in this table, it is evident that each definition of resilience provided by researchers appears to distinctly relate to traits, outcomes or processes. Specifically, while some definitions focus on traits and qualities of resilient individuals, others tend to focus on resilient outcomes

including lack of PTS and some others focus on processes such as coping and adaptation following the traumatic events. In addition, a further distinction may be made between psychological resilience as a general individual trait and psychological resilience following adversity as a dynamic process (Tedeschi & Kilmer, 2005), as there is also difference between psychological resilience following traumatic or normative events (Davey et al., 2003). The latter, psychological resilience following adversity, can be understood in terms of resilience processes. Although this distinction is not clearly made in many empirical studies including the present study, it is important to keep in mind that different conceptualizations of resilience may be referring to different elements of the concept (e.g., resilient attributes, outcomes, or processes). The debates on conceptualization of resilience presented in the following paragraphs can also be understood in terms of these distinctions. In the present study, psychological resilience is conceptualized both as an individual attribute and an outcome following the earthquakes; and it is defined as the ability to bounce back from and withstand adversities and threatening situations by maintaining healthy levels of psychological functioning. Specifically, low levels of posttraumatic distress and resilience as measured by the ability to cope with stress are used as indicators of psychological resilience.

Table 1.2 A list of definitions of resilience

Author(s)	Definition
Rutter (1987, p. 316)	“Protective factors which modify, ameliorate or alter a person’s response to some environmental hazard that predisposes to a maladaptive outcome”
Masten, Best, & Garmezy (1990, p. 426)	“A process, capacity or outcome of successful adaptation despite challenges or threatening circumstances. Resilience is described by three kinds of phenomena: good outcomes despite high risk status, sustained competence under threat and recovery from trauma”
Garmezy (1991, p. 459)	“The capacity for recovery and maintained adaptive behavior that may follow initial retreat or incapacity upon initiating a stressful event”
Luthar et al. (2000, p. 543)	“A dynamic process encompassing positive adaptation within the context of significant adversity”
Connor & Davidson (2003, p. 76)	“The personal qualities that enables one to thrive in the face of adversity”
Masten (2001, p. 228)	“A class of phenomena characterized by good outcomes in spite of serious threats to adaptation or development”
Wagnild & Young (2003, p. 165)	“A personality characteristics that moderates the negative effects of stress and promotes adaptation”
Walsh (2003, p. 1)	“A ability to withstand and rebound from disruptive life challenges...involves key processes over time that foster the ability to ‘struggle well’, surmount obstacles, and go on to live and love fully”
Bonanno (2004, p. 20)	“An ability of adults in otherwise normal circumstances who are exposed to an isolated or potentially highly disruptive event, such as the death of a close relation or a violent or life-threatening situation, to maintain relatively stable healthy levels of psychological and physical functioning. Resilience is more than the simple absence of psychopathology”

Table 1.2 (continued)

Tugade & Fredrickson (2004, p. 320)	“Effective coping and adaptation although faced with loss, hardship, or adversity”
Agaibi & Wilson (2005, p. 198)	“A good outcome regardless of high demands, costs, stress, or risk...sustained competence in response to demands that tax coping resources”
Leipold & Greve (2009, p. 41)	“An individual’s stability or quick recovery (or even growth) under significant adverse circumstances”
Butler, Morland, & Leskin (2007, p. 402)	“Resilience may be seen in a recovery trajectory that involves a return to baseline functioning following challenge”
Pooley & Cohen (2010, p. 34)	“The potential to exhibit resourcefulness by using available internal and external resources in response to different contextual and developmental challenges”
American Psychological Association (2013)	“The process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress — such as family and relationship problems, serious health problems, or workplace and financial stressors”
Kotzé & Niemann (2013, p. 94)	“Both internal and external protective factors that assist individuals in overcoming or avoiding the negative trajectories associated with risks”

1.3.1.1 Debates on the Conceptualization of Psychological Resilience

In the literature, there are a number of ongoing debates on how to conceptualize psychological resilience. Different researchers focus on resilience from different viewpoints. Here, some current debates in the literature are presented. These include debates on whether resilience is a process or an outcome, whether it is a process or a trait, how it is different from vulnerability, and whether it is an inborn trait or an acquired competency. Moreover, as opposed to researchers conceptualizing resilience as a stable outcome, there are researchers advocating the conceptualization of resilience as a trajectory.

As reflected as a distinction in the focus on definitions of resilience, one important debate on the conceptualization of resilience is whether resilience is a process or an outcome. Kaplan (1999) discussed that the definitions of resilience in the literature fall into two broad categories: resilience as a desired outcome and resilience as a process leading to a desired outcome. Listing the definitions by several authors from 1991 to 2005, Manyena (2006) suggested that there has been a gradual refinement in the conceptualization of definitions from more outcome-oriented to more process-oriented definitions. Rutter (1987) argued that resilience can be understood in terms of processes rather than static factors. Deriving from the developmental systems theory, resilience cannot be viewed as a single trait because it involves many systems from individuals to families to societies (Cutuli & Masten, 2009). Rather, it results from many interactions both within the individual and between the individual and the environment; therefore, any effort to operationalize resilience as a universal trait is misguided.

Masten (1994) emphasized that the term *resilience* is process-oriented; on the other hand, the term *resiliency* focused on an individual's internal traits. However, these two terms have also been used synonymously by some researchers (Miller, 2003). In fact, one of the earliest conceptualizations of the resilience construct in psychological literature is development of the concept of ego-resiliency (Block & Block, 1980; Block & Kremen, 1996) which reflected

the strength and maturity of the ego in the face of adversity. Block (1980) theorized ego-resiliency as a central personality construct offering adaptive flexibility; it was defined as “the dynamic capacity of an individual to modify his or her modal level of ego control, in either direction, as a function of the demand characteristics of environment” (p. 48). Highly ego-resilient individuals could adapt their level of control temporarily up and down based on the environmental conditions compared to individuals with low levels of ego-resiliency who were more likely to behave in a maladaptive manner. As a result, these individuals were conceptualized to be more likely to experience self-confidence, positive affect, and overall psychological adjustment (Block & Kremen, 1996).

A third major debate in the literature concerns the difference between resilience and vulnerability and whether the two concepts can be defined in relation with each other. “The concept of vulnerability emerged in the 1970s and was promoted by the environmentalist movement” (Furedi, 2007, p. 487). Furedi asserted that vulnerability is a state of being that precedes a disaster; a society makes meaning of an adversity through this cultural metaphor and a wide variety of group identities are marked using vulnerability (for example, women, the elderly). Miller and colleagues (2010), from a social-ecological perspective, aimed to determine whether resilience and vulnerability were conflicting or complementary concepts. They concluded that although both approaches are concerned with how systems respond to change, systems are considered quite differently in each approach. Resilience and vulnerability researchers often adopt different starting points, guiding questions and frameworks; nevertheless, they may address similar themes and problems. The interaction between vulnerability and resilience currently attract the attention of researchers from various disciplines. For example, in the three-hit concept of vulnerability and resilience within the epigenetic field of studies (Daskalakis, Bagot, Parker, Vinkers, de Kloet, 2013), it has been asserted that vulnerability is enhanced in a given context when failure to cope with adversity accumulates. On the other hand, when relatively mild adversity is experienced in early life, individual is prepared for the future and resilience is promoted in later life. However, when a mismatch occurs

between experiences in early and later life, coping fails and vulnerability is proposed to enhance.

A further issue concerned the issue of nature or nurture, namely whether resilience is an inborn trait or an acquired competency (Harvey & Delfabbro, 2004). The authors asserted that the early idea of psychosocial immunity emerged from the studies showing that many young people seemed invulnerable to hardships and were able to adapt and function successfully despite these challenging circumstances; however it was later shown in a number of studies that the extent to which these people could overcome adversities were indeed limited and also young people coping successfully in a given situation did not necessarily show the similar success in other contexts.

Resilience has also been conceptualized in the literature as a trajectory following trauma. Watson and Neria (2013) discussed that resilience is a functional trajectory but not a fixed attribute; it depends on the quality of stressor, the surrounding culture and circumstances, and individual variations in response to risk. An individual who has exhibited resilience in response to an event may not be resilient at other times in the face of adversity. Rutter (1987) also described resilience as an interactive process in which resilience has to be inferred from individual variations in outcome following significant stress or adversity. Therefore, achieving a better understanding of those variations would be important to infer resilience in individuals.

Resilience, as a trajectory, has been discussed in relation to different functional outcomes following adversity. O'Leary and Ickovics (1995) identified four potential consequences following psychological trauma: succumbing (characterized by a continued downward slide which ultimately ceases), survival with impairment (characterized by a post-event diminution in functioning and a failure to return to baseline functioning), recovery (resilience), and thriving (postevent adaptation that exceeds pre-event levels). In their classification, resilience was not the same thing as thriving but a synonym for recovery from

trauma. Similarly, it was suggested that resilience may be seen in a recovery trajectory involving a return to baseline functioning after experiencing a challenge and that resilient people are less vulnerable and “bend rather than break in the face of adversity” (Butler, Morland, & Leskin, 2007, p. 402). According to Bonanno (2004; 2005), resilience is one of the four prototypical trajectories observed following traumatic events along with recovery, chronic dysfunction, and delayed dysfunction. These prototypical trajectories represent the individual variation in response to potentially traumatic events. Recovery is characterized by initial elevations in psychological symptoms in moderate to severe levels that decline over the course of many months. In resilience trajectory, initial, brief spikes in psychological distress may be observed. Resilient individuals nonetheless maintain functioning effectively at or near normal levels. Recently, Bonanno and Diminich (2013) proposed two other trajectories of positive adjustment: emergent resilience and minimal-impact resilience. Emergent resilience refers to positive adjustment in response to chronically stressful circumstances. It is typical to observe this trajectory after the stressful circumstances have abated. On the other hand, the minimal-impact resilience represents the trajectory following a single-incident trauma and “suggests little or no lasting impact on functioning and a relatively stable trajectory of continuous healthy adjustment from before to after the PTE” (p. 380). Resilience trajectories are examined in the literature using longitudinal research methods which are beyond the scope of the present study.

Studies addressing resilient outcomes following a traumatic event suggest that resilience is not uncommon in individuals. Discussing psychological reactions to loss or to violent and life-threatening events, Bonanno, Westphal, and Mancini (2011) cited several studies on populations of bereaved spouses, hospitalized survivors of the severe acute respiratory syndrome (SARS) epidemic in Hong Kong, persons admitted for surgery following a traumatic injury, etc. In these studies, rates of resilience ranged between 35% and 71.9%. Defining resilient individuals as displaying initial symptoms and becoming nonsymptomatic, Hobfoll et al. (2009) found that 13.5% of Jews and Arabs in Israel undergoing

threat of mass casualty exhibited the resilience trajectory. In an 8-year prospective cohort study about trajectories of PTSD risk and resilience following the World Trade Center terrorist attacks, Pietrzak and colleagues (2014) found relatively higher rates; 77.8% of 4035 police responders and 58.0% of 6800 non-traditional responders including workers from various occupations were characterized in resilient/resistant trajectory.

To conclude, there are many efforts to conceptualize and theorize psychological resilience with large number of researchers proposing various definitions. In addition, there are debates going on in the literature regarding how to conceptualize resilience; is resilience a stable trait, a process, or an outcome? The field has no definite answer. Furthermore, these debates are also complicated with other conceptualizations including trajectories. Nevertheless, empirical studies show that it is commonly observed following adversity. Hence, the field still needs an increased number of empirically validated theories/models tested on community members and traumatized populations, and also in disaster contexts. This definitely requires an appropriate assessment of psychological resilience. The next section addresses what may be assessed as resilience and how resilience may be assessed.

1.3.2 Methods for Operationalizing and Assessing Psychological Resilience

The rapid development in understanding human response and functioning in the face of adversities and the need to empirically validate theories and models constructed to better understand resilience necessitates appropriate ways of assessment for resilience. But how should the resilience construct be assessed? Resilience researchers have relied on diverse strategies to be able to assess resilience such as using standardized measures or currently, developing objective testing methods.

These methods used by researchers basically depend on how resilience is defined by those researchers. There are large number of studies which used absence of psychopathology to define resilience and hence to assess it. Resilience was shown

in a vast majority of studies to be inversely associated with measures of psychopathology such as the absence of PTSD (e.g., Hobfoll, Mancini, Hall, Canetti, & Bonanno, 2011; Streb, Haller, & Michael, 2013), depression (e.g., Engmann, 2013; Gito, Ihara, & Ogata, 2013; Yu, Stewart, Liu, & Lam, 2013), and alcohol misuse (Green, Beckham, Youssef, & Elbogen, 2014) in diverse samples. Although the use of scales or questionnaires for assessing psychopathology is quite common, evidence is mixed in terms of the relationship between resilience and psychopathology. Similarly, Bonanno (2012) also stressed out that defining resilience as the absence of psychopathology is one of the misuses of the resilience construct and that many individuals exposed to PTEs do not exhibit pathological responses and researchers must be cautioned against lumping together all individuals who did not show pathology into a single resilience category. In addition to measures of psychopathology, consistent with trait-based definitions of resilience, psychological resilience has also been assessed by investigating relevant individual traits such as hardiness, optimism, and spirituality. More process-based assessments are also existent with examples of studies in which resilience is measured by indices of change in positive adjustment and healthy functioning following the traumatic event. Tedeschi and Kilmer (2005) offered a more comprehensive framework for assessment and emphasized that the protective influences stem from multiple levels of an individual's context, that is individual, family, and community. Therefore, rather than assessing resilience per se (e.g., by focusing only on qualities of the individual), "it may be more appropriately framed as seeking to assess factors associated with positive adjustment, competence in core domains, and healthy outcomes under adversity" (Tedeschi & Kilmer, 2005, p. 232).

Resilience has been assessed by numerous authors using checklists, scales, or interviews to assess risk and protective factors, and other potential protective factors that may be related to positive adjustment (Tedeschi & Kilmer, 2005). The empirical literature is especially limited due to an over-reliance on self-report measures of resilience for assessment, specifically in studies on psychological aspects of resilience. Although few, there are a number of measures of resilience

in adult populations. Fewer (Connor-Davidson Resilience Scale, Resilience Scale for Adults, and ER-89) are translated into Turkish for use in populations from Turkey. Windle, Bennett, and Noyes (2011) provided a methodological review of fifteen resilience measurement scales. They concluded that there was no ‘gold standard’ amongst those measures. Overall, the measures developed for adults (Connor-Davidson Resilience Scale, the Resilience Scale for Adults, and the Brief Resilience Scale) tended to achieve higher quality assessment scores, but the quality of these measures was only moderate when all quality criteria were considered. However, criticisms on the use of self-report measurements continue because “individuals are unlikely to be perfect judges of their own resilience” (Campbell-Sills, Cohan, & Stein, 2006). Table 1.3 on page 33 presents a brief list of widely-used self-report resilience measures for adult populations. In addition to the limitation caused by a reliance on self-report instruments, researchers also heavily relied on cross-sectional data, leading to an inability of researchers to examine causal relations between resilience and adjustment (Bonanno, 2012).

More recently in the past decade, qualitative studies on resilience have begun to flourish. For example, Sossou, Craig, Ogren, and Schnak (2008) conducted a qualitative study to understand resilience factors in Bosnian refugee women. Jude and Miriam (2013) employed a case-study approach to investigate resiliency of women survivors of the 2004 tsunami in South India. Hussen and colleagues (2014) used a multi-method qualitative study to examine factors promoting resilience among patients with HIV in Ethiopia. Although the numbers of these studies still appears to be lower compared to studies utilizing quantitative methodology, the qualitative methods seem increasingly promising for resilience research.

Table 1.3 Self-report adult resilience measures in common use

<i>Instrument</i>	<i>Original study</i>	<i>Brief description</i>
Dispositional Resilience Scale	Bartone (1989)	The instrument was designed to measure psychological hardiness in commitment, control, and challenge domains.
Resilience Scale	Wagnild & Young (1993)	The instrument measures an individual's capacity to live a full and rewarding life. It was developed to explore five essential characteristics of resilience: meaningful life (purpose), perseverance, self reliance, equanimity, and coming home to yourself (existential aloneness).
Ego Resiliency Scale (ER-89)	Block & Kremen (1996)	The 14-item instrument measures ego resiliency.
Connor-Davidson Resilience Scale	Connor & Davidson (2003)	The instrument measures stress-coping ability of individuals.
Resilience Scale for Adults	Friborg, Hjemdal, Rosenvinge, & Martinussen (2003)	The instrument examines central protective resources for healthy adjustment. It covers three main categories of resilience: personal competence, social competence, family coherence, social support, and personal structure.
Adult Resilience Indicator	Visser (2007)	The instrument measures presence or absence of resilience promoting and hindering factors. The subscales are confidence and optimism, positive reinterpretation, facing adversity, social support, determination, negative rumination, religion, and helplessness.
Brief Resilience Scale	Smith et al. (2008)	This six-item unidimensional instrument was developed to assess the ability to bounce back or recover from stress.
Devereux Adult Resilience Survey	Mackrain (2008)	The instrument measures personal strength of individuals in domains of relationships, internal beliefs, initiative, and self control.
Trauma Resilience Scale	Madsen & Abell (2010)	The instrument is a measure of positive adaptation following violence, focusing on domains of creative problem solving, supportive relationship, optimism, and spirituality.

The measures in the table above are directed as different aspects of resilience, i.e. trait, process, or outcome. For example, Resilience Scale for Adults (Friborg et al., 2003), Adult Resilience Indicator (Visser, 2007) and Devereux Adult Resilience Survey (Mackrain, 2008) seem to focus on resilience as both a process and a trait. On the other hand, Dispositional Resilience Scale (Bartone, 1989), Ego Resiliency Scale (Block & Kremen, 1996) and Connor-Davidson Resilience Scale (Connor & Davidson, 2003) addresses resilience as a personal trait.

The use of relatively more accurate assessment methods such as measures which capitalize on informant people or coding of responses in stressful situations by expert judgments was also among proposals for the assessment of resilience (Campbell-Sills et al., 2006). From this line of thought, efforts have been shown to delineate more objective markers of resilience in the last decade. For example, Charney (2004) developed a psychobiological model of resilience and vulnerability in extreme stress conditions in which eleven possible neurochemical, neuropeptide, and hormonal mediators of the psychobiological response to extreme stress were identified.

1.3.3 Theories/Models of Psychological Resilience

In this section, theories/models relevant for the understanding of adult psychological resilience are presented. In addition to an electronic literature search for published papers in relevant databases (e.g., EBSCOhost, MEDLINE, PsycINFO), the compilation of models was also aided by the list of resilience theories in the review paper *Psychological resilience: A review and critique of definitions, concepts, and theory* by Fletcher and Sarkar (2013, pp. 18-19). Nevertheless, readers should be cautioned that models of psychological resilience may not be limited to the efforts on conceptualization of resilience cited here. In addition, the review is limited with theories and models focusing on resilience following adversity and traumatic events. There are more specific conceptual models in the literature for family resilience (Walsh, 1996), sport resilience (e.g., Fletcher & Sarkar, 2012), nursing resilience (Gillespie, Chaboyer, Wallis, &

Grimbeek, 2007; Polk, 1997), police officer resilience (e.g., “the stress shield model” by Paton et al., 2008), resilience of military families (Palmer, 2008), resilience and well-being of medical students (Dunn, Iglewicz, & Moutier, 2008) and so on, which are not covered in the present section.

The present study is especially guided by two highly-cited frameworks in the literature. The first framework is the Multivariate Risk Factor Model by Freedy, Kilpatrick, and Resnick (1992a). In this model, mental health outcomes are conceptualized as resulting from a broad range of risk factors before, during, and after natural disasters. These factors influence subsequent adjustment and adaptation. The model recognizes the necessity of both a time frame and an interaction of a range of factors in predicting adjustment after disasters. Interactions between individual, environmental, and disaster-related factors determine adjustment following disasters (Freedy et al., 1992a). The second framework guiding the current thesis work is the general conceptual framework of the coping, resilience, and growth (Holahan, Schaefer, & Moos, 1996; Moos & Schaefer, 1993; Schaefer & Moos, 1992). This framework suggests that the environmental and personal factors influence the life crises and transitions faced by individuals. The environmental factors are composed of ongoing life stressors and social coping resources. The personal factors include socio-demographic characteristics and personal coping resources (i.e., self-efficacy, optimism, hardiness, sense of coherence, and an internal locus of control). Both directly and indirectly through cognitive appraisals and coping processes, these all influence and shape health and well-being. In each stage, reciprocal relationships are possible. Situations of novel crisis promote new coping skills and these can lead to new personal and social resources; facing with stressful situations and coping with them effectively causes resilience to develop (Holahan, Schaefer, & Moos, 1996). Basic elements of this framework are presented in Figure 1.1.

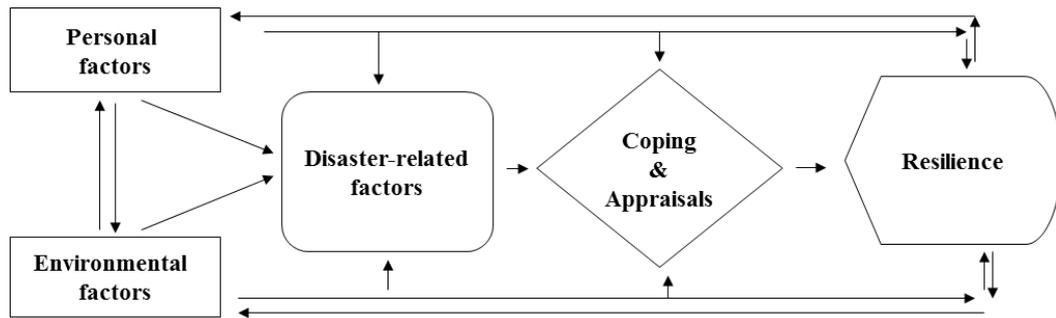


Figure 1.1 Model of life crises and personal growth (adapted from Schaefer & Moos, 1992)

Mancini and Bonanno (2009) developed the hypothesized model of resilience which share common elements with the abovementioned model by Schaefer and Moos (1992) discussed above. In this model, individual differences directly and indirectly effect coping with loss, and these effects are channeled through two processes, appraisal processes and social support, which are associated with each other. The effects of exogenous resources on coping are mediated through social support. Coping with loss and resilience are linked with a two-headed arrow; they both influence each other. Individual differences including personality variables (self-enhancing biases, repressive coping, dismissive attachment, and optimism), a priori beliefs, identity complexity, positive emotions, and comfort from positive memories are individual-level factors associated with resilience.

A recent framework is the Resilience Activation Framework by Abramson and colleagues (2014). It provides a basis for how access to social resources promotes well-being and resilience in post-disaster setting at the individual and community level. Resilient attributes (latent measures of human, political, social, and economic capacities and resources) both at the community and the individual level are suggested to be deployed by individuals and communities faced with stressors. Access to or engagement with social resources is suggested to activate inherent individual resilience attributes. Social support, including family cohesion/warmth, strong social networks, and connecting and bonding with others, is used in this framework as a potential activator of resilience.

Jang and Wang (2009) investigated and modeled disaster resilience in a Hakka community in Taiwan. In this study, they defined resilience as an ability to maintain pre-disaster levels of functioning, show successful adaptation, and foster posttraumatic growth. In the model, protective factors at the personal and community levels and post-disaster life events were formulated as mediators between the experience of natural disasters and disaster resilience. Personal-level protective factors included acceptance, disaster preparedness, self-reliance, and spirituality. Community-level protective factors included Hakka spirit including characteristics such as sense of responsibility, self-reliance, persistence, and frugality, resource availability, social support networks, and the process of serving others. These factors were positively related with each other and with disaster resilience. On the other hand, post-disaster life events negatively influenced disaster resilience.

There are also a number of models and theories in the literature focusing on several multiple factors associated with resilience. In an early process-based and socio-ecological model by Garmezy (1991) for understanding resilience, the dynamic interactions between protective factors and risk factors on levels of individual, family, and environment were described. Individual characteristics such as temperament and intelligence, family and the extent of support provided to the child, and external support from the environment were the three factors Garmezy (1991; as cited in Malhi, 2012) believed to play an important role in resilience. Resilience is viewed as a process in the model and individuals are empowered to shape their environment and to be shaped by their environment in turn. A similar framework which focused on the protective factors was of Werner's (1995). She distinguished three contexts for protective factors: (a) individual characteristics, including good communication and problem solving skills, ability to recruit substitute caregivers; (b) the family, such as having close bonds with at least one family member or an emotionally stable parent that encourage trust, autonomy, and initiative; and (c) the community which reinforce and reward the competencies of resilient children.

A transactional framework was developed by Kumpfer (1999) which allows for interaction between the resilient person and his/her high risk environment including both process and outcome constructs. In the resilience framework which have been tested in several empirical studies, six major cluster variables were identified including four domains of influence and two transactional points between domains, all of which were suggested to be predictive of resilience in individuals in research studies. The four influence domains were the acute stressor or challenges, the environmental context, internal characteristics of the individual and positive outcomes. Transactional points are the person-environment transactional processes and the person-outcome transactional processes.

In Agaibi and Wilson's (2005) generic model of resilience in response to psychological trauma, specific stressor dimensions (e.g., duration, severity, degree of threat, etc.), subjective experience of traumatic stressors (e.g., degree of affect dysregulation), types of stressor (single, multiple, complex, etc.), level of stressor impact (e.g., threat, injury, exposure, etc.), type of allostatic load (e.g., repetitive system failure, etc.), and level of affect dysregulation (i.e., negative or positive affect balance) are presented as the characteristics of traumatic life events. They discussed that traumas vary greatly in their stressor dimensions and it is critical to recognize the multidimensional nature of traumatic experiences in order to understand the plasticity of behavioral responses to such experiences. Many classes of variables including impact to personality, self structure, and ego-processes caused by trauma, and activation of allostatic stress response work together to produce a continuum of adaptive behavior and different degrees of resilient behavior (Agaibi & Wilson, 2005, p. 209). In this model, resilience is viewed as a continuum from low resilience to high resilience where ends of the continuum correspond to minimal coping and optimal coping, respectively.

Van Vliet (2008) formulated a grounded theory of shame and resilience in adulthood. It was postulated that shame plays a role in various psychological disorders and has a debilitating effect on adjustment. Therefore, the researcher

aimed to understand resilience in the face of shame which was conceptualized as an assault on the self. In this model, experiencing shame emotion threatens the individual's self-concept, social connection, and sense of power and control. Bouncing back from this adversity occurs through a process of self-construction including a core category of rebuilding of the self and subcategories of connecting, refocusing, accepting, understanding, and resisting.

In the literature, coping has been emphasized in some models of resilience. For example, Leipold and Greve (2009) outlined an integrative model of coping, resilience and development in which they viewed resilience as a conceptual bridge between coping and development. Defining resilience as the individual stability under significant adverse conditions, authors proposed that coping processes such as assimilation and accommodation influenced by personal and situational conditions result, to a large degree, in resilience in adulthood.

The importance of social context for resilience is addressed in some models. In a recent model proposed with an effort to develop a measuring tool for resilience, Hoijsink, te Brake, and Dücker (2011) suggested that the positive effect of psychological resilience on the degree of being affected by a disaster, adoption of a behavior, and search for information is mediated through social context (indicated by social optimism, social support, and attachment to place) and trust in government and information.

There are also some trajectory models of resilience. A highly cited model of resilience is the resiliency model by Richardson and colleagues (Richardson, Neiger, Jensen, & Kumpfer, 1990; Richardson, 2002). This model is similar to trajectory models of resilience. In this model, individuals are considered to encounter different reintegration outcomes following adversity. The four types of reintegration are resilient reintegration, return to biopsychospiritual homeostasis, reintegration with loss, or dysfunctional reintegration. "Resilient reintegration is to experience some insight or growth through disruptions" (Richardson, 2002, p. 312). In reintegration back to homeostatis, individual is healed and "just gets

past” a disruption while in reintegration with loss, some motivation, hope or drive is lost because of disruption. When people resort to dysfunctional ways of coping such as substance abuse or destructive behaviors to deal with life prompts, dysfunctional reintegration occurs. One model based on this Resiliency Framework is Machida et al.’s (2013) model of resilience after traumatic injury which was developed after interviewing twelve male quadriplegic wheelchair rugby players. In this model, development of resilience was sought to be a multifactorial and interactive process. This process involved pre-existing factors and pre-adversity experiences, disturbance/disturbing emotions, multiple sources and types of support, special opportunities and experiences, various behavioral and cognitive coping strategies, motivation to adapt, and gains from the resilience process. No factor is the sole determinant of resilience; the interaction between processes in the model characterized resilient integration.

Rutten et al. (2013) also provided a model of resilience and trajectories of risk and resilience. In the model, the level of an individual’s well-being is illustrated as declining in response to severe adversity. In this model of resilience, mental health disturbance following trauma is followed by mental health recovery as time passes. It was suggested that there is variance between individuals in the level of mental well-being before the exposure, the speed and severity of mental health disturbance in response to the exposure, the speed and timing of mental health recovery and level of mental health and well-being after the exposure-related disturbance and recovery.

There have been also efforts to better understand and categorize resilience theories and models. Fergus and Zimmerman (2005) postulated that researchers have identified three models of resilience: compensatory, protective, and challenge. In a compensatory model, a protective factor counteracts or operates in an opposite direction of a risk factor and its effect is independent from the effect of the risk factor. On the other hand, assets or resources moderate or reduce the effects of a risk factor on a negative outcome in the protective factor model. Luthar et al. (2000) further defined protective-stabilizing and protective-reactive

models. In protective-stabilizing models, a protective factor neutralizes the effects of a risk factor. In protective-reactive models, a protective factor helps to diminish the correlation between risk and negative outcomes. Brook and colleagues (1986, 1989; as cited in Fergus & Zimmerman, 2005) also posited protective-protective models in which the effect of a protective factor in producing an outcome is enhanced by another protective factor. Finally, a curvilinear relationship exists between a risk factor and an outcome; exposure to low and high levels of a risk factor are associated with negative outcomes but exposure to moderate levels are associated with less negative (positive) outcomes.

To summarize, there is no unitary theory or model of psychological resilience following adversity agreed upon by researchers. Some theories view resilience as a process while other theories view it as an outcome of the life prompts. In some theories such as the resiliency theory by Richardson (2002), resilience is equated with growth or “bouncing-back” in some models such as Rutten et al.’s (2013) model of resilience. Although theories seem to share elements including bouncing back to pre-trauma psychological functioning or optimal coping, there are still a high number of theories and models constructed to define and conceptualize psychological resilience, possibly to due the complex nature of the concept. The models and theories of resilience addressed in this section provide foundation for understanding resilience. Based on those models and theories, various factors have been tested in empirical studies. The following section presents an overview of empirical research findings about resilience in the literature.

1.3.4 Factors Associated with Psychological Resilience

It is important to gain an understanding of the factors that are associated with resilience in order to understand, assess, and finally facilitate resilience. This section provides an overview of factors found in empirical studies as associated with psychological resilience. Multivariate studies show that there is not a single

dominant factor predicting resilience (Bonanno, Brewin, Kaniasty, & La Greca, 2010). Resilience researchers have studied many potential protective and promotive factors with an effort to account for better outcomes in the context of risk or adversity (Cutuli & Masten, 2009). Protective factors are risk-moderating factors, they show a special effect when the level of adversity is high. On the other hand, promotive factors are more general, they are associated with good outcomes regardless of exposure to risk or adversity.

Consistent with the aims of the present study, both protective and promotive factors which were shown to be associated with psychological resilience in empirical studies were reviewed and summarized below. Order of the subtitles in this section is arranged according to the panels in the model by Schaefer and Moos (1992). Factors specified for other specified typologies of resilience such as health resilience or community resilience were excluded since they are beyond the scope of this thesis work.

1.3.4.1 Individual/Personal Factors

Certain individual or personal factors have been shown to be associated with psychological resilience. *Sociodemographic variables* such as age, gender, race-ethnicity, and educational attainment have been found to be consistently associated with psychological resilience. In a comprehensive review on disaster studies, Norris et al. (2002a) mentioned that female gender, middle age, ethnic minority status, and prior psychiatric problems were associated with more adverse outcomes. In studies by Bonanno and colleagues, older age (Bonanno, Galea, Bucciarelli, & Vlahov, 2006; 2007; Bonanno & Mancini, 2008), male gender, being Asian (vs. Whites) (Bonanno et al., 2007), high levels of education (Bonanno et al., 2006) were found to be related to psychological resilience. However, when other demographic factors, i.e. exposure, resources, and life stress were controlled, low levels of education (Bonanno et al., 2007) were found to be related to resilience. Campbell-Sills, Forde, and Stein (2009) showed that higher level of education, male gender, and higher income predicted

psychological resilience. On the other hand, in the study by Johnston et al. (2009), younger age was associated with resilience. In a more recent study, male gender and older age were associated with higher resilience in patients of cancer (Cohen, Baziliansky, & Beny, 2014). Pietrzak et al. (2014) found that greater education and non-Hispanic identity were protective against symptom trajectories. To conclude, psychological resilience is shown to be associated with a range of sociodemographic variables. There seems to be consensus on the relationship between male gender or higher income and resilience; however, there are some inconsistencies on age and education variables, warranting further studying.

Personality factors, including sense of coherence, hardiness, and dispositional optimism, were frequently demonstrated to be correlates of resilience (Lepore & Revenson, 2006). In a Turkish study on resilience following the 1999 Marmara earthquake, self-esteem, dispositional hope and optimism indirectly influenced resilience via positive affect and life satisfaction (Karairmak, 2007). Gito et al. (2013) also emphasized that self-esteem and hardiness were positively correlated with resilience. Assessment of personality using the Big Five model is widespread across personality studies; this model is validated and supported in empirical research across different cultures (McCrae & Costa, 1997). In the Big Five model, individual differences in personality are described by five factors: openness to experience, agreeableness, extraversion, conscientiousness, and neuroticism which is also referred to as lack of emotional stability. Studies investigating the relationship between these personality factors and resilience often demonstrated a positive relationship between extraversion, openness to experience, conscientiousness, agreeableness, and optimism and a negative relationship with neuroticism or emotional instability (e.g., Davey et al., 2003; Furnham, Crump, & Whelan, 1997; Karanci et al., 2012a; Riolli, Savicki, & Cepani, 2002). Conscientiousness, agreeableness, and openness to experience were also shown in Turkish samples to be associated with growth experiences following traumatic experiences (Karanci et al., 2012b). However, openness was negatively related with resilience in the study by Furnham et al. (1997). Friborg,

Barlaug, Martinussen, Rosenvinge, and Hjemdal (2005) found that subscales of the Resilience Scale for Adults (RSA) were positively correlated with some personality factors. Emotional stability, which was indicated by absence of neuroticism, was significantly and positively correlated with RSA-personal strengths (perception of self and perception of future). Conscientiousness was correlated with RSA-perception of future and RSA-personal structure. Social competence subscale of RSA was strongly associated with extraversion and agreeableness; and RSA-social resources was associated with agreeableness, indicating a possible relationship between a supporting, reinforcing social network and authentic, trusting, empathic personality. Therefore, psychological resilience is mostly associated in the literature with relatively positive personality characteristics including optimism, extraversion, agreeableness, and conscientiousness, and negatively associated with neuroticism.

Intelligence is another factor studied within resilience research. In the study by Friberg et al. (2005), resilience and social intelligence was positively related; however, although insignificant and negligible, there was a slight negative relation between resilience and cognitive intelligence contrary to the expectations of the authors'. They discussed that this result was consistent with what Werner (1993) and Vaillant and Davis (2000) stated; resilient individuals were not necessarily intelligent but had the ability to adapt effectively, and adolescents with lower levels of IQ were equally successful in adulthood and late life as people with higher IQ levels. The conclusion made was that using measures of intelligence as indicators of resilience may be problematic. In addition, emotional intelligence has also been shown to be associated with resilience. In the study by Schneider, Lyons, and Khazon (2013), ability-based aspects of emotional intelligence facilitated resilient psychological and physiological responses.

Positive emotions have been also viewed as building blocks of psychological resilience (Mancini & Bonanno, 2009; Rutten, 2013) and were shown to buffer resilient individuals against negative outcomes following crises (Frederickson, Tugade, Waugh, & Larkin, 2003). Resilient individuals engaged more strongly

with positive events, show elevated responsiveness to positive events, and exhibited greater positive mood savoring (Ong, Bergeman, & Chow, 2010). The capacity for positive emotions and low negative affectivity were recognized as determinants of resilience also by Watson and Neria (2013). Testing the broaden-and-build theory by Fredrickson (1998, 2001; as cited in Cohn, Fredrickson, Brown, Mikels, & Conway, 2009) in which positive emotions are suggested to help individuals to build lasting resources for long-term success and well-being, Cohn et al. (2009) found that positive emotions increased life satisfaction by building resilience, suggesting that high levels of life satisfaction of happier people did not simply result in by feeling better, but also enabled them to develop resources for living well.

Attachment in early years of life was also shown to be associated with psychological resilience. Attachment theory holds the main assumption that attachment security during early childhood years enables the children to manage subsequent adversity successfully (Bowlby, 1982). Secure attachment has recently been acknowledged as an important factor for resilience by several researchers (e.g., Watson & Neria, 2013). For example, in a study with a Turkish sample of women living in shelters, Gökmen (2009) found that the only significant (and positive) correlation was observed between resilience and secure attachment among other types of attachment. The study by Fraley, Fazzari, Bonanno, and Dekel (2006) showed that high exposure survivors with secure attachment exhibited relatively healthy adjustment in the months following the September 11th attack in USA. A recent study (Black-Hughes & Stacy, 2013) compared resilient and non-resilient female siblings in correctional facilities to explore the impact of early childhood attachment and its impact on later life resilience. It was shown that the resilient siblings showed higher attachment to mother, father, friend, and other adult were higher than non-resilient siblings (inmates).

The relationship between *early maladaptive schemas* and resilience was also investigated. In a study with imprisoned criminals of murder, drug trafficking,

and rape (Soltankhah, Rahmani, & Akbari, 2013), different maladaptive schemas were shown to be negatively associated with resilience: Subjugation, defectiveness/shame, and insufficient self-control in murder group; unrelenting standards and entitlement/grandiosity in drug trafficker group; and defectiveness/shame, failure, dependence/incompetence, subjugation, insufficient self-control, social isolation/alienation, and emotional inhibition in rape group.

Spirituality is also an important variable which has appeared in empirical studies as a predictor of resilience. It is defined as “deep personal beliefs and practices that transcend the regular activities of this world” (Madsen & Abell, 2010, p. 225), and tested in different contexts such as hurricane (Gillard & Paton, 1999), violent trauma (Madsen & Abell, 2010), and earthquake (Jang & Wang, 2009). It has appeared as a resilience factor in a large number of studies. For example, in a qualitative study on Bosnian refugee women resettled in the Southern United States, participants emphasized the importance of spirituality (belief in a higher power, dead relatives, or something inside them that helps them through difficult times), but not religion, as a resilience factor (Sossou et al., 2008). However, although spirituality has been assigned importance for psychological resilience, it was also recognized to possibly increase vulnerability to experience lower levels of resilience because religious denomination might act both as a coping resource and a vulnerability factor (Gillard & Paton, 1999). From a similar perspective, Hanfstingl (2013) showed that different aspects of spiritual transcendence were associated with psychological resilience in different life phases; in a younger sample (age<30), only self-determination was associated with psychological resilience, while predictors of psychological resilience in an older sample (aged between 30-71) were positive self-motivation, and two mystical orientation factors, oneness and good power. Moreover, spiritual insight was negatively associated with psychological resilience in this age group. In the total sample, psychological resilience was significantly associated with all meaning-of-life and internal-regulation scales but not with measures of mystical spirituality. Similar to spirituality, *religiousness* was also shown to be a predictor of psychological resilience. Spiritual and religious beliefs are shown to be an important component

of PTG following traumatic experiences in a number of studies (Augustine, 2014). Brewer-Smyth and Koenig (2014) stated that both spirituality and religion can be powerful sources of hope, forgiveness for self and others, meaning, and comfort. In addition, faith-based communities may offer opportunities for cathartic emotional release and social support. In empirical studies, increased attachment to God significantly predicted lower levels of psychopathology in university students (Brown & Thomas, 2013). In another student sample from Iran, practice of religious beliefs was significantly associated with resilience (Javanmard, 2013). Javanmard (2013) also mentioned that practicing religion was positively related to variables such as mental health, marital satisfaction, happiness, low levels of substance abuse and suicidal/criminal tendencies.

In sum, a range of personal factors are shown in empirical studies to be associated with psychological resilience. These include demographic variables, personality, intelligence, experience of positive emotions, attachment, early maladaptive schemas, spirituality and religiousness. The following section provides information on another set of pre-event factors, social and environmental factors, associated with psychological resilience.

1.3.4.2 Social and Environmental Factors

One defining characteristic of people with high levels of resilience is that they tend to thrive in social contexts. These people show positive social orientation towards others, have good social skills, and generally make a positive impression of themselves (Werner, 2001). This view is also similar to what Benight and colleagues (1999) concluded earlier; having someone to rely on is important for disaster recovery. Environments promoting physical and mental health, environments promoting normative development, and environments promoting social cohesion and the development of social capital were suggested to help increasing resilience in individuals (Lepore & Revenson, 2006). In these environments, shared community values, aspirations and goals, an established social infrastructure, positive social and economic trends, sustainability of social

and economic life, partnerships, communities of interest, established networks, resources and skills are emphasized as elements supporting resilience (Buckle, Mars, & Smale, 2000).

Availability, conservation, and sustainability of *resources* appear to be important for resilient responses following traumatic events. Conservation of Resources (COR) theory (Hobfoll, 1989; Hobfoll & Lilly, 1993) explained the critical role of resources in determining outcomes following potentially traumatic experiences, such as disasters. Stress occurs when resources are lost, threatened, or invested without subsequent gain. In COR theory, objects, condition, personal characteristics, energies (e.g., money, time) are specified as broad categories of resources. In disaster and terrorism- and war-related contexts, it was found that weak/deteriorating psychosocial resources (e.g., loss and lack of income and loss of social ties) were associated with poor psychological outcomes (Hobfoll et al., 2009; Johnson et al., 2009; Norris et al., 2002). Butler et al. (2007) acknowledged the central role of resources in the conceptualization of resilience:

Resilience may be seen as an issue of resources: the quality and quantity of psychological and interpersonal assets that can be drawn upon and brought to bear in transversing life's most difficult experiences. Such resources may be circumstantial or dispositional, learned through successes or life's knocks, or provided by supports we have in place or that come to our aid in times of need. However, resources may be limited by experience or situation, and they may be drained, inaccessible, or overwhelmed by traumatic events. Moreover, identifying these resource domains is only a first step in elucidating the underpinnings of resilience (p. 412).

In an examination of four different case studies in different contexts (Pooley & Cohen, 2010), the provision and facilitation of external resources such as social support and the ability and opportunity to make use of those resources were found to be important for a resilient process/interaction in different contexts. Additionally, self-efficacy, coping, and sense of belonging were important internal resources which contributed to resilience.

Paton (2000) viewed resilience as a capacity for maintaining functioning through using available resources. Preparedness promotes the availability of resources, and risk of damage and injury is minimized by being prepared (e.g. storing water, securing high furniture, preparing a household emergency plan) (Paton, Smith, & Johnston, 2005). In social cognitive model of hazard preparedness by these authors, preparation is conceptualized as three separate phases: motivation to prepare, formation of intentions, and the conversion of intentions into actions. Protective Action Decision Model by Lindell and Perry (2011) identifies predecision processes that precede core perceptions (threat perceptions, protective action perceptions, and stakeholder perceptions) forming a basis for response decision. Together with situational facilitators and impediments, a behavioral response is produced through a protective action decision-making process. Among other models explaining preparedness are Theory of Planned Behavior (Ajzen, 1991), Protection Motivation Theory (Rogers, 1975; 1983), and Person-Relative-to-Event model (PrE) (Mulilis & Duval, 1995; 1997). Thus, preparedness has long been recognized as an important factor in predicting disaster outcomes. Denial, fatalism, optimistic bias and externalization of responsibility are considered as hindering factors for preparedness behaviors (Karanci, 2012). In previous studies, the importance of appraisal processes was also recognized for disaster preparedness. Briefly mentioned, hazard appraisals and coping appraisals are important for protective motivation in Protective Motivation Theory (PMT) by Rogers (1975; 1983). Negative threat and fear appeals (Mulilis & Duval, 1995; Mulilis & Lippa, 1990), damage anticipation and disaster expectation (Rustemli & Karanci, 1999) were shown to be important for earthquake preparedness. On the other hand, in a study on volcanic hazards, Paton, Smith, and Johnston (2000) found that direct experience and more importantly, risk perception were not related to better preparedness; in fact, for example, public information campaigns reduced the need for preparation in some participants.

Social support is an important resource for positive disaster outcomes. However, the effects of social support may become complicated in disaster contexts where

social support networks are usually torn apart (Benight et al., 1999). In earthquake survivors, social support acts as a buffer decreasing psychological distress (Sümer et al., 2005). Through empirical findings and various models, it was suggested to be associated with resilience (Connor & Davidson, 2003; De Terte, Becker, & Stephens, 2009; Hoijtink et al., 2011; Mancini & Bonanno, 2009; Sossou et al., 2008). Smith et al. (2014) found that support from family, such as a spouse or partner, was associated with lower psychological trauma symptoms in the aftermath of the 2010 Haiti earthquake. In addition, family and work support while working were shown to be related to higher resilience (Pietrzak et al., 2014). In a study of hurricane survivors, Norris and Kaniasty (1996) provided evidence for the social support deterioration deterrence model in which availability of social support is hypothesized to deteriorate following natural disasters; external help and support can provide assistance in deterring this breakdown of social support. Moreover, they also showed that perceived support mediated the effects of the scope of disaster exposure and postdisaster mobilization of received support on distress.

Social capital is another emerging indicator of psychological resilience in the literature. There are many overlapping definitions of social capital; it is generally “a way of describing social relationships within societies or groups of people” (De Silva, McKenzie, Harpham, & Huttly, 2005, p. 619). According to the authors, the concept has multiple dimensions: It can be divided into a behavioral component (structural social capital, e.g., participation) and a cognitive component (cognitive social capital, e.g., trust) or into a dimension referring to linkages in relation to people who are similar to each other (bonding social capital) or people who are different (bridging social capital). In their systematic review on social capital and mental illness, De Silva and colleagues (2005) emphasized that for studies measuring social capital at the individual level, both cognitive and social capital showed inverse associations with common mental disorders. A deeper analysis of four low income countries showed that cognitive social capital was inversely associated with mental disorders and this association was universal; on the other hand, structural social capital showed more mixed and

culture-specific associations with mental disorders, some aspects of it were associated with increased odds of disorders (De Silva, Huttly, Harpham, & Kenward, 2007). Similarly, Flores, Carnero, and Bayer (2014) found that cognitive social capital, but not structural social capital, had a protective effect on the occurrence of chronic PTSD in survivors of the 2007 Earthquake in Peru. Mixed findings have also been obtained regarding the relationship between bridging and bonding social capital and mental health. Mitchell and LaGory (2002) found that bonding social capital increased mental distress of individuals in an impoverished community. They asserted that modifications for the claims that social capital is a promoting factor for individual well-being may be necessary.

Finally, a *sense of connectedness* may also foster psychological resilience in individuals exposed to traumatic life events. In a grounded theory study on people diagnosed who recovered from a serious illness with less than a 10% chance of survival at the time of the first interview, Denz-Penhey and Murdoch (2008) showed that the core category of personal resiliency was the organizing theme and resiliency had five major dimensions. The dimensions were social connectedness, connectedness to family, connectedness to the physical environment, connectedness to experiential inner wisdom, and connectedness to a strong psychological self.

To conclude, psychological resilience has been found to be associated with various social and environmental factors. Environments with resilience promoting qualities, availability, conservation, and sustainability of resources, preparedness, social capital including support systems and sense of connectedness are important social and environmental factors which would determine the level of resilience of trauma-exposed individuals. All pre-event factors including both personal and environmental factors strongly interact with specific characteristics of the disaster event to predict adjustment. The next section presents information on disaster-related factors which are important in addressing resilience in disaster contexts.

1.3.4.3 Disaster-related Factors

Previous disaster experience and *post-disaster life events* are possible predictors of psychological resilience. Bonanno and colleagues (2010) reviewed previous findings on prior disaster exposure and concluded that while some studies produced findings in favor of stress inoculation hypothesis by Eysenck (1983, as cited in Bonanno et al., 2010), some did not. Therefore, mixed findings exist. In an extensive review of disaster studies, recent life events and stress were suggested to predict disaster victim's symptom levels, and secondary stressors were shown to be associated with more negative outcomes (Norris et al., 2002a). In Jang and Wang's (2009) study on earthquake survivors, post-disaster life events were found to have both positive and negative effects on resilience. The authors concluded that these events might include "deceased loved one's birthdays, marriage, job security, living rearrangements, mortgages of their collapsed house, and property divisions. Those events might break the current social support networks, and need to reestablish new ones" (p. 63).

Severity of disaster exposure is also important for understanding disaster outcomes. Previous research on the severity of traumatic exposure focused on physical variables (e.g., proximity to the epicenter, location when the earthquake happened), specific aspects such as threat to self and close ones, loss of resources, exposure to victims, or a combination of stressor characteristics (Elal & Slade, 2005). Elal and Slade (2005) discussed that in the literature, severity of exposure has been consistently linked with higher levels of morbidity and psychopathology in survivors of disasters and other traumatic events (e.g., Carr et al., 1997), and exposure to a traumatic event, experiences of exposed individuals and the degree of exposure and consequences were all shown to be associated with disaster outcomes.

In their general review on the costs of disasters on individuals, families, and communities, Bonanno et al. (2010) identified factors of proximal exposure during the disaster and distal exposure following the disaster. Proximal exposure

factors included factors such as threat to life, injury, loss of loved ones, property damages, impact on community; and distal exposure factors were identified as economic resource loss, displacement and relocation, media exposure. Regarding proximal exposure, although many studies reported a dose-response effect whereby greater exposure is associated with worse psychological outcomes, resilience is evidenced in a significant portion of individuals with the highest levels of disaster exposure (Bonanno et al., 2010).

To conclude, disaster-related factors including previous disaster exposure, post-disaster life events, and severity of disaster exposure contribute to the understanding of psychological resilience in disaster contexts. Other important factors associated with resilience are coping with the hardships posed by disasters and appraisals of the disaster. The following section presents findings on these factors.

1.3.4.4 Coping and Appraisals

Coping is defined as "cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). Individuals may use different strategies to manage stressful situations in a successful or less successful manner. Moos and Holahan (2003) emphasized that the concept of coping encompasses relatively stable coping styles and dispositions as well as the behavioral and cognitive coping skills and responses. In stylistic or dispositional approaches to coping, stable, enduring personality, attitudinal and cognitive characteristics provide the psychological context for coping; efforts have been shown to identify and assess defensive styles, coping styles, problem-solving styles and personality dimensions which reflect general, preferred coping styles. Contextual approaches are complementary to dispositional approaches because the latter is limited about the coping choices people make in stressful situations. Concepts of coping responses and skills, measures that apply to diverse stressors and measures for specific types of stressors are examples for contextual approaches to coping. Both

contextual and dispositional perspectives “provide a foundation of a comprehensive understanding of coping” (Moos & Holahan, 2003, p. 1392).

While many researchers have not differentiated between coping dispositions and coping skills and responses as Moos and Holahan (2003) did, a broad classification of coping strategies is popular in the literature. Accordingly, coping may be understood in terms of problem-focused coping and emotion-focused coping because coping has two major functions which are widely recognized: regulating stressful emotions (emotion-focused coping) and altering the problematic environment-person relation (problem-focused coping) and ideal coping may include both functions (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). Folkman and colleagues (1986) identified eight forms of problem- and emotion-focused coping: confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, effortful, planful problem solving, and positive reappraisal.

In the literature, several researchers cited *coping* as being critical for psychological resilience to be observed. As examples, approach/active problem-solving/coping (Agaibi & Wilson, 2005), and flexible and pragmatic coping, and repressive coping (Bonanno & Mancini, 2008; Mancini & Bonanno, 2009) are considered to be associated with psychological resilience. Hoijtink et al. (2011) presented coping with difficult circumstances as one of the three direct indicators of psychological resilience along with personal competence. Nolen-Hoeksema (2000) discussed positive reappraisal, problem-solving, and positive distraction which she named as adaptive coping strategies mediated the relationship between optimism and finding something positive after loss among bereaved individuals. Riolli and colleagues (2002) found that control coping style was associated with higher levels of resilience. Control coping, as opposed to escape coping, was conceptualized by Latack (1986; cited in Riolli et al., 2002) as problem-focused, proactive efforts to reduce stress by individuals. Similarly, in the study by Campbell-Sills et al. (2006), coping styles were shown to predict resilience beyond the contributions of personality traits in young adults. Specifically,

resilience was positively associated with task-oriented coping which mediated the relationship between conscientiousness and resilience. On the other hand, emotion-oriented coping was related to low levels of resilience. Emotion-focused coping was also found to predict psychological problems in adolescent earthquake survivors in China, while problem-focused coping predicted self-efficacy along with social support (Yang, Yang, Liu, et al., 2010). Another study by Lever, Garcia, and Estrada (2012) on people living in extreme poverty in Central Mexico showed that direct coping which “is determined by the creative strategies used by subjects to overcome, reduce or tolerate the internal and external demands caused by the relationship between stress and the environment” (González & Landero, 2006; as cited in Lever et al., 2012), was one of the significant predictors of resilience along with achievement motivation, locus of control, and sense of humor.

In a study on an elderly sample living in Spain, resilient coping as indicated by the tendency to cope with stress in a highly adaptive manner predicted a significant and large part of variance in well-being, without the need of including problem-focused and emotion-focused coping (Thomas, Sancho, Melendez, & Mayordomo, 2012). Still, resilient coping was positively associated with both of the coping strategies. Nevertheless, resilient coping is not necessarily prosocial in all settings, as Thompson and colleagues (2013) showed. In an exploration of perceptions of resiliency and coping of homeless young adults, substance use, self-mutilation/ cutting to relieve stress, and confrontations or angry outbursts were among the reported individual strategies for coping with life in the streets along with meditation and praying, hobbies and crafts, and keeping to oneself.

A growing body of literature also suggests that some people tend to use religion as a means of coping with stressful events. Religious coping may be defined as “the use of religious beliefs or behaviors to facilitate problem-solving to prevent or alleviate the negative emotional consequences of stressful life circumstances” (Koenig, Pargament, & Nielsen, 1998, p. 513). Pargament, Koenig, and Perez (2000) stated that positive religious coping strategies included religious

purification/forgiveness, religious direction/conversion, religious helping, seeking support from clergy or members, collaborative religious coping, religious focus, active religious surrender, benevolent religious reappraisal, and marking religious boundaries; on the other hand, negative religious coping strategies included spiritual discontent, demonic reappraisal, passive religious deferral, interpersonal religious discontent, reappraisal of God's powers, punishing God reappraisal, pleading for direct intercession. Religious methods of coping functioned to find meaning, to gain control, to gain comfort and closeness to God, to gain intimacy with others and closeness to God, or to achieve a life transformation. A meta-analysis of 49 studies (Ano & Vasconcelles, 2005) showed that positive and negative forms of religious coping are related to positive and negative psychological adjustment to stress, respectively.

Cognitive appraisals substantially influence how individuals cope with stressors (Lazarus & Folkman, 1984). Therefore, appraisal plays a critical role in coping. Folkman et al. (1986) defined cognitive appraisals as “a process through which the person evaluates whether a particular encounter with the environment is relevant to his or her well-being, and if so, in what ways” (p. 992). In the transactional theory of stress by Lazarus and Folkman (1984), stress appraisals are listed as key cognitive mediators. The authors also distinguished between primary and secondary appraisals. In primary appraisal, an individual evaluates whether anything is threatened in an encounter and determines if there are potential harms and benefits (Folkman et al., 1986). Whereas, in secondary appraisal, an individual evaluates whether anything can be done to prevent harm or to improve benefits in this encounter. In an empirical study, Folkman and colleagues (1986) showed that although there is a question of causality between coping and appraisals, variability in coping was a function of how individuals judge what is at stake (primary appraisal) in a stressful encounter and what coping options they perceived to have (secondary appraisal).

Other cognitive processes such as causal attributions are also important for how individuals cope with stressful events. These attributions may involve attributions

about controllability, generalizability, preventability of the traumatic event. Appraisals of low control, low predictability, and high threat are considered as risk factors hindering positive adjustment following disasters (Freedly et al., 1992a). In a recent study by Schaubroeck, Riolli, Peng, and Spain (2011), loss, threat, and challenge appraisals mediated the relationship between positive psychological capital which is characterized by self-efficacy, optimism, hope, and ego resilience (Luthans, Youssef, & Avolio, 2007, as cited in Schaubroeck et al., 2011) and psychopathological symptoms in soldiers deployed in combat. In addition, Mancini and Bonanno (2009) identified positive appraisals following a loss event as predicting psychological resilience. Moreover, appraisals were also claimed to directly predict positive outcomes following life crises or traumatic events in Schaefer and Moos's (1992) model. Positive self-appraisals also emerged as one of the three factors of the Turkish version of Ego Resiliency Scale (ER-89) which was translated and adapted into Turkish by Karairmak (2007).

Cognitive interpretations of individuals about to which extent they are effective in managing environmental demands are also important for resilience. Based on the empirical findings showing a link between personality traits and self-efficacy, Benight and Cieslak (2011) proposed that people with more resilient personalities may appraise negative events as less stressful and may believe more strongly in their capabilities to cope with these events. This may in turn affect post-traumatic outcomes. The authors also suggested that resilience research would benefit from the development of multiple theoretical approaches that elucidate how cognitive processes such as self-efficacy serve as catalysts for positive outcomes (p. 52). Coping self-efficacy (CSE) is a special form of self-efficacy. It is defined "as the perception of one's capability for managing stressful or threatening environmental demands" (Benight, Swift, Sanger, Smith, & Zeppelin, 1999, p. 2444). Previous studies found that domain specific self-efficacy acts as a mediator between dispositional resources and psychological adjustment to adverse events (Sümer, Karanci, Kazak-Berument, & Gunes, 2005). Studies on CSE in disaster context often demonstrated that CSE is an important variable for

disaster research and one's judgment about her/his capability to manage stress and disaster recovery demands predicts psychological outcomes following natural disasters (Benight et al., 1999). In the empirical study by authors following the Hurricane Opal, perceptions of CSE mediated the relationships between loss of resources and trauma-related distress, and also between social support or dispositional optimism and both general and trauma-related distress.

To conclude, adaptive coping with the stressful event and how the event (i.e., the disaster) is appraised are important determinants of psychological resilience. In addition, causal attributions of high control, high predictability, and low threat may help to foster adaptation following adversity. Coping and appraisals are shown to be associated with resilience in various empirical studies along with other factors including personal factors, social and environmental factors, and disaster-related factors. Investigation of these factors provides a basis for understanding psychological resilience and is the main aim of this present study. The aims and scope of this study are presented in the following section in detail.

1.4 Aims and Scope of the Present Study

Natural disasters are frequent, and many individuals are inevitably exposed to one or more disasters in their lifetime. From a psychological perspective, relatively high exposure to natural disasters worldwide makes the investigation of psychological outcomes in disaster settings very important. One of the positive outcomes following potentially traumatic experiences, psychological resilience, is a crucial factor reflecting post-disaster adaptation. Increasing the ability of individuals to adapt after disasters is also accepted as an important need by disaster experts around the globe. However, research and knowledge on the resilience capacity of individuals confronted with natural hazards and disasters are limited. Any effort to increase the resilience capacity of individuals requires well-grounded knowledge on what constitutes resilience in a given context. Exploration of the state of resilience and resilience indicators is an important goal and hence, was the scope of this study.

The current study aimed generally to understand psychological resilience in survivors in the aftermath of the two recent major earthquakes in 2011 in Van and Erciř, Turkey and specifically to explore possible factors that may contribute to psychological resilience. Investigation of factors in Turkish cultural context associated with psychological resilience was deemed important for research focused on disasters and resilience because culture and ethnic background of individuals in a community may affect how individuals experience potentially traumatic experiences such as earthquakes (Perilla, Norris, & Lavizzo, 2002). Different data collection and analysis methods were utilized in order to be able to identify such factors in a specific cultural context with a relatively small group of earthquake survivors using qualitative methods and subsequently, using quantitative research methods to examine whether and how identified factors were associated with psychological resilience in a larger group of survivors.

1.5 Research Questions

This study aimed to answer the main research question “What are the factors associated with psychological resilience in survivors following earthquakes in Van, Turkey?”

Research questions for the qualitative and quantitative studies can be specified as follows:

Research question for the qualitative study:

Which factors are perceived as related to psychological resilience by survivors? Specifically, what are the perceived personal qualities and characteristics, damage attributions, and coping strategies/styles associated with resilience? How is the level of psychological resilience perceived by survivors in the aftermath of the Van earthquakes?

Research question for the quantitative study:

To what extent and in what ways the identified pre-disaster, within-disaster, and post-disaster factors, i.e. personal, social/environmental, or disaster-related factors and coping variables, predict psychological resilience in survivors in the aftermath of the Van earthquakes?

1.6 Importance and Implications of the Present Study

Natural disasters are common, and most individuals are inevitably exposed to disruptive disasters. Although disasters as potentially traumatic events are likely to produce various posttraumatic stress reactions in survivors (e.g., Başıoğlu et al., 2002; Jin et al., 2014; Karanci, 2005; Neria et al., 2008; Nugent et al., 2014), the psychological outcomes may vary across individuals exposed to the effects and adverse consequences. However, most disciplines traditionally focus on typical negative outcomes of traumatic events (Tedeschi & Calhoun, 2004). In the literature, resilience and PTG have been frequently indicated to be positive psychological outcomes following traumatic events (e.g., Bonanno, 2005; Tedeschi & Calhoun, 1996). Yet, the definition and conceptualization of resilience continues to be a subject of debate among researchers. The present study is one among many efforts to understand psychological resilience following natural disasters. Furthermore, Westphal and Bonanno (2007) suggested that lessons from studies on resilient outcomes may be extended to posttraumatic growth. Therefore, clarifying the concept of resilience may shed light on positive experiences and adaptation following trauma.

In Turkey, resilience following disasters is a much less studied research subject; hence, the gap is more apparent than abroad. There are studies addressing resilience with various populations. For example, resilience has been investigated in college students (Aydın, 2010; Demirbaş, 2010; Gürkan, 2014; Orbay, 2009), women subjected to violence (Gökmen, 2009), migrant women (Çakır, 2009), adolescents with substance abuse (Çataloğlu, 2011), teachers (Kumartaşlı, 2014), and adolescents in different risk groups (Sipahioğlu, 2008). Yet, only one study

in Turkey addressed resilience in the context of earthquakes. Karairmak (2007) conducted a model testing study for investigating personal attributes which may contribute to resilience in individuals exposed to the effects of the 1999 Marmara earthquake. The present study expands the results of Karairmak's study through accounting for variables other than personal qualities such as social capital, coping and appraisals. The present study is the first in Turkey to focus on psychological resilience comprehensively; it both addresses culture-specific understanding of resilience through qualitative methods and provides a test of the association with resilience on a broad range of factors.

Apart from theoretical implications, the present study also has practical implications and offers a promise for post-disaster psychosocial clinical interventions as "the concept of resilience emphasizes the complexity of psychopathology, helps elucidate the possibilities of prevention, and gives cause for hope in clinical practice" (Amering & Schmolke, 2007, p. 26). It was suggested that resilience research should not only identify 'at-risk' individuals demonstrating low resilience, but also focus on characteristics of resilient groups or individuals for purposes of public health intervention (Davydov, Stewart, Ritchie, & Chaudieu, 2010). This emphasizes the value of this study since identification of characteristics of resilient individuals is a major aim of the present study. Resilience has become even more prominent in recent years. One important development in the applied field is that resilience has become one of the main themes in APA's online help center and brochures for providing guidance and support following difficult events that change people's lives (American Psychological Association, 2013). The public education campaign by the APA, "The Road to Resilience" was launched in August 2002 in response to the finding from focus groups conducted by the APA Practice Directorate after the terrorist attacks of September 11, 2001 that individuals experiencing a chronic stress and uncertainty wanted to be more resilient (Newman, 2005).

Bonanno and Mancini (2008) pointed out that there seems to exist a cultural assumption that early interventions (e.g., critical stress debriefing) have been

effective for every exposed individual; however, such interventions might interfere with the processes of natural recovery and might indeed become harmful for some individuals due to possible exacerbation of trauma symptoms. Litz, Gray, Bryant, and Adler (2002) also discussed that an indiscriminant use of single-session psychological debriefing would be inappropriate. Moreover, interventions targeted at posttraumatic stress symptoms do not distinguish between resilient and recovering individuals, and engage in the faulty assumption that both utilize the same coping responses (Bonanno & Mancini, 2008). Previous studies suggest that resilience in the aftermath of a traumatic and disruptive event is not uncommon or unusual. Therefore, a better understanding of resilience would lead to the development of specific interventions tailored to prevent and/or treat common mental disorders with highly variable individual and cultural risk factors (Connor & Zhang, 2006). This necessitates the appropriate assessment and diagnosis of affected individuals following exposure (Bonanno & Mancini, 2008).

Furthermore, a comprehensive understanding of resilience would also help to develop interventions “that emphasize the building of psychological strength rather than simple remediation of symptoms” (Campbell-Sills et al., 2006). In addition to psychological interventions, resilience factors would even aid in shaping pharmacological interventions to protect individuals at risk for mental problems (Campbell-Sills et al., 2006; Tsuang, 2000). As advocated, resilience interventions for assisting individuals to cope with adversities and promoting resilience have been continuously developed. The Penn Resilience Program developed by University of Pennsylvania (Gillham, Reivich, & Jaycox, 2008), the US Army Master Resilience Training programme (Reivich et al., 2011), the Practical Resilience Programme (The Resilience Institute, 2013), and the FOCUS (Families OverComing Under Stress) Family Resilience Training™ (UCLA Nathanson Family Resilience Center, 2013) are examples of available structured resilience interventions. These programs are offered to individuals, families, organizations, and schools and they are based on existing psychological knowledge on resilience. In addition, research on resilience interventions appear

more in scientific journals. For example, Cheng, Cheng, Hsieh, et al. (2012) showed that an individual resilience intervention program, which included individual resilience assessments addressing relocation needs, emotional adaptation, and interpersonal networks, individual strengthening and maintenance, and resource linking and referral, was helpful for enhancing individual resilience of victims as measured by the Flood Indigenous Victims Post-Disaster Individual Resilience Questionnaire following Typhoon Morkot in Taiwan.

To conclude, efforts to understand factors influencing psychological resilience are valuable because such clarification may assist researchers to shape interventions targeted at high-risk individuals following traumatic events in addition to its potential theoretical contribution. In the light of such premises of value, the purpose of the present study was to understand psychological resilience following the devastating earthquakes in Van, Turkey and to identify resilience factors in groups of survivors with guidance from the model of Schaefer and Moos (1992) and the Multivariate Risk Factor Model of Freedy et al. (1992a).

CHAPTER 2

GENERAL METHODOLOGY

The present study is an attempt to understand psychological resilience of survivors following the 2011 earthquakes in Van, Turkey. This chapter provides information on research design utilized to reach the study aim. It presents an overview of research questions, general procedures as well as limitations resulting from the selected design.

2.1 Research Design

In this study, the mixed methods research design was utilized. Mixed methods designs “incorporate techniques from both the qualitative and quantitative research traditions yet combine them in unique ways to answer research questions that could not be answered in any other way” (Tashakkori & Teddlie, 1998, p. x). In mixed methods research, both qualitative and quantitative research methods are mixed at some stage of the research process allowing researchers to explore and understand a research question more completely (Creswell & Plano Clark, 2011). Many disciplines including psychology and anthropology have recognized that research endeavor can be maximized using a mix of qualitative and quantitative methods (Nastasi & Schensul, 2005). Similarly, Creswell, Plano Clark, Gutmann, and Hanson (2003) noted that using mixed-methods research can neutralize or cancel out some disadvantages inherent to certain methods and mixing different methods can strengthen a study. According to Creswell and Zhang (2009), this design procedure is well-suited for trauma-related research; mixed methods build upon a need to bridge research which tends to be characterized by a reliance on quantitative methods and practice heavily using qualitative data collection and analysis.

Approximately forty types of mixed methods design procedures are identified by Tashakkori and Teddlie (2003). Creswell and Plano Clark (2011) differentiates between fixed and emergent mixed methods study designs and also typology-based and dynamic approaches to mixed methods studies. In fixed mixed methods designs, the use of qualitative and quantitative research methods is predetermined at the start of the research process; on the other hand, in emergent mixed method designs, the use of mixed methods arises during the process of research. For example, a researcher might think one method as inadequate and add a second method to the study design. Identifying an approach to design is also important. Useful mixed methods designs are classified and a particular design is selected based on the aims of a particular study in typology-based approaches. The authors have summarized fifteen classifications representing diverse disciplines with different terminologies and differential focus on important features of the mixed methods research. In contrast, dynamic approaches does not place emphasis on selecting the appropriate design, instead it focuses on interrelating multiple components of research design. Creswell and Plano Clark have proposed to use typologies as a guiding framework for helping researchers design their studies rather than adopting them as cookbook recipes (p. 60).

Consistent with the aims of the present study and the lack of an empirically tested and verified framework for psychological resilience, sequential exploratory design was chosen as suitable for conducting a comprehensive analysis on resilience in an earthquake-related context. The mixed methods sequential exploratory design includes two phases of research (Creswell, Plano Clark, Gutmann, & Hanson, 2003). In exploratory design, qualitative data are collected and analyzed in the first sequence. As a second step, quantitative data are collected and analyzed. It is a two-phase research design: Quantitative phase builds on the first, qualitative phase and these phases are connected together for explaining and discussing the results from both strands of collected data. Exploratory sequential design is conducted with the intent to explore a research objective for several reasons. Broadly, these are to develop and test measures or

instruments which are not readily available, to identify variables in the qualitative phase and to study them quantitatively in the second phase, and to study aspects of an emergent framework or theory.

To attain a complete understanding of psychological resilience in earthquake survivors and to ensure comprehensiveness of study results, a mix of qualitative and quantitative research methods were employed in the present study. The aim for choosing sequential exploratory design was the lack of knowledge regarding possible important Turkish culture-specific factors associated with psychological resilience and also the lack of a verified framework for explaining psychological resilience focusing on the operating mechanisms between those factors. As in every mixed-methods design, the critical components of the sequential exploratory design is (1) the level of interaction between the qualitative and quantitative strands, (2) the relative priority of the strands, (3) the timing of the strands, and (4) the procedures for mixing the strands (Creswell & Plano Clark, 2011). The level of interaction between strands can be independent and interactive. When the level is independent, research questions, data collection and analysis are separate and those are only mixed during interpretation. On the other hand, if the level is interactive, two methods are mixed before interpretation. In addition, the priority between strands can be equal or weighting can be given to a particular strand. Timing is also referred as pacing or implementation. The temporal relationship between qualitative and quantitative strands can be concurrent, sequential or there can be a multiphase combination. Finally, data can be mixed during interpretation, during data analysis, during data collection, or at the level of design.

Figure 2.1 provides a schematic illustration of the research design utilized in the present study.

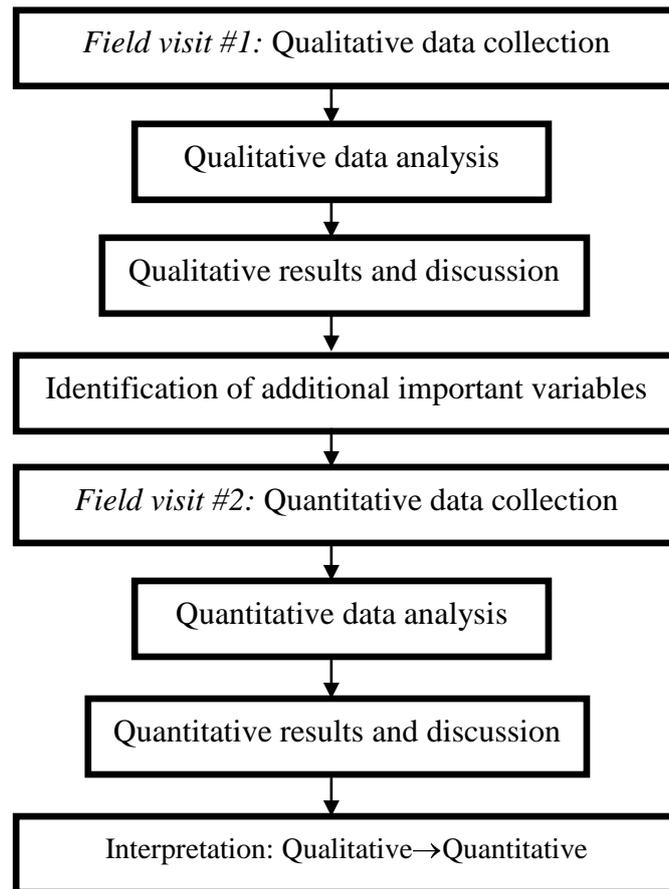


Figure 2.1 Research design of the study

The decisions for mixing methods were made as follows:

- The qualitative and quantitative strands of this study were conducted *independently* in terms of data collection and analysis. Different data collection methods and analysis techniques were used for the qualitative and quantitative strands of the study.
- This study utilized a *quantitative priority*. The relative weight was given to the quantitative study while the qualitative study played a secondary role. Morgan (1998) views designating one method as the principal means of data collection as a more practical strategy compared to giving equal weight to both methods; it also removes the threat that the knowledge gained from two methods may be either incommensurate or contradictory.

- Data were collected *sequentially* in two field visits during a nine-month period. The first field visit was nine months after the first earthquake and the second visit was nineteen months after the quake. The quantitative data was collected following the qualitative data. The timing decision was given firstly because of practical reasons including the difficulty in implementation during challenging weather conditions in winter season and the availability of researchers. It was anticipated during the designing phase that collection of qualitative data would take relatively shorter time as compared to the collection of the quantitative data. Therefore, the qualitative data was collected before the quantitative data. Secondly, since the qualitative data were treated as a more complementary one than the quantitative data and the quantitative study was informed by the findings from the qualitative study, it was deemed appropriate to collect it in the first field visit.
- The strands were *mixed during interpretation* after collecting and analyzing both sets of qualitative and quantitative data. Therefore, different chapters are devoted to the presentation of qualitative and quantitative studies and another one is devoted to the general discussion of findings from each set. Information on the qualitative or quantitative data analysis is presented in detail in relevant chapters. Those chapters are followed by a general discussion in which the findings from each study are discussed together.

For sampling purposes, it was underlined by Carpenter (2011) that it is usually impossible to implement qualitative and quantitative techniques on the same sample unless the quantitative measure is being standardized in the study because qualitative methods require a small, purposeful sample whereas quantitative methods require randomly selected and larger samples. This study utilized different sampling strategies for qualitative and quantitative studies, and different samples were used in each phase. The information on selected samples was presented in the relevant chapter.

2.2 General Procedure

This study was conducted as a part of a larger project titled “Building Resilience Amongst Communities in Europe (emBRACE)” conducted between October 2011 and September 2015. The aim of this project is to build resilience to disasters amongst communities in Europe. It uses interdisciplinary, collaborative and socially inclusive models to improve the pan-European framing of the resilience concept. The project is supported by the European Commission under the Environment (including climate change) Theme of the 7th Framework Programme for Research and Technological Development. More information about the project is available on the website, <http://www.embrace-eu.org>. As part of the case studies across Europe, resilience to the earthquakes which affected the cities of Van and Adapazari has been investigated as part of the project. Findings obtained in the present study regarding psychological resilience will be included in the case study reports of the emBRACE project. This document reflects only the authors’ views and that the Union is not liable for any use that may be made of the information contained therein.

Prior to the application of all procedures, permission was granted from The Applied Ethics Research Center of Middle East Technical University for research with human participants and Governorate of Van (reference number: 41110129-299/10222).

For both parts of the study, inclusion criteria were being 18 years and older, currently living in Van at the time of the data collection, having experienced either or both of the earthquakes in Van. Sample size in each phase of the study was identified based on the applied procedures and anticipated return and response rate (around 40% to 50%).

In both the qualitative and quantitative strands of the study, a participant information form was administered. The form was developed by the researcher in order to collect information on participants’ socio-demographic characteristics. The participants were informed about the purpose of the study, their right to

withdraw from responding at any time, and their right to be informed about study results; they were assured of confidentiality and anonymity in phases of data collection, analysis, and dissemination of results through an informed consent form; and were required to read and sign the written form for study participation. One copy of the signed participation form was given to the participants. Following participation, a debriefing form was delivered and all participants were thanked for acknowledging the time they spent for responding. The informed consent and debriefing forms which were used in both strands of the study are presented in Appendix A.

2.3 Limitations of the Research Design

The present study is thought to have some significant contributions to the literature on psychological resilience; however, it had a number of limitations due to the employed research design. A general limitation might have arisen from epistemological and ontological differences between qualitative and quantitative paradigms and the question of how assumptions underlying both methods can be mutually exclusive is important; however, when different methods are used to understand a particular topic are combined, flaws of one method can be neutralized and one method can strengthen the benefits of the other (Hussein, 2009).

A limitation concerns data collection and sampling procedures. Data were collected from survivors of the earthquakes in Van, Turkey and may not be representative of individuals exposed to earthquakes or other types of hazards in other parts of Turkey or the world. It is important for future research to especially focus on other hazard types in different regions of Turkey or the world and seek whether psychological resilience would manifest itself similarly in exposed individuals.

Another limitation is about timing of data collection. Data were collected retrospectively. Qualitative data were collected approximately one year after the earthquakes in Van in two field visits over a nine-month period from September

2012 to June 2013. Quantitative data were collected approximately nineteen months after the earthquakes. Although data collection was retrospective in respect to the time elapsed since the earthquakes and any retrospective data collection may especially be associated with recalling and reporting bias (e.g., Bromet, Havenaar, Gluzman, & Tintle, 2005; Caldera, Palma, Penayo, & Kullgren, 2001), the questions in the qualitative study or the instruments used in the quantitative study instructed the participants respond thinking the last week or the last month except for the questions of disaster impact. While abovementioned biases may be problematic for data quality, it is considered that their effects on data quality would be minimal because of the data collection methods. In addition, Lalande and Bonanno (2011) reported that recollection was more accurate for potentially traumatic events than non-traumatic events. In a study by Norris and Kaniasty (1992) on Hurricane Hugo survivors, retrospective assessments on disaster-related losses, preparedness, social support received from others, and social support were found to be reliable. Bonanno et al. (2006; 2007) reported constant proportion of resilience in the sample at 1 month, 4 months, and 6 months post September 11th terrorist attacks. It was also discussed that a passage of time (18 months in the study) would offer participants sufficient opportunity to process the experience (Qureshi et al., 2007). Nevertheless, evaluating different resilience factors and indicators of resilience at different times may be necessary because differentiating between factors and mechanisms of resilience in the short-, medium- and long-term is a central challenge for resilience studies (Davydov et al., 2010).

CHAPTER 3

PERCEPTIONS OF PSYCHOLOGICAL RESILIENCE: THE QUALITATIVE STUDY

This chapter is devoted to the presentation of the qualitative study. The first section provides a brief introduction and presents the rationale and the aims of the qualitative study. The second section describes methodology of the qualitative study. In the third section, results are presented whereas the last section presents a discussion of the results.

3.1 Introduction

The qualitative phase of the present study aimed to understand perceptions of earthquake survivors about psychological resilience, to investigate whether there are additional important factors associated with resilience which have not appeared or addressed in previous studies or models of resilience, and to examine any specific dimensions that may be relevant to Turkish culture. Hofstede (1980) called culture ‘mental programming’ likening it to computer software. In an often cited definition of culture, it was proposed that

culture consists in patterned ways of thinking, feeling and reacting, acquired and transmitted mainly by symbols, constituting the distinctive achievements of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e. historically derived and selected) ideas and especially their attached values. (Kluckhohn, 1951, p. 86, no. 5).

The link between culture and human psychology has long been recognized, going as far back as the Greek era as well as the beginning of psychology as a discipline (Betancourt & Lopez, 1993), and incorporating a cultural perspective to the

knowledge gathered in mainstream psychology is considered as vitally important (Matsumoto & Juang, 2008). Focusing on the concept of resilience, Yu and Zhang (2007) noted that “since cultures are so different in their geological, historical and social environments, the realities of adversity and hard times may be different for people who are living in different cultures” (pp. 20-21); therefore, the conceptual structure of resilience may not be universal. However, little is known about whether there are cultural variations in loss and trauma reactions and also whether resilience has different meanings in different cultural contexts (Bonanno, 2005). It was shown that ethnicity and culture can influence the disaster response such as the way trauma is experienced or expressed by different community populations (Perilla et al., 2002) as exemplified by the study of Bonanno, Papa, Lalande, Nanping, and Noll (2005) in which bereaved Chinese people recovered more quickly and showed more physical symptoms compared to bereaved American subjects. Such variation may also exist in the ascribed meanings of resilience by people with different cultural backgrounds. Although there are few studies which focused on possible associations of cultural variables and resilience such as the one by Lee (2005) demonstrating the role of ethnic identity pride in facilitating resilience against discrimination, the number is far less compared to the ones focusing on variations in trauma reactions in different cultures.

The ways in which resilience can be context- and culture-dependent are extensively elaborated by social ecologist Michael Ungar (2005; 2008; 2011; 2013) who, in his recent research paper (Ungar, 2013), identified the principle of cultural variation to explain the influence of environment on resilience. He emphasized that appropriate ways of coping with adversity is embedded in culture and that introducing the variable of culture into the study of resilience challenges assumptions of what is functionally adaptive in the face of adversity; such way of thinking is incongruent with individualistic notions of coping apparent in Western studies and may not be valid for communities with more relational worldviews.

In the light of Ungar's (2013) proposition that resilience may manifest itself differently in communities with relational traits, it is important to note that Turkey has long been recognized as a relational (i.e., collectivist) community by social scientists. Based on the four national dimensions by Hofstede (2001), Turkish culture is more collectivistic (based on the degree that society reinforces collective or individual achievement), relatively masculine (because of high degree of gender differentiation), and has high uncertainty avoidance (low tolerance for ambiguity) and high power distance (more emphasis on power and wealth) in comparison with more than forty countries all over the world. A degree of high collectivism is also implied by a concern by a person about the effects of one's own actions and/or decisions for other people, sharing of material benefits and nonmaterial resources, willingness of the person to accept the opinions and views of other people, concern about self-presentation and loss of face, belief in the correspondence of own outcomes with the outcomes of others, and feeling of involvement in and contribution to others' lives (Hui & Triandis, 1986). Nevertheless, it is important to underline that more recent studies demonstrated that Turkish culture has become less collectivistic (Göregenli, 1997; Aycan et al., 2000) and it displays both collectivistic (i.e., relational) and individualistic (i.e., autonomous) characteristics (Göregenli, 1995; İmamoğlu, 1987).

Bartelt (1994) and Winfield (1994) also cautioned against the individualistic view of resilience and asserted that resilience is relational and one should not infer resilience without taking into account environmental factors. Although few in number, efforts for understanding or highlighting the influence of culture on resilience are apparent in the literature (e.g., the study on African Americans from high-risk urban communities by Utsey, Bolden, Lanier, & Williams III, 2007; a comparison of Turkish and American college students in Kararmak & Figley 2006; a comparison of adolescents across cultures in Ungar, Lee, Callaghan & Boothroyd, 2005; the study on disadvantaged youth by Harvey & Delfabbro, 2004). Nevertheless, Boyden (2011) pointed out the need for further theorization in order to explain how resilience is manifested through the broader influence of culture and society. Although cross-cultural meanings of resilience

are beyond the scope of the present study, identification of the perceptions of psychological resilience was sought to be important in order to gain an understanding of perceived factors associated with psychological resilience in a small sample of Turkish earthquake survivors. In qualitative studies, using small samples allow researchers to conduct in depth interviews with the selected participants. “The validity, meaningfulness, and insights generated from qualitative inquiry have more to do with the information-richness of the cases selected and the observational/analytical capabilities of the researcher than with sample size” (Patton, 1990, p. 185); in qualitative studies using field or documentary/historical research compared to experimental and survey research, sampling strategy strives for information-richness compared to representativeness in quantitative studies.

To conclude, the qualitative study would assist in how resilience is perceived by Turkish survivors by seeking meaningful and rich information, and would provide an opportunity to subjectively test some indicators of resilience which commonly appear in the resilience literature. In addition, it would also help to identify if there are factors not present in existing theories and models of psychological resilience and would provide additional variables for the quantitative study.

3.2 Method

3.2.1 Participants

Fifty one earthquake survivors in Van participated in the study. All participants were living in Van at the time of the earthquakes. The sample had 34 females (66.7%) and 17 males (33.3%). The mean age of the participants was 36.94 (range: 19-69), and standard deviation was 11.41. The majority of participants were married (76.5%), primary school graduates (39.2%), unemployed (56.9%) and had health insurance coverage (92.2%). 27 of the participants identified themselves as having either low or very low levels of income, followed by 23 participants with medium level of income and only 1 participant identifying

himself as having high income level. None of the participants responded to the choice of upper middle income level. Compared to 25 participants reporting no change in their income since the earthquakes, 22 participants reported a decrease and 4 reported an increase in income following the Van earthquakes. Table 3.1 provides information on the participants' socio-demographic representation.

Table 3.1 Socio-demographic representation of the participants in the qualitative study (N = 51)

<i>Variable</i>	<i>f</i>	<i>%</i>	<i>Mean</i>	<i>SD</i>	<i>Range</i>
Gender					
Female	34	66.7			
Male	17	33.3			
Age			36.94	11.41	19-69
Marital status					
Single	9	17.6			
Married	39	76.5			
Widow	2	3.9			
Divorced	1	2.0			
Education level					
Illiterate	3	5.9			
Literate	5	9.8			
Primary school	20	39.2			
Secondary school	6	11.8			
High school	10	19.6			
Vocational school	1	2.0			
University	6	11.8			
Employment status					
Employed	16	31.4			
Unemployed	29	56.9			
Retired	6	11.8			
Health insurance coverage					
Yes	47	92.2			
No	4	7.8			
Self-reported monthly income level					
Very low	12	23.5			
Low	15	29.4			
Medium	23	45.1			
High	1	2.0			
Change in income since earthquake(s)					
No	25	49.0			
Increased	4	7.8			
Decreased	22	43.1			

In addition, 33 participants (64.7%) reported being at their homes at the time of the earthquake (which participants were exposed to). Earthquake exposure resulted in great amount of losses among the survivors. Approximately one fourth of participants ($n = 13$, 25.5%) lost a close one (mostly relatives) in the earthquakes, and a total of fifteen participants (29.4%) had themselves or a close one injured during the earthquakes. Participants also reported high levels of financial loss due to the earthquakes. 72.5% of participants ($n = 37$) reported losing their property (home, store) or assets (money, furniture, animals) during or after the earthquakes. Finally, ten participants (19.6%) reported having suffered from a psychological disorder in the aftermath of earthquakes. One participant (2%) reported getting psychological treatment and three participants (5.9%) reported taking medications for psychological difficulties they were experiencing; and only two participants (3.9%) were in psychological treatment at the time of data collection. Table 3.2 provides information on the participants' responses to disaster-related questions.

Table 3.2 The participants' responses to disaster-related questions

<i>Question</i>	<i>f</i>	<i>%</i>
Where were you at the time of the earthquakes?		
At home	33	64.7
Other (e.g., at school, at work, outside)	18	35.3
Have you lost someone close during the earthquakes?		
Yes	13	25.5
No	38	74.5
Did you or someone close get injured during the earthquakes?		
Yes	15	29.4
No	36	70.6
Did you suffer financial losses due to the earthquakes?		
Yes	37	72.5
No	14	27.5
Did you have a psychological problem/disorder requiring treatment?		
Yes	10	19.6
No	41	80.4

3.2.2 Interview Schedule

A semi-structured interview protocol was used for collecting in-depth information from survivors of the Van earthquakes. According to Patton (2002), semi-structured type of interviewing allows the researcher and the participant to naturally and spontaneously interact on the topic. It offers possibility to personalize questions for immediate situations and also flexibility in obtaining information.

Prior to the interviews, a participant information form was provided in order to obtain information regarding participant's socio-demographic characteristics including age, gender, marital status, employment status, monthly income level, health insurance coverage, and variables related to earthquake exposure (the place at which the earthquakes were experienced, family members in the house at the time of the earthquakes, loss of close ones, injury of self/close ones, change in income, financial loss, psychological problems following the earthquakes).

The semi-structured interview schedule consisted questions focusing on the factors perceived by the individuals exposed to the earthquakes as associated with psychological resilience. The questions followed a logical order, from more general questions to more specific ones. The interview began with a general question regarding psychological resilience. Since there is no direct translation for the term "resilience" in the Turkish language and a variety of Turkish terms (e.g., "*yılmazlık*", "*dayanıklılık*", "*sağlamlık*") emerged during literature searches, inclusion of a brief description for psychological resilience in the question was opted suitable. Interviewees were then asked how resilient they perceived themselves and why. Next, more specific questions for specified domains (e.g., personal qualities, coping, attributions) were directed. To expand a given response and improve comprehension, probing questions were provided whenever necessary (e.g., "Would you please tell me more about that?").

The questions are listed below:

1. Earthquakes may result in psychological distress and other problems among survivors. However, some may more easily bounce back to their normal routine than others. It is said these individuals are “resilient”. How would you evaluate yourself in terms of psychological resilience? [*The participants responded by marking one of three boxes labeled as ‘very much’, ‘moderate’, or ‘none’*]
2. Would you tell me more about your self-evaluation?
3. In your opinion, what kind of individuals would be more likely to have psychological resilience following earthquakes?
4. Which personal characteristics would help these psychologically resilient individuals to overcome problems associated with the earthquake? Which individuals would overcome the situation more easily?
5. How would individuals with higher levels of psychological resilience attribute the reasons for and the damage caused by the earthquakes?
6. How would individuals with higher levels of psychological resilience cope or deal with the challenges they face following earthquakes?

3.2.3 Procedures

Ethical permission for the study was granted from The Applied Ethics Research Center of METU for study with human participants, the Governorate of Van, and the managers of container cities (i.e., Anadolu and Duhok container cities located in Van city center) at which the qualitative study took place.

In the present study, a non-probability sampling strategy was employed for participant selection in the qualitative phase. In non-probability samples, researchers target a particular group of individuals, in the full knowledge (Cohen et al., 2000). Specifically, purposive sampling procedures were applied. Participants were selected to be included in the sample based on their availability and the researcher’s judgment about their typicality and information-richness

(Cohen et al., 2000; Patton, 1990). Eligible participants were contacted and asked for study participation.

All interviews were conducted face-to-face by the researcher and a clinical psychology graduate assistant (YA) in the study site. The two interviewers were clinical psychologists and also doctoral-level research assistants employed in the same department, and were trained in qualitative data collection. The questions were read from a standardized survey form. Responses were written verbatim. Handwritten responses were later transcribed using a word-processing program. The total time for the administration of the interview was approximately 20 minutes. Data collection took part approximately eleven months after the earthquakes, on 9-16 September 2012.

Before conducting the interviews, written informed consent was obtained from the participants. Thus, in addition to the interview schedule, an informed consent form was delivered to and signed by the participants. This form provided information about the purpose and the importance of the study. Participants were assured verbally and in written form that they could withdraw at any time and their anonymity and confidentiality would be maintained at all stages of data collection, analysis, and dissemination of results. Following interviews, participants were debriefed using a written form including aims of the study, expected time for results, and information on contact persons, and thanked. Informed consent and debriefing form used in the present study are presented in Appendix B.

3.2.4 Data Analysis

In the present study, verbal responses of the participants to open-ended questions about psychological resilience were the content of the analysis. Prior to the analysis, all data collected in the field were recorded in Microsoft Word 2010 processing software without any changes. 51 documents were constructed. Moreover, demographic variables were entered into IBM SPSS v20.0 Computer Software (SPSS Inc., 2011) for descriptive analyses. Qualitative data analysis

was aided by MAXQDAplus 10 qualitative research software (MAXQDA, 2011). MAXQDAplus is a tool for computer-based qualitative data analysis. It works with rich text and multimedia formats, and helps to organize, classify, and code qualitative data. It supports data in different languages, including Turkish. This software was chosen because it allows for visualizing data, provides a flexible coding system, and it is especially designed for mixed-methods research. All documents (or cases) were imported into the software for coding and analysis purposes.

According to Coffey and Atkinson (1996), coding of qualitative data partly depends on the intent of the researcher and can be more or less complex; it is “a first step toward organizing the data into meaningful categories” (p. 36). Coding process in qualitative research usually occurs on a continuum from data-driven to theory-driven coding. Boyatzis (1998) contrasted three different coding styles in qualitative research, namely theory-driven, prior research-driven and inductive approaches. Coding categories used in the first two deductive approaches emerge directly from a theory or a classification which was derived from a previous study with similar nature. In inductive approaches, raw data is used to construct codes and those codes often carry labels close to the words of the original data. There is seemingly a consensus between researchers to analyze the data in a manner evolving from the data itself (Kuş, 2006). Qualitative inquiry often includes an integration of inductive and deductive processes and qualitative data is used to inform and transform existing theory and research (Nastasi & Schensul, 2005). As described in the next paragraph, both inductive and deductive approaches were used in the present study for data analysis.

In the present study, for creation of categories, the upper level categories were identified and defined. Prior to the coding process, relevant empirical and theoretical literature on psychological resilience was reviewed in order to identify important variables and to form the upper level or more general categories. For forming the lower level categories, in-vivo coding was conducted. In-vivo coding, or open coding, is defined in the grounded theory approach (Kuş, 2006)

which aims to systematically generate, modify or extend existing theories from the data collected by researchers maintaining sensitivity to possible theoretical relevances without any rigid preconceived assumptions (Glaser & Strauss, 1967). In-vivo codes, as contrast to sociologically constructed codes, are derived from the terms and the language of social actors in the field (Strauss, 1987). In this study, existing knowledge and theory were used during the identification process of the upper level or main categories. After coding to main categories was completed, a thorough check was performed on the content of each category. As the next step in the qualitative data analysis, lower level categories were created and similar or the same responses were coded into them. During the process of coding a response into a lower level category or naming categories and codes, each response by participants was reviewed in detail. The lower level categories were completely derived from the raw data using in-vivo coding; actual words and phrases used in specific segments of the text were used to create in-vivo codes following the guidelines for general inductive approach by Thomas (2003). Each participant's responses were coded into these categories for each question. The coding system was composed of categories and codes ordered and listed according to each question asked. For responses within the data which did not fit into identified categories, new categories were formed or the content of each category was expanded to include similarly grouped responses. The process of reviewing the literature and forming higher level categories (deduction), coding from raw data into categories and higher level categories (induction) and thoroughly checking all codes and categories was continued rigorously during the analysis.

A detailed inspection of responses to 3rd and 4th questions about individual characteristics associated with resilience revealed that responses were generally very similar and the majority of participants provided the same responses to each question. Therefore, responses were combined and coded together to ensure that responses were not replicated and code frequencies were not inflated. In addition, each single response for the questions was not double-coded based on the observation that the content of the responses allowed coding only in one single

category. The percentage of participants pronouncing a response under a particular code and the ratio of the response to all responses in this question were not provided separately. Hence, the percentages shown in the tables and figures in the following section represent the number of participants who mentioned a particular code.

3.3 Results

The qualitative analysis concerned four primary topics: (1) participant's perceptions about their own level of psychological resilience and their attributions about their reported state of resilience, (2) participants' perceptions about personal qualities and characteristics associated with psychological resilience, (3) attributions about the causes of damage in the earthquakes and (4) participants' perceptions about coping strategies and styles associated with psychological resilience.

3.3.1 Self-reported Levels of Resilience and Attributed Reasons

Among 51 earthquake survivors interviewed, more than half of them ($n = 27$, 52.9%) viewed themselves as highly resilient to disasters followed by 15 (29.4%) survivors reporting to have moderate levels of resilience. Furthermore, 9 (17.6%) survivors perceived themselves as having low levels of resilience. The reasons participants gave for these perceived levels of resilience were also examined (see Table 3.3).

Most of the participants ($n = 27$, 52.9% of all participants) perceived themselves as showing high levels of psychological resilience following adversity. Being religious was the most pronounced reason given for being highly psychologically resilient. Responses such as "Belief in God helped me cope with difficulties", "Belief in God is extremely important after such events", "I am now very comfortable because I have faith in God", "God relieved our pain and suffering" were coded under "Belief in God/Being religious". Assuming responsibility for the family and having to look after family members such as providing food and

shelter was the second most pronounced reason given for being highly resilient. Being patient and optimistic, receiving social support from others, not having lost close ones in the earthquakes, being able to resume daily routine, and also not leaving the city following the earthquakes were other reasons given for being highly resilient. Having financial resources, having previous earthquake experience, and having good physical health were also among the reasons for high resilience level reported by the survivors in Van.

For the participants with self-reported moderate levels of psychological resilience ($n = 15$), a mix of negative and positive factors appeared as reasons. Positive reasons included assumed responsibility for the family, having no loss of close ones in the earthquakes, participation in volunteer work, and being able to resume daily routines. Negative reasons included limited financial resources, adverse physical conditions, having experienced previous traumatic life events, and problems in the family. Holding responsibility for the family was the most pronounced reason (6/18, %33.3); all participants whose responses were coded under this category indicated that they were struggling and trying to cope for the sake of their children and family. Furthermore, the participants indicated experiencing difficulties and challenges following the earthquakes; however, different from the participants reporting themselves to be not resilient at all, these participants additionally provided positive reasons. For example, one participant said that physical conditions were very challenging due to cold weather and problems in family including violence were increased. However, her family was able to resume their daily routine and this gave her strength to cope with problems. Another participant also stated resumption of daily life following earthquakes as a resilience factor despite apparent lack of financial resources.

Finally, the analysis of qualitative data indicated that among nine individuals who reported themselves as being not resilient at all, lack or low levels of financial resources (3/11 responses, 27.2%) and problems in family (3/11 responses, 27.2%) were reported as the most frequent reasons. This was followed by

problems with physical health including chronic illnesses, existing psychological problems, and having lost a close one during the earthquake.

Table 3.3 Self-reported levels of resilience and attributed reasons

<i>Level</i>	<i>Codes for reasons</i>	<i>Frequency</i>
Low (<i>n</i> = 9)	Lack of financial resources	3
	Problems in family	3
	Problems with physical health	2
	Psychological problems	2
	Loss of close ones	1
	Subtotal	11
Moderate (<i>n</i> = 15)	Assuming responsibility for the family	6
	Adverse physical conditions	3
	No loss of close ones	2
	Participation in volunteer work	2
	Limited financial resources	2
	Previous traumatic experiences	1
	Being able to resume daily routine	1
	Problems in family	1
Subtotal	18	
High (<i>n</i> = 27)	Belief in God / Being religious	10
	Assuming responsibility for the family	7
	Being patient and optimistic	6
	Social support	5
	No loss of close ones	4
	Being able to resume daily routine	4
	Participation in volunteer work	3
	Staying in Van following the earthquakes	3
	Financial resources	2
	Previous earthquake experience	1
	Good health	1
Subtotal	46	
Total	75	

Figure 3.1 illustrates the model for self-reported resilience levels and perceived reasons for the level of psychological resilience. Percentages shown in the figure represent the ratio of the frequency of codes under each self-reported resilience level to the total frequency of codes which was 75.

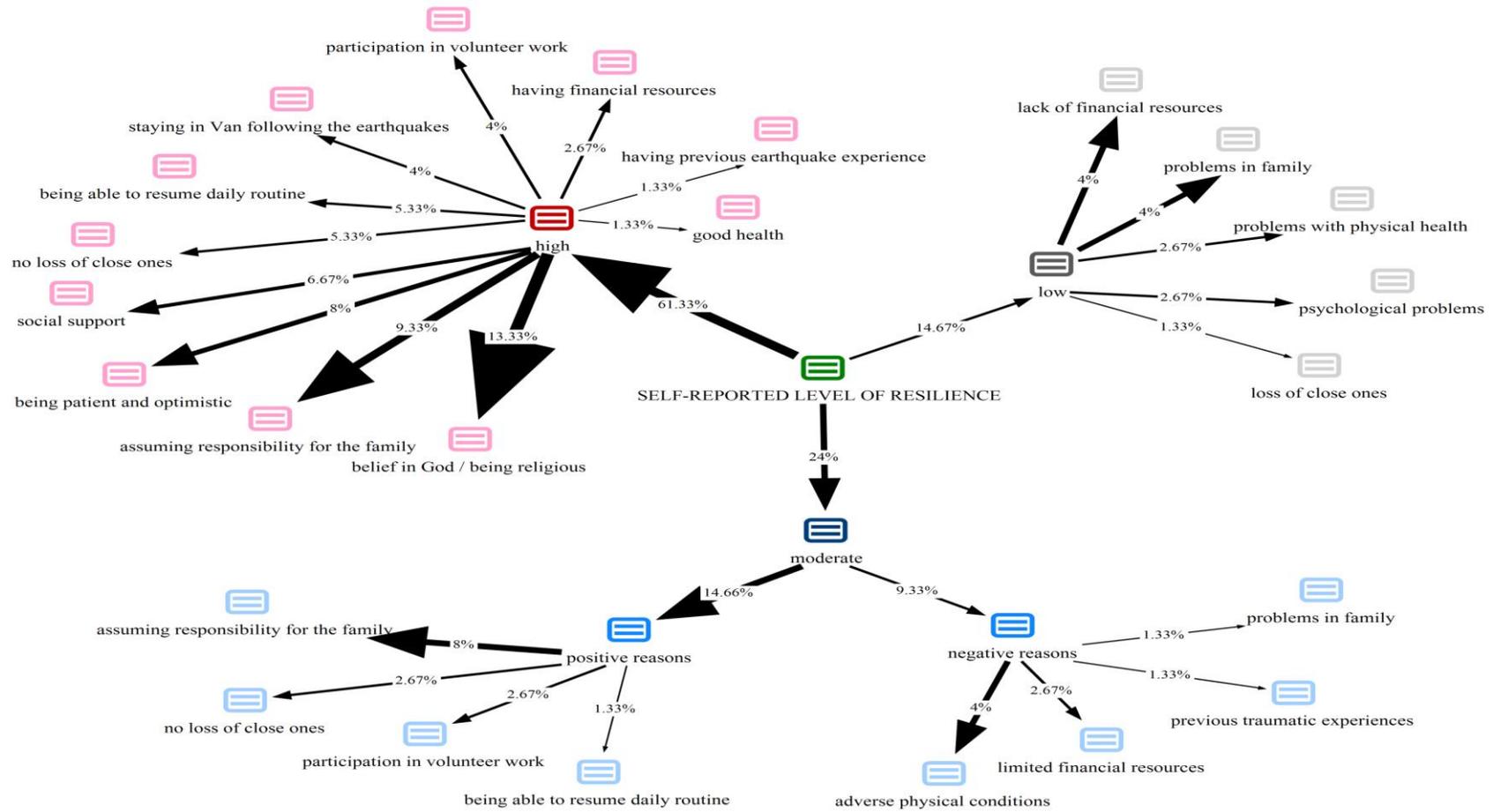


Figure 3.1 The model for self-reported resilience levels and perceived reasons

3.3.2 Personal Qualities/Characteristics and Psychological Resilience

The participants were asked about personal qualities and characteristics a psychological resilient individual will likely have. Main categories and codes are listed on the basis of frequencies of responses in a descending order in Table 3.4. The percent of the frequency for each main category (number of responses in the category/total number of responses) is presented in parantheses.

Table 3.4 Perceived personal qualities and characteristics associated with psychological resilience

<i>Main Categories and Codes</i>	<i>Frequency</i>
1. Personality	87 (39.01%)
Patient	15
People with a relaxed attitude	9
Grateful	8
People who care for others	6
Brave / Courageous	4
Optimistic	4
Coolheaded	3
People with good intentions	3
Smart	3
Careless / Insensitive	3
Hopeful	2
Helpful	2
Extraverted	2
People with fortitude	2
People with self-esteem and self-efficacy	2
Easily adapting	1
Mature	1
Loving	1
Responsible	1
Content	1
Single-minded	1
Persistent	1
People with strong will	1
People with inner balance	1
Well-mannered	1
Not greedy	1
Not perfectionist	1
Ruthless	1
People who don't appreciate others or what is being done	1
Irresponsible	1
People with no expectations	1

Table 3.4 (continued)	
People with nothing to lose	1
Egoistic	1
2. Material and financial resources	42 (18.83%)
Money	26
Home ownership	11
Job	4
Financial resources to leave the city in the aftermath	3
People who are not responsible from child care	1
Extra income (apart from salary)	1
3. Belief in God / Religiousness	27 (12.11%)
4. Previous experiences and life events	22 (9.87%)
Being experienced and educated about natural disasters	14
Being used to hardships and worse conditions	8
5. Social networks	21 (9.42%)
Having close ones around	14
Experiencing no loss of close ones	6
Being together with the community	1
6. Gender	10 (4.48%)
Men	5
Women	5
7. Age	8 (3.59%)
Old	6
Young	2
8. Mental health	6 (2.69%)
Being psychologically healthy and strong	5
Receiving psychological support	1
Total	223

Content analyses revealed eight main categories for personal qualities and characteristics. As seen in Figure 3.2, these were named as *personality, material and financial resources, belief in God/religiousness, previous experiences and life events, social networks, gender, age, and mental health*. In the figure, sub-codes are not presented for the purposes of parsimony and brevity.

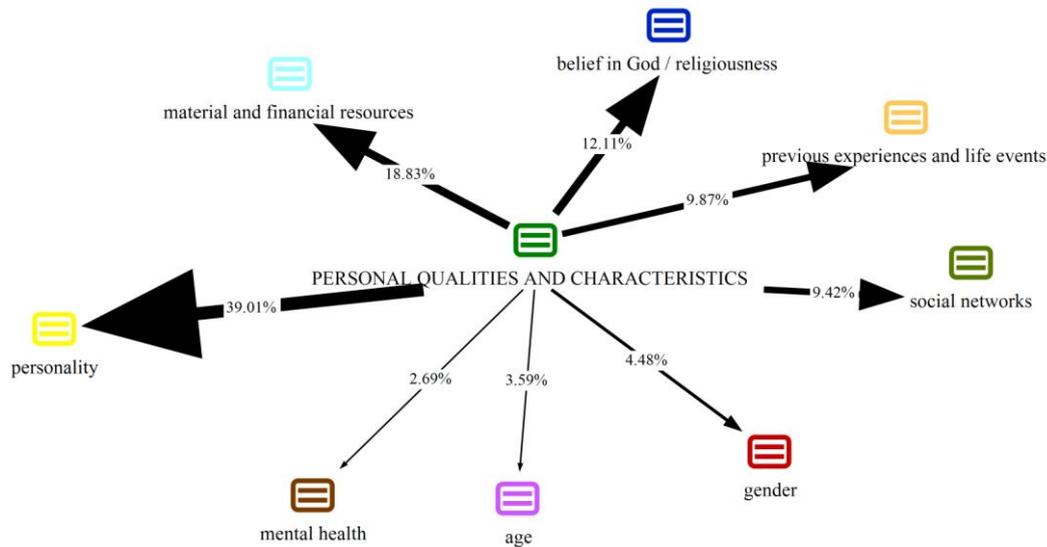


Figure 3.2 The model for personal qualities and characteristics associated with psychological resilience

The main category with the highest response frequency (corresponding to 39.01% of all responses) was *personality*. Psychological resilience was perceived to be associated with a high number of personality characteristics, with the majority of them being positive. These included qualities and characteristics such as “being patient”, “having a relaxed attitude”, “being grateful”, “caring for others”, being “brave/courageous”, “optimistic”, “coolheaded”, “having good intentions”, being “smart”, “hopeful”, “helpful”, “extraverted”, and “having fortitude” and “self-esteem and self-efficacy”. Other less pronounced codes included “ability to adapt easily to situations”, being “mature”, “loving”, “responsible”, “content”, “single-minded”, “persistent”, “having strong will” and “inner balance”, being “well-mannered”, “not greedy”, and “not perfectionist”. However, in 4% of responses, a number of personality characteristics that may appear as reflecting insensitivity to others were perceived as associated with psychological resilience. Participants mentioned that “careless/insensitive”, “ruthless”, “irresponsible”, “egoistic” individuals and “people who do not appreciate others and what is being done”, “people with no expectations”, “people with nothing to lose” would show psychological resilience in the face of an adverse event.

The second most pronounced category was *material and financial resources*. 18.8% of all responses were coded under this category. The category included “having money”, “owning a house”, “having a job”, “having financial resources to leave the city in the aftermath of earthquakes”, “not being responsible from child care”, and “having extra income apart from salary”.

Belief in God and religiousness was the third most pronounced category. 12.1% of all responses in this question were coded under this category. Participants mentioned that “people who believe in God”, “people who fear God”, “people who love God and the prophet” and “people who find strength through a strong belief in God” would be psychologically resilient in the face of adverse events.

Having previous experiences and life events also emerged as a perceived quality associated with psychological resilience. 9.87% of all responses to the question about personal qualities and characteristics were coded under this category. Being experienced and educated about natural disasters and being used to all kinds of hardships and worse conditions were the two main codes. Responses including “people with previous earthquake experience have more resilience”, “people who know what could happen in an earthquake become resilient”, “resilient people are the ones who has been in the midst of a disaster” were coded under “being experienced and educated about natural disasters”; and responses including “people who have seen a lot are better off psychologically after an earthquake”, “people who are used to hardships and difficulties cope better”, “poor people are resilient because they know there is worse of anything” were coded under “being used to hardships and worse conditions”.

Undisrupted *social networks* were also perceived to be an important resilient characteristic during interviews. 41.2% of participants ($n = 21$, corresponding to 9.42% of responses) mentioned that having close ones around, experiencing no loss of close ones in the earthquakes, and being together with the community would be associated with resilience in the face of earthquakes. Responses including “people who have loved ones and neighbors around”, “being together

with the spouse and children”, “receiving support from family” were coded under “having close ones around”, “people who do not lose close ones during earthquakes”, “people whose children are alive and well”, “people who witness no death of loved ones” under “experiencing no loss of close ones”, and “being together and bonding with the community” under “being together with the community”.

Demographic characteristics (corresponding to 8% of responses) were perceived to be associated with psychological resilience. Three fourth of participants said that older individuals would be more resilient compared to two participants indicating that being young was a resilience indicator. For both gender categories, there was no observed trend in responses in favor of men or women; an equal number of responses (frequency of five for each) were obtained about women or men to have higher psychological resilience.

Finally, good *mental health* was pronounced by few respondents ($n = 6$) as a quality of resilient individuals. Responses of the participants including “being psychologically healthy”, “not being an individual with panic disorder”, “having no psychological problems” and also “receiving professional psychological support and not having any problems” were coded under this category.

3.3.4 Damage Attributions and Psychological Resilience

Participants were also asked how psychologically resilient individuals would appraise the damage caused by the earthquakes and whether any specific attribution would lead to a resilient outcome. Table 3.5 presents main codes and categories generated for the open-ended question addressing cognitive attributions. The percent of the frequency for each main category is presented in parentheses. As seen in the table, psychological resilience was perceived to be associated with a range of attributions, i.e., “Earthquakes are given by God”, “Earthquakes are the result of impact to non-resistant buildings”, “Both God and natural causes act together in the creation of earthquakes”, and “Earthquakes have natural causes”.

Table 3.5 Damage attributions about the earthquakes associated with psychological resilience

<i>Main Categories and Codes</i>	<i>Frequency</i>
1. Earthquakes are given by God	45 (90%)
Given as a warning	8
Given as a punishment	4
Given as a test	3
Given as fate	2
Reason not specified	28
2. Earthquakes are the result of impact to non-resistant buildings	2 (4%)
3. Both God and natural causes act together in the creation of earthquakes	2 (4%)
4. Earthquakes have natural causes	1 (2%)
Total	50

Almost all participants (90%) reported that psychologically resilient individuals would view the earthquakes as an act of God. Although majority of participants (28/45) did not assign a motive for the action; themes of warning, test and punishment and God-given fate were apparent in responses of others. Examples of responses under this code were “God would create earthquakes to test his believers and only if one believes that God is the reason behind all this suffering, he is resilient, he can cope with any difficulty encountered”, “God is the reason for all we live and if you see that as an act of God, you can handle all difficulties with calmness”, “It is fate and it is God-given; this is the only thought that could help” and “Natural hazards are part of the God’s plan and the only way to have your mental mind intact is to believe that this is no human action, but it is given”.

Few other participants argued that resilient individuals would attribute the reasons for the damage caused by them to the impact of non-resistant buildings with sturdy design, a combination of natural causes and God’s plan, strictly natural causes. The reason for damage caused by earthquakes was attributed by only two participants (%4) to *non-resistant buildings*. Two participants (4%) argued that earthquakes and subsequent damage are *a creation of both God and natural causes*. The least relatively cited category of attributions concerned *natural causes*. Only one participant (2%) mentioned that earthquakes “are

completely natural happenings because the only reason for earthquakes were the existence of active fault lines in the region and if one views it that way, she or he shall adapt and cope better”.

3.3.4 Coping Strategies/Styles and Psychological Resilience

One of the questions in the interview was about coping strategies and styles perceived to be associated with a psychologically resilient outcome. Main categories and codes generated for this question are presented in Table 3.6. The percent of the frequency for each main category is presented in parantheses.

Table 3.6 Perceived coping strategies and styles associated with psychological resilience

<i>Main Categories and Codes</i>	<i>Frequency</i>
1. Religious coping	19 (24.36%)
Engaging in religious practices	15
Being grateful to God for no greater damage	4
2. Coping through social networks	19 (24.36%)
Social support from family and others	13
Social cooperation and bonding	6
3. Active coping	14 (17.95%)
Struggling and trying to bounce back	7
Engaging in social activities and hobbies	3
Resuming daily routine	3
Creating own chances without waiting for help	1
4. Coping through preparedness and mitigation	10 (12.82%)
Building/living in earthquake-resistant buildings	5
Education on preparedness	1
Securing furniture	1
Not specified	3
5. Coping through utilization of resources	9 (12.82%)
Utilizing financial resources	8
Utilizing resources in general	1
6. Passive coping	7 (8.97%)
Trying to forget and repress the memory	4
Being patient and waiting for good things to happen	2
Trying to relax thinking there are people in worse conditions	1
Total	78

Content analyses revealed six main categories and these were named as *religious coping*, *coping through social networks*, *active coping*, *coping through preparedness and mitigation*, *coping through utilization of resources*, and *passive coping*.

Majority of the participants said that *religious coping* following earthquakes would contribute to an individual's resilience. 19 out of 51 participants (23.1%, corresponding to 24.36% of responses) referred to religion when asked about coping styles and strategies associated with psychological resilience. This category included two codes which were engaging in religious practices such as praying, namaz, and reading Quran (15/19), and being grateful to God for no greater damage due to earthquakes (4/19).

The same amount of responses was coded under the category of *coping through social networks* which includes 24.36% of all responses to the sixth question in the question form. Perceived social support from family members and others was the most pronounced response in this category. Responses which include themes of "support from family", "support from community members", "being able to talk with close ones about difficulties encountered", "being together with others", "holding onto life with the help of family", "quality relationships with neighbors", "support from spouse" were coded under "social support from family and others". Furthermore, "social cooperation and bonding" including sub-codes "bonding and connecting with community members" and "creating a close-knit community", and "struggling together as a nation" was the other main code under this category.

The third most pronounced coping strategy associated with psychological resilience was labeled as *active coping*. Similarly to the category of religious coping, 17.95% of responses to the question about coping corresponded to this category. Participants (7/51) mentioned that struggling and trying to bounce back was the most important resilient response following earthquakes. Responses such as "It is important to try to reach prior conditions", "Going back to previous life

makes us resilient”, “Resilient people try to fix their lives”, “They fight with challenges”, “Resilience is achieved through holding onto life” were coded under this main code. In addition, engaging in social activities and hobbies such as reading books, going to picnics, travelling (3/51), and resuming daily routine and activities such as going to work, school (3/51) were other pronounced resilient coping strategies. One participant said that resilient individuals would create their own chances and opportunities; they would be active and not wait for help from outside.

Other less pronounced coping strategies included *coping through preparedness and mitigation* (12.82% of responses) and also *through utilization of resources* (12.82% of responses). It was argued that living in earthquake-resistant buildings, provision of education on earthquake preparedness, securing furniture was important for resilient outcomes to occur. There were also participants (3/51) who talked about the crucial importance preparedness and mitigation for resilience but did not specify why. Furthermore, 9 out of 51 participants acknowledged the role of utilization of resources in coping with earthquakes. Participants mentioned that having financial resources including savings, regular income, and money or being financially resourceful in general would be associated with psychological resilience.

Possibly consistent with a negative view of resilience observed during the interviews, seven participants (13.7% of participants, 8.97% of responses) asserted that a *passive coping* style was important for a resilient outcome. Specifically, they stated that forgetting and trying to repress memories about the earthquakes or being patient and waiting things to become better would contribute to resilience. In addition, some indicated that “the only thing to cope would be to think there are people in worse conditions and to relax on this thought”.

Figure 3.3 illustrates the model for coping responses and styles associated with psychological resilience.

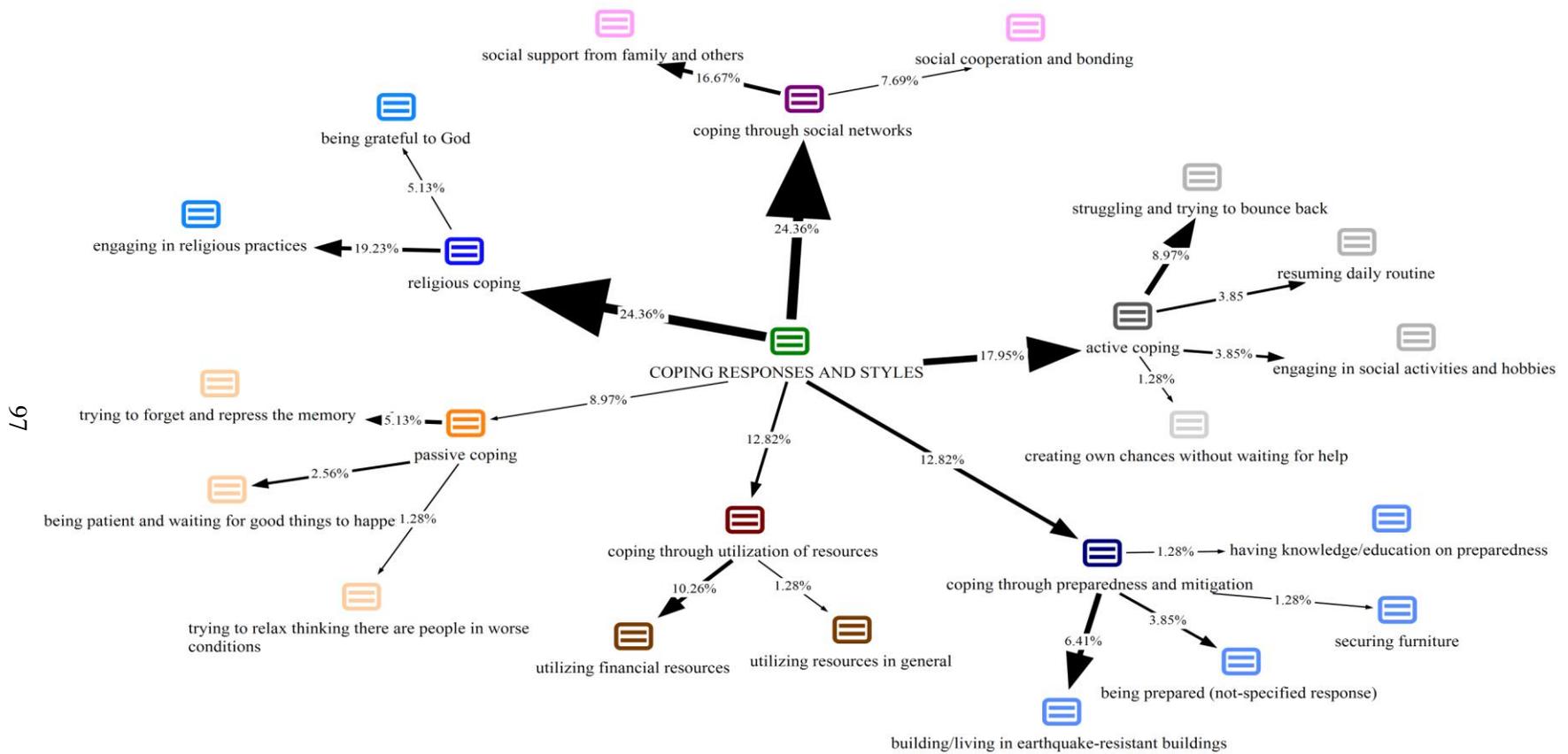


Figure 3.3 The model for coping strategies and styles associated with psychological resilience

3.4 Discussion

The qualitative phase of the present study aimed to understand the perceptions about psychological resilience and associated factors among Turkish earthquake survivors. In order to understand these perceptions, six questions were directed at fifty one earthquake survivors who had experienced the 2011 Van earthquakes. Discussion on the findings based on the analysis of the semi-structured interviews includes four topics: (1) survivors' perceptions about their own level of psychological resilience and their attributions about their reported state of resilience, (2) survivors' perceptions about personal qualities and characteristics associated with psychological resilience, (3) survivors' perceptions about attributions about the damage caused by the earthquakes, and (4) survivors' perceptions about coping strategies and styles associated with psychological resilience. Following this discussion, a general conclusion including limitations and directions for future research is presented in the final section. Implications for clinical practice and applied field for both phases of the study are presented in the final chapter along with a general discussion of findings from different phases of the study.

Self-reported Levels of Psychological Resilience and Attributed Reasons

Using semi-structured interviews, the participants were asked about perceptions about their own levels of psychological resilience and also the factors they perceived as associated with resilience. In agreement with the literature, the results revealed that the majority of the participants reported themselves as highly resilient to disaster effects. Similar to the results of the present study, resilience has been recognized as a common response trajectory following traumatic events with estimates ranging between 13.5% and 77.8% in a number of studies (Bonanno et al., 2011; Hobfoll et al., 2009; Pietrzak et al., 2014). Although the estimate in the present study (52.9%) was based on self-report rather than a measure of psychological resilience, it could be placed towards the higher end of the estimates in the literature.

The results revealed that self-reported reasons about being highly resilient to the earthquakes were diverse. The most pronounced reasons were believing in God/being religious, assuming responsibility for the family in the quake aftermath, being patient and optimistic, having social support, not experiencing death of close ones during the earthquakes, and being able to resume daily routines after the quakes. Similarly, as expected, for survivors categorizing themselves as showing moderate level of resilience, a combination of positive and negative attributes/experiences were given when asked about reasons for their state of psychological resilience. The most frequently reported positive reasons were assuming responsibility for the family, not having lost any close one during the earthquakes, and participation in volunteer work in the aftermath of the earthquakes. Therefore, degree of exposure and being involved in a social network (family or volunteer work) seemed important.

Overall, as mentioned previously, it was found that the majority of survivors interviewed perceived themselves as highly resilient. Belief in God and being religious were among the primary sources of resilience for those survivors. Interestingly, this source was not pronounced by the survivors who reported themselves as moderately resilient. Religiousness and attachment to God has been reported to be positively associated with psychological resilience (e.g., Brown & Thomas, 2013; Javanmard, 2013); it may increase comfort, hope, forgiveness and offer emotional release by reducing helplessness and loss of control (Brewer-Smyth & Koenig, 2014; Peres, Moreira-Almeida, Nasello, & Koenig, 2007). Therefore, the survivors might have perceived that the comfort, hope, etc. resulted by the religious beliefs and practices would increase resilience by promoting acceptance and sense of control.

In the present study, assuming or accepting responsibility for basic needs of the family members and participation in voluntary-based disaster relief efforts are highly reported sources which facilitate resilience. These may strengthen the sense of personal agency and self-efficacy of disaster survivors. Similarly, being able to resume daily routine in the disaster aftermath may also foster these

factors. Agency and self-efficacy are viewed as important factors which enable individuals to persist in the face of adverse events. Mastery motivation system is “so powerful that many individuals prefer to shoulder the responsibility for events beyond their control, rather than believe that events are completely uncontrollable” (Masten & Obradovic, 2008, p. 8). Thoits (2006) stated that exercising personal agency and being able to reverse or extricate oneself from the unfortunate aftermath are associated with better mental health outcomes. Through problem-solving and purposeful efforts, people who exercise agency may transform or compensate for stressors that they cannot avoid or eliminate such as natural disasters or adversities in the aftermath (Thoits, 2006). In addition, they may also have a function of strengthening ties and sense of connectedness in the social circle. The fostering role of functional social ties and sense of connectedness in the community for resilience is well-recognized in the literature (e.g., Denz-Penhey & Murdoch, 2008; Mancini & Bonanno, 2009 Sümer et al., 2005). Furthermore, another source of resilience, not having lost any close ones during the earthquakes, was also apparent in the responses of the survivors who perceived themselves as having moderate-to-high psychological resilience. Death of a close one during disasters is associated with traumatic stress symptoms, as shown by Başoğlu, Kılıç, Şalçioğlu and Livanou (2004) in a group of earthquake survivors from Turkey, and also with intense sadness, other health problems, intrusive preoccupation with the loved ones and transient cognitive disorganization, and impaired role functioning (Bonanno et al., 2010). Therefore, loss of close friends or relatives may hinder psychological resilience, increasing negative affect, fostering grief reactions, and contributing to poor mental outcomes.

The participants acknowledged the importance of resources for psychological resilience in their responses. As in the negative responses attributed for moderate levels of resilience, lack of financial resources was the most prominent reason for self-reported low levels of psychological resilience in the present study. Lack of financial resources and other adverse conditions in the quake aftermath were also among the most frequently pronounced reasons for the survivors reporting

themselves as moderately resilient. Existence of financial resources was also pronounced as a reason by the participants reporting themselves as having high resilience. Lack of economic resources makes it more difficult for survivors to withstand the impact of the disaster; loss of economic resources as a result of the disaster is an even more imposing risk factor for poor postdisaster psychological functioning (Bonanno et al., 2010). The importance of availability, conservation, and sustainability of resources for resilience and positive adaptation has also been discussed by many researchers such as Butler et al. (2007), Hobfoll et al. (2009), Johnson et al. (2009), and Norris et al. (2002). Resources are the key element in the Conservation of Resources (COR) theory (Hobfoll, 1989; Hobfoll & Lilly, 1993) in which stress is considered to occur when resources are lost, threatened, or invested without subsequent gain. Therefore, lack of resources including money may hinder psychological resilience. Problems with physical and mental health were also important determinants of perceiving themselves to have low resilience for two survivors. Resilience is characterized by most researchers as being able to maintain stable and healthy levels of functioning (e.g., Bonanno, 2004; Masten, Best, & Garmezy, 1990; Leipold & Greve, 2009). Therefore, an inability to maintain physical or mental health or previous financial status would impede resilience.

The results also showed that the perceived state of psychological resilience was frequently perceived to be associated with conditions in the aftermath of the earthquakes, suggesting that post-disaster environment also impacts psychological resilience. This finding is particularly consistent with the Multivariate Risk Factor Model of Freedy and colleagues (1992a) which suggests that post-disaster context is important for disaster adaptation. In addition, psychological resilience was frequently perceived as an outcome. This may be partly due to the structure of the questions in the interview schedule because the questions asked the state of resilience at the time of the interview, partially excluding the possibility of a process-based understanding. Or, this might have been observed due to the Turkish translation of the concept used by the interviewers (“*dayanıklılık*”) since resilience is commonly used in daily life in

Turkey as implying “resilience to” something instead of general resilience and this might have led individuals think more about the experience of the quakes and their aftermath. However, resilient traits (e.g., personality characteristics) and resilience processes (e.g., social support) were also evident in the responses. As discussed in the previous sections, resilience has been mostly defined in the literature as an attribute, an outcome, or a process. Therefore, the perception of the participants regarding resilience was consistent with the previous definitions and conceptualizations.

Personal Qualities and Characteristics Associated with Psychological Resilience

When the responses to the 3rd and 4th questions about personal qualities and characteristics associated with psychological resilience were examined, it was found that a wide range of personal factors were perceived as important for resilience. Various positive personality characteristics, material/financial resources, religiousness and belief in God, previous potentially traumatic experiences and life events, demographic characteristics, social networks and relationships, and good mental health were named as characteristics or qualities of individuals with psychological resilience. These findings are quite consistent with the findings of empirical studies cited in previous sections of the present study and the models guiding the present study.

The analysis revealed that personality characteristics were the most frequently cited qualities for resilience. These personality characteristics included various positive characteristics such as being patient, having a relaxed attitude, being grateful, and caring for others. In the literature about personality and psychological resilience, a positive relationship has been consistently found between resilience and personality factors including optimism, extraversion, agreeableness, and conscientiousness, and resilience has been mostly negatively associated with emotional instability (e.g., Davey et al., 2003; Furnham et al., 1997; Riolli et al., 2002). In addition, longitudinal studies also have shown that

personality characteristics predict resilience. For example, children with more positive temperaments were more resilient in later life (Werner & Smith, 1992). Personality characteristics were also deemed as important factors in various models and theories of psychological resilience, such as the models by Garnezy (1991), Schaefer and Moos (1992), or Mancini and Bonanno (2009). Therefore, the perception of psychological resilience as associated with positive personality characteristics is consistent with previous models and studies on resilient attributes. Surprisingly, some personality characteristics that may appear as reflecting insensitivity to others were also named as characteristics of resilience. Survivors stated that carefree, ruthless, irresponsible, egoistic individuals and individuals who do not appreciate others or what is being done, individuals with no expectations from life and individuals with nothing to lose would be psychologically resilient. These responses were particularly related to apparent negative outcome expectations of the participants after the earthquakes as some emphasized during the interviews that almost every survivor was affected heavily and negatively in Van; the participants might have perceived that bouncing back and returning to previous levels of functioning following such disruptive events would not be possible. Automatically linking disaster exposure with pathological outcomes following disasters are similar with what mental health researchers and practitioners have long searched for following potentially traumatic events (Tedeschi & Calhoun, 2004). Extreme exposure to traumatic events such as high-magnitude earthquakes may evoke expectations of pathological outcomes. These expectations are realistic to some extent, as posttraumatic distress and PTSD are common (e.g., Başoğlu et al., 2002; Neria et al., 2008; Nugent et al., 2014; Yıldız & Göker-Kuruoğlu, 2004) following traumatic events along with positive outcomes including resilience. Nevertheless, still, many people exposed to traumatic events maintain their psychological functioning and resilience is a common response trajectory following traumatic events (Bonanno et al., 2011; Hobfoll et al., 2009). This common observation was also reflected in the responses of few survivors stating that good mental health functioning is associated with high levels of psychological resilience. In addition, being

insensitive to others may be associated with a sense of avoidance in the face of traumatic experiences. Avoidance may act as a positive coping strategy for short-term stressors by reducing distress and increasing hope (Ibañez, Buck, Khatchikian, & Norris, 2004), resulting in low levels of negative affectivity. Hence, it is possible that such insensitivity and resulting low negative affect state may be functional in the post-disaster environment to distract survivors from adversities and to cope with them.

Material and financial, or economic, resources were also perceived to be associated with psychological resilience. Having money, regular income and other material resources such as home and job ownership were responses that were listed under this response category. As emphasized in the previous section about attributions about self-reported state of resilience, economic resources increase the ability of disaster survivors to withstand the effects of the disaster (Bonanno et al., 2010); therefore, they are important resources for facilitating resilience. Such resources are accepted as central for the conceptualization of resilience (Butler et al., 2007) and in disaster contexts, weak or deteriorating resources are associated with poor psychological outcomes (Hobfoll et al., 2009; Johnson et al., 2009; Norris et al., 2002). Hence, the availability and conservation of economic resources seem critical for psychological resilience, as also emphasized in the Conservation of Resources theory (Hobfoll, 1989; Hobfoll & Lilly, 1993).

Belief in God and religiousness also appeared as a prominent category. 39 percent of the participants cited this as a quality associated with psychological resilience. The ascribed importance of religiousness was consistent with the findings of an empirical study regarding religious beliefs and values in Van after the earthquake experience (Yilmaz & Isitan, 2012). Two thirds (66.5%) of the participants in this study reported that their beliefs were strengthened and almost half the participants (45.7%) stated that they engaged more in religious practices. The authors concluded that religious beliefs and practices would act to comfort individuals who were exposed to traumatic events and increase their ability to

withstand such events. As mentioned previously, the positive link between religiousness and resilience was also supported in several previous studies (e.g., Brewer-Smyth & Koenig, 2014; Brown & Thomas, 2013; Javanmard, 2013).

Another important personal quality which was perceived as important for facilitating resilience was having previous disaster experiences and other prior hardships. The survivors perceived that having disaster experience and education about disasters and also being exposed to hardships and challenging living conditions previously would facilitate psychological resilience. Van is one of the least developed cities in Turkey (Baday Yıldız et al., 2010; Daniell et al., 2011; Dincer et al., 2003) and is characterized by high levels of unemployment and low levels of educational attainment (TUIK, 2011; 2012). Therefore, individuals in Van are likely to be highly susceptible to various hardships. The latter perceived association between resilience and being used to all kinds of hardships is consistent with the stress inoculation hypothesis of Eysenck (1983; as cited in Bonanno et al., 2010). Prior traumatic life experiences might inoculate individuals against possible psychological harm in the future and help them prepare for future events. This may also be true for previous disaster exposure. Previous findings regarding prior disaster exposure in the literature are mixed; although prior exposure might also sensitize individuals to be more reactive to subsequent trauma, such exposure to stressors might also buffer against subsequent traumatic events and many empirical studies have demonstrated inoculation effects (Bonanno et al., 2010).

The perceived facilitating effects of social relationships and ties with the community in which the individual is embedded in, implied the importance of social capital. Social capital is an important variable for increasing the ability of survivors to adapt following the earthquakes. With regard to psychological recovery in the post-disaster phase, it has long been recognized that it is essential to mobilize networks of family and community and to receive support from others (Bonanno et al., 2002; Kaniasty & Norris, 2009). The emphasis made by the survivors on social networks in this study is also consistent with the evidence

from a review of studies measuring social capital at the individual level that showed that social capital is inversely related to common mental disorders (De Silva et al., 2005) and may be a resource for promoting individual well-being.

Some demographic characteristics were also perceived as personal characteristics associated with resilience. Firstly, out of the eight survivors who mentioned age as a personal characteristics related to resilience, older age was perceived as associated with higher psychological resilience by six survivors compared to two survivors who stated that younger individuals would be more resilient. In the literature, while there are studies showing that younger age is associated with higher resilience (e.g., Johnston et al., 2009), a larger number of studies seem to indicate an association between higher resilience and older age (e.g., Bonanno et al., 2006; 2007; Bonanno & Mancini, 2008; Cohen et al., 2014). The findings in the qualitative study regarding age support these mixed previous findings and also may reflect the inconsistencies between previous studies. In addition, the survivors in the sample stated that gender would affect psychological resilience. However, no trend was observed in the analysis in favor of men or women, possibly also reflecting the mixed empirical findings in the literature about gender and resilience.

Overall, a range of personal and environmental factors were perceived by the earthquake survivors in the qualitative study as associated with psychological resilience. The most prominent factors were personality, religiousness, social relationships and support, good physical and psychological functioning, previous experiences and life events, and resources or conditions in the post-disaster period. These are mostly in line with the models of psychological resilience presented in the introduction chapter.

Damage Attributions Associated with Psychological Resilience

A similar response pattern in which religiousness and belief in God were prominent themes was also observed during the inquiry about cognitive appraisals and attributions for earthquakes as related to resilience. Responses

were diverse; survivors stated that earthquake damage would be attributed to both controllable (e.g., building design) and uncontrollable (i.e., earthquake being an act of God) reasons and both type of attributions would facilitate psychological resilience. Although diverse, it is important to note that 90% of responses included attribution of damage to God. Perceived controllability of stressors has long been recognized as an important factor which increases adaptation (e.g., Foa, Steketee, & Olasov Rothbaum, 1989; Freedy et al., 1992a). However, majority of responses included attributions of uncontrollability. Specifically, almost all survivors responding to the questions about attributions stated that the Van earthquakes were given solely by God. Themes of warning, punishment for sins, test of faith, and fate were evident in responses. Fatalistic beliefs about uncontrollability of damage may hinder preparation and therefore, resilience (McClure et al., 2001). However, it should be kept in mind that many participants who attributed the damage to God indeed reported that they would control any possible damage (or risk) by truly fulfilling religious responsibilities such as praying more often and reading Koran regularly. Therefore, it may be wrong to directly consider any appraisal of the earthquakes as uncontrollable because they are created by God. Religious practices may act as tools which increase perceived controllability and hence, facilitate psychological resilience. These practices may enhance psychological well-being and promote acceptance of the negative experiences, thoughts, and feelings. The responses of the participants were consistent with positive religious coping strategies (Pargament et al., 1998; 2000) which were also highly pronounced as coping strategies associated with resilience; especially with religious purification/forgiveness, active religious surrender, religious helping and benevolent religious reappraisal.

Coping Strategies/Styles Associated with Psychological Resilience

The participants gave a wide range of coping strategies relating to psychological resilience. These ranged from active coping to passive coping and from religious coping to coping through disaster preparedness and mitigation. One might infer from these findings that any type of coping effort in the face of potentially

traumatic experiences is helpful for individuals to show psychological resilience; this finding is consistent with the view that different forms of coping, namely emotion- or problem-focused forms, might facilitate (or impede in some instances) each other in the coping process (Lazarus & Folkman, 1984) and that coping flexibility has been associated with good psychological adjustment (Cheng, 2001).

Again, similar to the content of the responses to previous questions, religious coping appeared in responses to the question about coping as a very prominent source of psychological resilience. It is not uncommon that people turn to religion to cope with stressful events they encountered. Religious coping is defined by Koenig, Pargament, and Nielsen (1998) as “the use of religious beliefs or behaviors to facilitate problem-solving to prevent or alleviate the negative emotional consequences of stressful life circumstances” (p. 513). Religious coping strategies are divided by Pargament and colleagues (Pargament et al., 1998; 2000) into positive and negative forms. A meta-analysis of 49 studies about religious coping and psychological adjustment to stress showed that positive religious coping was associated with positive psychological adjustment and negative religious coping was associated with negative psychological adjustment (Ano & Vasconcelles, 2005). Positive religious coping strategies consisted of religious focus, religious direction/conversion, seeking spiritual support, collaborative religious coping, spiritual connection, religious purification/forgiveness, active religious surrender, religious helping and benevolent religious reappraisal (Pargament et al., 1998; 2000). Two strategies which were pronounced by the survivors in the sample, engaging in religious practices and being grateful to God for no greater damage, seem to coincide with methods of religious focus and benevolent religious reappraisal respectively in positive coping strategies (Pargament et al., 2000) and therefore, their proposed relationship to high resilience in the present study is consistent with what Ano and Vasconcelles (2005) found in their study.

A similarly important coping strategy pronounced by the survivors was coping through use of social networks. Among coping strategies given, majority included problem-focused or task-oriented coping strategies. In addition to coping through social networks, active coping efforts, coping through preparedness and mitigation, and coping through utilization of resources were stated as associated with high levels of psychological resilience. Problem-focused coping, or approach coping, allows for action; it is associated with an increased possibility of noticing and taking advantage of changes in a situation (Ruth & Cohen, 1986). Problem-focused coping has been consistently shown to be associated with good psychological outcomes and resilience (e.g., Agaibi & Wilson, 2005; Campbell-Sills et al., 2006; Lever et al., 2012; Riolli et al., 2002; Yang et al., 2010).

Finally, surprisingly, some survivors perceived that individuals who tend to use passive, emotion-focused coping strategies would be more resilient. Passive coping strategies given by these survivors included emotion-focused or avoidance strategies. Specifically, these strategies were trying to forget and repress the memory of the earthquakes, being patient and waiting for good things to happen, and trying to relax emotionally by the thought of people living in worse conditions. Avoidance-focused strategies are generally associated with a higher number of costs relative to its benefits. It interferes with appropriate action and is associated with emotional numbness, intrusions of threatening material, disruptive avoidance behaviors, and a lack of awareness of relationship of symptoms to trauma (Roth & Cohen, 1986, p. 817). However, it has been also emphasized in the literature that avoidant, emotion-focused strategies may lead to an increased sense of control and may reduce stress and prevent anxiety from becoming crippling and they are better for adjustment compared to approach strategies when the encountered situation is uncontrollable (Freedy et al., 1992b; Roth & Cohen, 1986), such as in the case of earthquakes. Especially in the case of the Van earthquakes, use of passive coping strategies by the survivors might have been helpful in the post-quake environment because all of the survivors in the study sample were staying in container cities at the time of data collection and were waiting for the permanent housing sites to be built by the government.

Therefore, passive coping including being patient and waiting for good things to happen or trying to relax might have facilitated resilience for those survivors. Moreover, those coping strategies and relatively more adaptive strategies, i.e., problem-focused coping strategies, are not mutually exclusive; rapid alterations between the two orientations are possible while certain aspects of a stressor would be avoided while certain aspects are approached (Roth & Cohen, 1986). Therefore, the use of passive, emotion-focused strategies may be adaptive in some instances, such as the earthquakes and also coexist with other more problem-focused strategies, making the individuals flexible and more adaptive in their coping process with the stressful events (Cheng, 2001).

Hence, the qualitative findings suggested that a wide range of coping strategies was perceived by the survivors in the sample to be associated with psychological resilience. Among those strategies, religious coping and coping through social networks were the most pronounced strategies.

Limitations and Directions for Future Research

Inclusion of a qualitative phase in the current study has been considered important in order to open the pave to gather more enriched and culture-specific responses from participants because employing only quantitative methods does not allow hearing the voices of participants (Patton, 2002). However, there are a number of limitations specific to this qualitative phase of the study.

In the quantitative phase, a major limitation may be the provision of a definition for resilience in the first question. This was deemed necessary in the absence of a direct translation of the term in the Turkish language. However, this might have inhibited participants' own understanding of psychological resilience and responses might have been biased in the particular direction towards the mindset of researcher. Future studies would replicate and try to understand if participants' responses would change when such a definition is not provided.

This phase of the study included only individuals who consented to participate and answer questions. Available and resourceful individuals were reached using this recruitment method; therefore, the sample would have been biased in a particular direction as Mirdal (1984) suggested. In addition, the selection process could have resulted in a gender bias. More women than men participated in the qualitative study because data collection took place during the day working hours (between hours 9:00 AM and 7:00 PM) each day due to logistic reasons and security issues. Therefore, mostly housewives and some unemployed men who were in their homes at the time of data collection were reached in the field. This led to an unequal distribution of demographic variables, especially gender and educational level. Women and survivors with low educational attainment were overrepresented owing to the accidental nature of participant selection in this study.

One of the shortcomings of the study about the interview schedule was that only personal characteristics perceived to be associated with psychological resilience were asked to the participants. This may have affected the range of responses, resulting in a limited list of factors, and some other potentially important factors that would appear as related to resilience if asked otherwise may not have been identified. It may be important in future qualitative studies to focus on a wider range of factors such as psychosocial resources or health-related variables by not prompting participants to respond thinking only personal factors.

Finally, responses in the qualitative interviews were written verbatim and not audio- or video-taped because permission to record was not obtained from local authorities. In addition, recording was considered to potentially inhibit responses of some participants. However, this data recording method might have led to the loss of some sensitive information due to the difficulty of asking questions and writing responses at the same time. The interviewers completed field diaries and took notes between and after the interviews in order to be able to supplement written material and to partially overcome the limitations associated with this

chosen method. It is important for future studies to properly tape-record interviews to overcome limitations associated with writing the data verbatim.

Conclusion

Overall, “belief in God and religion”, “economic resources”, “social networks (including family relationships and support)”, “health”, and “positive personality characteristics” were the most pronounced factors that were perceived by the earthquake survivors as associated with psychological resilience. Furthermore, coping strategies included diverse strategies, reliance on social networks and religiousness appearing prominent among them. Similarly, disaster-related cognitions perceived as associated with resilience were also diverse. To conclude, survivors of the 2011 Van earthquakes in the study sample were able to identify various indicators leading to psychological resilience. This may imply that they were aware of the sources they could employ to strengthen their psychological resilience in disaster context.

The qualitative study also aimed to investigate perceptions about psychological resilience that may be specific to Turkish culture or to an earthquake context. The factors which were perceived as associated with psychological resilience in this sample of earthquake survivors were actually quite similar to identified resilience factors in the literature including theories/models and empirical studies from both Turkey and the globe. Although Turkey has been initially considered as a collectivistic country (Hofstede, 2001), recently it is considered as displaying both individualistic and collectivistic traits (Göregenli, 1995; İmamoğlu, 1987) and hence, Turkey is becoming more similar to Western cultures characterized by individualistic characteristics as it is similar to other collectivistic cultures. Therefore, identification of factors consistent with the literature dominated by studies from Western countries may be somehow reflecting these changes in Turkey’s position in dimensions of collectivism/individualism. Furthermore, this consistency with the literature may also point out to the possibility of the global nature of the resilience construct which contrasts with especially Ungar’s (2005;

2008; 2011; 2013) propositions about culture-dependency of resilience. However, Ungar (2013) himself asserts that resilience looks both the same and different within and between populations and mechanisms that predict positive outcomes are sensitive to contextual and cultural variations. Depending on those variations, some factors influence resilience more than others (Ungar, 2013). As Nastasi and Schensul (2005) underlined, “the view that culture and context might vary from one group to another does not imply that there are no universal social or psychological elements at work” (p. 179). Therefore, to conclude, psychological resilience may manifest similarly across cultures while mechanisms by which resilience is manifested may be altered according to differential impact of resilience factors. The contribution and role of different factors for psychological resilience was beyond the scope of the present study; however, further research on this subject matter is warranted.

Nevertheless, compared to the elements in the frameworks which guided the current study, namely the model of Schaefer and Moos (1992) and the Multivariate Risk Factor Model of Freedy and colleagues (1992a), religiousness appeared as a different factor which was perceived as facilitating psychological resilience. The importance of religiousness may be unique to the Van context because religious beliefs and practices of survivors seemed to be strengthened or increased following the earthquakes, as shown by Yilmaz and Isitan (2012). In addition, after the quakes, praying and counting prayer beads were reported among the listed daily activities by both women and men in Van along with childcare, getting supplies for the household, etc. (Tuna et al., 2012). In the post-disaster environment, many Quran training courses were offered in tent cities or container cities for survivors and Quran reading was one of the daily activities in those places, especially for women (Women’s Solidarity Foundation, 2012). Coupled with that two thirds of the sample in the present study was composed of female participants, the ascribed importance of religiousness in the study sample may appear expected. In addition, the increase in the number of Quran training courses after the earthquakes might have created a normative expectation in survivors in the Van context that religiousness increases the ability to cope with

adversities in the post-disaster phase. This normative expectation might have led the participants to state that religious belief and practices may save them and help them to withstand difficulties. Furthermore, a high number of positive personality traits were shown or hypothesized to be associated with resilience in previous studies and model. However, in the present study, some personality traits reflecting insensitivity toward others were also perceived as positively associated with resilience. Unique expression of these personality traits seemed specific to this sample, probably reflecting to functional value of avoidance in reducing distress and negative affectivity following high-impact disasters.

CHAPTER 4

FACTORS ASSOCIATED WITH PSYCHOLOGICAL RESILIENCE: THE QUANTITATIVE STUDY

This chapter presents the quantitative phase of the current study. The chapter includes four sections. In the first section, a brief introduction is presented to provide the rationale and the aims for the study. The second section provides information on the methodology including participants, study instruments, procedures, and data analysis. The results are presented in the third section and followed by a discussion in the fourth section which discusses the main research findings from this phase of the current study.

4.1 Introduction

Following the qualitative study described in the previous chapter, the second, quantitative phase is conducted consistent with the aims of the present study and the mixed methods methodology employed. Findings of the qualitative study showed that a combination of personal and environmental indicators, and certain coping responses and cognitive factors might play a role in how psychological resilience is manifested among disaster survivors. The quantitative study described in this chapter, is guided by the results obtained in the qualitative study and previous theories and empirical findings. It aims to discover the roles of the pre-, within-, and post-disaster variables (see Table 4.1 for full list of variables) in leading to psychological resilience in an earthquake context. Furthermore, this strand of study also tries to discover to what extent and in which ways those factors related to psychological resilience.

Psychological resilience is defined in the current study by the ability to cope with stress and adversity following the earthquakes in Van (i.e., resilience) and good psychological functioning (i.e., low levels of trauma-related psychopathology) in the face of adverse effects of the earthquakes. Literature review on resilience revealed that previous studies have assessed psychological resilience mostly by either measuring the construct directly using resilience scales or measuring it through indices of mental health functioning. These indices included psychopathological symptoms such as post-traumatic stress, depression, or other anxiety symptoms. The present study uses a direct measure for resilience and also assessed severity of post-traumatic stress symptoms. It is thought that such kind of assessment would allow gaining additional information on whether disaster-related variables are differentially associated with different indices of psychological resilience.

The variables included in the quantitative study were grouped under broad categories taken from the Multivariate Risk Factor (MRF) Model of Freedy et al. (1992a). According to the MRF Model, adjustment after a traumatic event is a process in which certain risk factors influence the outcome. The model distinguishes between broad domains of the risk factors. These are pre-disaster, within-disaster (or during disaster), and post-disaster factors. The interactive relationships between individual, environmental, and within-disaster experiences and resources of an individual determine subsequent adjustment (Freedy et al., 1992a). The focus in the MRF Model on pre-disaster factors is especially relevant in assessing mental health outcomes in a population with a relatively long history of exposure to stressors. The categories in the present study were pre-disaster factors, within-disaster factors, post-disaster factors, and mental health outcomes (psychological resilience).

In the quantitative study, it was hypothesized that (a) pre-disaster, (b) within-disaster, and (c) post-disaster factors would be associated with psychological resilience, and (d) two identified indicators of psychological resilience, namely resilience and severity of PTS symptoms, would be inversely related.

Table 4.1 Variables included in the quantitative study

Pre-disaster factors	Within-disaster factors	Post-disaster factors	Mental health outcomes (Psychological resilience)
<i>Socio-demographic variables</i>	<i>Severity of earthquake exposure</i>	<i>Post-disaster adversity</i>	<i>Resilience (stress-coping ability)</i>
Age	Objective severity of exposure	<i>Coping strategies</i>	<i>(Low levels of) Posttraumatic stress symptoms</i>
Gender	Subjective severity of exposure	Problem-focused coping	
Education	<i>Attributions of reasons for earthquake damage*</i>	Fatalistic coping	
Marital status*	<i>Attributions of controllability of reasons for damage</i>	Optimistic/seeking social support coping	
Working status*	<i>Attributions of disaster preventability</i>	Helplessness coping	
Insurance coverage*	Preventability of earthquakes in general	<i>Coping self-efficacy</i>	
<i>Prior disaster experience</i>	Preventability of the Van earthquakes	<i>Post-disaster social capital</i>	
Experience of earthquakes		Structural social capital	
Experience of other disasters		Cognitive social capital	
<i>Self-reported pre-quake health status</i>			
Physical health			
Mental health			
<i>Self-reported level of religiousness</i>			
Current level of religiousness			
Change in the level of religiousness*			
<i>Financial resources</i>			
Level of monthly income			
<i>Personality</i>			
Neuroticism			
Extraversion			
Optimism			
<i>Satisfaction with life</i>			
<i>Pre-disaster social capital</i>			
Structural social capital			
Cognitive social capital			

* These variables were only used for descriptive purposes and not included during hypothesis testing.

4.2 Method

4.2.1 Participants

A total number of 360 earthquake survivors in Van participated in the second phase of the study. The sample of participants consisted of earthquake survivors living in Van. Participants were recruited through using quota sampling procedures (Fink, 2006; Sturgis, 2012) in order to be able to reach people with different levels of earthquake damage exposure. In the present study, the sampling frame was organized for an equal representation of women and men from different districts in the Van city center with different levels of earthquake damage because the exact proportions of individuals with different exposure levels were not readily available. Therefore, the decision was to arrange equal quotas for each damage level (high/collapsed, moderate, or low/none) and gender. Participants in each quota were then selected using convenience sampling procedures (Fink, 2006).

The central province of Van has 30 registered districts and also 2 towns (Bostaniçi town with 5 districts and Erçek town with 2 districts). Bostaniçi and Erçek were excluded from the sampling frame and 30 districts were included. Information on damage status of all 30 districts was retrieved from the Governorate of Van and AFAD. Only the damage status of the households was examined; information on damaged workplaces and others were excluded from any investigation. Three categories of earthquake damage were identified for households: (1) slightly damaged districts or districts with no damage, (2) moderately damaged districts, and (3) highly damaged districts. Based on the number of damaged households provided by AFAD, percentages for each damage category were calculated and districts were ordered accordingly. The first three districts with highest percentages in each damage category were selected to represent that category. The first three districts with the highest percentages of slightly damaged households or households were Şemsibey (percent of households with slight damage/no damage: 95.73%), Akköprü (percent of households with moderate damage 82.20%), and İskele (81.75%). Alipaşa

(42.28%), Vali Mithat Bey (41.96%), and Hafiziye (34.36%) were selected to represent moderately damaged districts. Finally, three districts, Hacıbekir (percent of households with high damage 36.06%), Yenimahalle (30.12%), and Esenler (28.86%) were selected because those districts had the highest percent of highly damaged households among all the 30 districts. Moreover, two permanent housing sites in Van city center (Kalecik TOKİ and Bostaniçi TOKİ) which were built after the 2011 Van earthquakes for the survivors were also included in order to increase the possibility of reaching individuals who experienced the highest damage to their households because due to governmental policies, the right to placement in permanent houses was initially given to quake-affected families whose houses were collapsed or severely damaged during the earthquakes. Table 4.2 provides information on distribution of the sample according to damage status of the selected districts.

Table 4.2 Sample distribution according to the damage status of the selected districts

<i>Damage Status</i>	<i>District Name</i>	<i>Female</i>	<i>Male</i>	<i>Total</i>
None / Slight	Akköprü	25	15	40
	Şemsibey	33	7	40
	İskele	2	38	40
	Total	60	60	120
Moderate	Alipaşa	22	18	40
	Hafiziye	14	26	40
	Vali Mithat Bey	24	16	40
	Total	60	60	120
Heavy / Collapsed	Kalecik TOKİ	14	16	30
	Bostaniçi TOKİ	22	8	30
	Yenimahalle	6	14	20
	Hacıbekir	5	15	20
	Esenler	13	7	20
	Total	60	60	120
TOTAL		180	180	360

The city of origin/birth was Van for 75% of the participants (N = 270); the remaining participants were from other cities in Turkey, mostly the ones in the eastern region. Most participants lived in relatively crowded houses. The average

household size was 5.93 (range: 1-17). The number of people in the household above 18 years of age was 3.84 in average (range: 1-10).

Mean age of the participants was 33.94 ($SD = 12.70$). Most of the participants ($N = 228$, 63.3%) were married. 125 participants (34.7%) were single and 7 participants (1.9%) were widowed or divorced. Majority of participants were high school graduates (30.6%), followed by primary school (24.7%), university graduates (15.8%), illiterate participants (11.9%), secondary school graduates (9.7%), vocational school graduates (3.3%), literate participants with no formal degree of education (2.8%) and participants with a graduate degree (1.1%).

Approximately one third of participants ($N = 125$) were employed, 59.7% of them ($N = 215$) were unemployed and 5.6% of participants ($N = 20$) were retired. Among 215 unemployed participants, 148 reported having never worked outside the house (e.g., housewives). The remaining 67 participants were currently unemployed at the time of data collection with a mean duration of 26.5 months (range: 15 days-21 years). 88.6% of participants were covered by insurance. Among all participants, 58.1% ($N = 209$) had state insurance (SGK), 29.2% ($N = 105$) had green card issued by the state, 0.8% ($N = 3$) were covered by unemployment insurance system, and only 0.6% ($N = 2$) had private insurance. More than half of the participants ($N = 194$, 53.9%) reported having medium level of income, followed by the participants reporting to have low ($N = 116$, 32.2%), very low ($N = 27$, 7.5%), high ($N = 18$, 5.0%), and very high ($N = 5$, 1.4%) levels of income.

Table 4.3 below presents information on participants' socio-demographic characteristics.

Table 4.3 Socio-demographic representation of the participants in the quantitative study (N = 360)

<i>Variable</i>	<i>f</i>	<i>%</i>	<i>Mean</i>	<i>SD</i>	<i>Range</i>
Gender					
Female	180	50			
Male	180	50			
Age			33.94	12.70	18-82
Marital status					
Single	125	34.7			
Married	228	63.3			
Widow/Divorced	7	1.9			
Education level			8.39	4.90	0-17
Illiterate	43	11.9			
Literate	10	2.8			
Primary school	89	24.7			
Secondary school	35	9.7			
High school	110	30.6			
Vocational school	12	3.3			
University	57	15.8			
Graduate school	4	1.1			
Employment status					
Employed	125	34.7			
Unemployed	215	59.7			
Retired	20	5.6			
Health insurance coverage					
Yes	319	88.6			
No	41	11.4			
Self-reported monthly income level					
Very low	27	7.5			
Low	116	32.2			
Medium	194	53.9			
High	18	5.0			
Very high	5	1.4			

4.2.2 Instruments

In the quantitative phase of the study, a survey form was applied. The survey form included questionnaires and scales, and also questions prepared by the researcher. The survey form used in the current study is presented in Appendix B.

4.2.2.1 Participant Information Form included nine questions about sociodemographic characteristics of the study participants. The questions asked

about city of birth (response options: Van, other), gender (response options: female, male), age, educational attainment (response options: illiterate, literate, primary school, secondary school, high school, university), marital status (response options: single, married, widowed, divorced), employment status (response options: working, never worked, not currently working, retired), professional attainment/job, health insurance coverage (response options: no coverage, green card, SGK, private insurance, other), and monthly income level (response options: very low, low, medium, high, very high).

Religiousness and change in religiousness following the earthquakes was assessed using two questions (“To which extent do you describe yourself as religious?” and “Did any change occur in your religious beliefs following the earthquake?”) inserted at the end of the participant information form. Both questions had five response options ranging from “not at all” to “very much”.

4.2.2.2 Measure of exposure-related variables included measures of disaster experience, severity of earthquake exposure, and post-earthquake adversity.

Prior disaster experience was assessed using two short “Yes/No” questions asking whether the participant experienced any prior earthquake or any other disaster before the 2011 Van earthquakes.

Measure of earthquake exposure severity consisted of eleven “Yes/No” questions addressing the subjective and objective severity of earthquake impact from the earthquakes in Van, Turkey. These questions were formed on the basis of criterion A indicated for the diagnostic criteria for PTSD in DSM-IV-TR (APA, 2000) for detailing what constitutes a traumatic event. The first part including four questions asked whether the participant thought her/his or a close one’s life was threatened, felt helpless or experienced an intense fear or horror during the earthquake. The items corresponded to criterion A2 and labeled as “subjective severity of exposure”. The second part included seven questions targeted at assessing objective impact severity. The questions asked the participant whether s/he experienced, witnessed, or was confronted with actual or threatened death or

serious injury, or a threat to the physical integrity of self or others during the earthquake. The items corresponded to criterion A1 and labeled as “objective severity of exposure”. Lower scores indicated lower subjective and objective severity of earthquake exposure. It was found that both scales for the assessment of subjective and objective impact severity had acceptable level of reliability, as shown by alpha values (Cronbach, 1951) of .64 and .61 respectively.

Post-earthquake adversity was assessed using ten “Yes/No” questions focusing on possible adverse events and conditions following the earthquakes. The questions targeted at assessing resource loss relevant for earthquake exposure and were formed drawing upon the identified domains of resource loss in Sattler et al.’s (2006) Resource Loss Scale and the Conservation of Resources Evaluation (COR-E) scale by Hobfoll, Lilly, and Jackson (1992). The resource loss domains used in the present study were forced migration, staying in temporary accommodation, material loss (money for living expenses and loss of furniture, household appliances, etc.), disruptions in working life and conditions, disruptions in social relationships including family relations, health-related problems (physical and psychological). Two other questions asked whether participants received any material/financial or emotional support and were treated as reverse items with “No” responses indicating a resource loss in domains of support from others. Lower scores indicated lower levels of adversity experienced during the post-earthquake period. The ten-item scale showed unacceptable reliability, as indicated by Cronbach’s alpha value of .45. Reliability analysis showed very low item-total correlations for the first five items (ranging from .03 and .14) and suggested an increase in the alpha value if these items were deleted. These items addressed forced migration, support from others, temporary accommodation, and material loss. Deletion of the items resulted in a substantial increase in Cronbach’s alpha (.60), indicating acceptable reliability. Therefore, items on disruptions in working life and conditions, disruptions in social relationships including family relations, and experiencing physical and psychological problems were retained.

4.2.2.3 Eysenck Personality Questionnaire Revised-Abbreviated Form (EPQR-A; Francis, Brown, & Philipchalk, 1992) was used for the assessment of personality traits in the present study. The scale is developed from the 48-item short form EPQR (EPQR-S) and consists of 24 items with 6 items for each subscale (psychoticism, neuroticism, extraversion, and lying). The lie subscale is presented as a check for validity and a tool to prevent biases in reporting. Each item is coded as “Yes” or “No”. Each subscale has a scoring range between 0 and 6. Psychometric properties of the scale were investigated among samples of 685 students from England, Canada, the U.S.A. and Australia. Except for the psychoticism subscale (.33-.52), all three subscales were found to have good internal reliability with Cronbach’s alpha coefficients ranging between .70-.77 for neuroticism, .74-.84 for extraversion, and .59-.65 for lie subscale. Correlations between the subscales of EPQR-A and EPQR-S were examined in order to test concurrent validity of the scale. Correlation coefficients ranged between .84 and .90 for extraversion, neuroticism and lie subscales; for psychoticism, relatively low correlations were observed (.44-.52). The authors recommended the use of the EPQR-A as a reliable functional equivalent to the EPQR-S.

The scale was translated and adapted into Turkish by Karanci, Dirik, and Yorulmaz (2007). Reliability and validity of the translated scale was supported in a study with 756 students from four different universities in Turkey. Kuder-Richardson alpha coefficients for the extraversion, neuroticism, psychoticism, and lie scales were found to be .78, .65, .42, and .64, respectively, supporting internal consistency of the scale. The test-retest reliability of the scales was .84, .82, .69, and .69, respectively. The construct validity of the scale was supported through the finding that correlations between the translated scale and The Fear Survey Inventory-III, Rosenberg Self-Esteem Scale, Egna Minnen Beträffande Uppfostran (EMBU-C) were all in the expected direction.

In this study, Cronbach’s alpha coefficients for the extraversion, neuroticism, psychoticism, and lie scales were found to be .70, .62, .58, and .19. Consistent with the aims of this study and due to low Cronbach’s alpha values for

psychoticism and lie subscales, only neuroticism and extraversion subscales of the EPQR-A were included in the analysis.

4.2.2.4 Life Orientation Test (LOT; Scheier & Carver, 1985) was used to assess dispositional optimism which was treated as a unidimensional construct. The scale consists of twelve items rated on a 5-point scale from 0 (strongly disagree) to 4 (strongly agree). Items 3, 8, 9, and 12 are reverse coded to obscure the purpose of the measure and to prevent an optimistic bias in responding. These reverse items are coded 0 = Strongly Agree, 1 = Agree, 2 = Neutral, 3 = Disagree, and 4 = Strongly Disagree. Moreover, the scale includes four filler items (items 2, 6, 7, 10) which are not scored. The scores on each item are summed to obtain a total score. The minimum total score is 0 and the maximum is 32. Higher scores indicate higher levels of optimism. In the original report, the scale was shown to have sound psychometric properties with adequate level of internal consistency, test-retest reliability, and convergent and discriminant validity. Cronbach's alpha for the scale was reported as .76 and a test-retest correlation over a 4-week period was .79 showing that scores on the scale were reasonably stable over time. For examining convergent and discriminant validity, scores on the LOT were correlated with measures of internal-external control, self-esteem, hopelessness, depression, perceived stress, social desirability, self-consciousness (private self-consciousness, public self-consciousness, and social anxiety), and alienation. As expected, compared to pessimistic individuals, optimistic individuals had higher levels of self-esteem, more internal locus of control and lower levels of hopelessness, depression, perceived stress, alienation, and social anxiety. Moreover, the LOT did not appear to be completely redundant with any of these measures. A revision of LOT was also published by Scheier, Carver, and Bridges (1994). The LOT-R included ten items with only 6 scored items. The correlation between the original and revised scale was found to be very high ($r = .95$). Since only the LOT was adapted into Turkish, the present study used the original scale.

The LOT was translated and adapted into Turkish by Aydin and Tezer (1991), and it was found that the scale had good validity and reliability in a Turkish

sample. The scale's reliability was indicated through calculation of test-retest and internal consistency coefficients. The scale was applied to 97 participants twice with a four-week interval. Pearson product-moment correlation coefficient for the test-retest procedure was found to be .77 ($p < .001$). In a sample of 150 participants, internal consistency was shown to be satisfactory, with Cronbach's alpha coefficient of .72. Evidence for validity of the scale was obtained through its correlations with Beck Depression Inventory (BDI) since there was no valid measure for optimism in Turkish language. BDI includes items for pessimism specific to depression. The correlation between scores of the two scales was found to be negative ($r = -.56, p < .001$) as expected in a pilot sample of 50 participants. In a larger sample of 97 participants, the association between two scales was again shown to be inverse ($r = -.45, p < .001$). In the present study, internal consistency was relatively poor, with Cronbach's alpha of .53.

4.2.2.5 The Short Adapted Social Capital Assessment Tool (SASCAT; De Silva et al., 2006) was formed as a shortened version of Adapted Social Capital Assessment Tool (A-SCAT) by Harpham, Grant, and Thomas (2002). A-SCAT was designed to assess social capital in low-income country setting with low literacy levels and consisted of seven questions on structural social capital and eleven questions on cognitive social capital. It was originally developed as a longer and comprehensive instrument called SCAT by a group from the World Bank for use in developing countries (Krishna & Shrader, 2000). It was shortened by Harpham et al. (2002) because the household survey part of SCAT was time-consuming, not tested for reliability and validity, included overlapping questions and questions relating to the determinants and outcomes of social capital.

The SASCAT consists of nine items measuring structural and cognitive social capital of individuals within a community. The first five questions assess structural social capital. They relate to membership and support from groups in the community, support from individuals in the community and participation in citizenship activities in the community. The remaining four questions measure cognitive social capital which includes generalized trust in others in the

community, social harmony, sense of belonging to the community, and sense of fairness. Since all questions refer to respondents' community, the SASCAT predominantly assesses bonding social capital; however, elements of bridging and linking social capital are also assessed (for example, linking social capital can be inferred as membership may provide access to external resources and policy makers) (De Silva, 2005).

For scoring purposes, the coding scheme for generation of individual social capital variables provided by De Silva (2005, p. 91) generates five variables: group membership, support from groups, support from individuals, citizenship activities, and cognitive social capital. Variables of structural social capital are categorized as 0, 1 or 2. On the other hand, cognitive social capital is coded using Yes/No dichotomizations and variables are added to create a continuous score from 0 (no cognitive social capital) to 4 (very high cognitive social capital). These scores are then dichotomized as 0 (low cognitive social capital) if the respondent scored 0-2 or 1 (high cognitive social capital) if the respondent scored 3 or 4.

The SASCAT was translated into Turkish in the present study. The scale was translated into Turkish and back-translated into English by the researcher and two other doctoral candidates in the same psychology department. Original and back-translated versions were then investigated for discrepancies by the researcher and a senior professor in psychology. In addition, two professors in sociology were included in the review process, especially for advice in the inclusion of possible culture-specific categories of groups participated. Throughout the translation process, recommendations for re-wording of the tool for use in Peru (M. De Silva, personal communication, February 26, 2013) were followed to ensure understandability and clarity of the questions. Accordingly, the name of the place (respondents' geographical community) which was Van in the current study was iterated in each question. In the first question about group membership, credit/funeral group category was replaced with charity group based on the suggestions by reviewing sociologist; and the other category in this question was

dropped. A major modification was the assessment of both pre- and post-earthquake social capital. The original scale asked participants to answer questions considering the past twelve months and this period corresponded to the post-disaster phase in the case of the Van earthquakes. Therefore, it was deemed plausible to exclude time frame in the questions and to present two columns labeled as pre- and post-earthquake periods in order to obtain a broader picture of social capital in Van and to understand whether there have been any differences between the two phases. Each question was asked twice to the participants modifying the question wording according to both phases (e.g., “Have you talked with a local authority or governmental organisation about problems in Van before the earthquakes?”/“Have you talked with a local authority or governmental organisation about problems in Van since the earthquakes?”). Another modification was the utilization of a 3-point Likert-type scale (1 = None, 2 = A little, 3 = Very Much) instead of a Yes/No response format in order to achieve scale consistency throughout the survey form. The first five questions formed the structural social capital subscale and the remaining four questions were used to compute the score for the cognitive social capital subscale. Table 4.4 below presents the scoring guide for the SASCAT. This guide was adapted from De Silva et al. (2006). The possible score range for the structural social capital subscale was 18-61 and the range was 4-12 for the cognitive social capital subscale.

Construct validity and reliability of the translated scale were tested in the current study. The results of the exploratory factor analysis for both pre- and post-quake social capital revealed three factors. Extracted factors were labeled as “group membership/social support”, “citizenship activities”, and “cognitive social capital”. Reliability analysis indicated that three factors had Cronbach’s alpha coefficients ranging between .46 and .70. Low ($< .50$) values obtained for “citizenship activities” subscale were ignored because this subscale was defined by only two items and the inverse relationship between test length and reliability has long been recognized (Cortina, 1993). The results of the factor analysis for the SASCAT are presented in detail in Appendix C.

Table 4.4 Scoring guide for the SASCAT

Question	Scoring
<i>Items for group membership</i>	
1. Have you been an active member of any of the following types of groups in Van? Work related/trade union Community association/co-op <input type="checkbox"/> Women's group Political group Religious group Charity group Sports group	Score between 7 and 21
<i>Items for support from groups</i>	
2. Did you receive from the group any emotional help, economic help or assistance in helping you know or do things? Work related/trade union Community association/co-op <input type="checkbox"/> Women's group Political group Religious group Charity group Sports group	Score between 0 and 7
<i>Items for support from individuals</i>	
3. Have you received any help or support from any of the following, this can be emotional help, economic help or assistance in helping you know or do things? Family Neighbours Friends who are not neighbours Community leaders Religious leaders Politicians Government officials/civil service Charitable organisations/NGO Other: specify	Score between 9 and 27
<i>Items for citizenship activities</i>	
4. Have you joined together with other community members to address a problem or common issue? 5. Have you talked with a local authority or governmental organisation about problems in Van?	Score between 2 and 6
<i>Items for cognitive social capital</i>	
6. In general, can the majority of people in Van be trusted? 7. Do the majority of people in Van generally get along with each other? 8. Do you feel as though you are really a part of Van? 9. Do you think that the majority of people in Van would try to take advantage of you if they got the chance? (<i>reverse coded</i>)	Score between 4 and 12

4.2.2.6 Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) assesses subjective well-being using five statements related to quality of life in adults. The items are rated on a 7-point scale from “strongly disagree” (1) to “strongly agree” (7). The possible range of scores is between 5 and 35, and higher scores indicate higher satisfaction with life. In the study by Diener et al. (1985), the internal consistency and test-retest correlation coefficients were found to be good (.87 and .82, respectively). The one-factor structure explained 66% of the variance. It is accepted by many researchers using different versions of the scale that it has only one factor (Durak, Durak, & Gençöz, 2010).

The scale was translated and adapted into Turkish by Durak, Durak, and Gençöz, (2010) using the back-translation procedure. Psychometric properties of the scale were investigated in three studies using samples of university students, correctional officers and elderly adults. The reliability of the scale was found to be similar to the original scale with alpha coefficients ranging between .81 and .89, and the corrected item total correlations were reported to be quite adequate. On the basis of model fit indices, the single-factor solution provided an adequate fit in all three samples. Finally, SWLS was shown to have good concurrent and discriminant validity using measures such as perceived social support, positive and negative affect, depression, self-esteem, health status, work stress, and burnout.

For purposes of achieving consistency between rating scales of instruments employed in the present study, the 7-point scale was reduced to a 5-point scale excluding “slightly disagree” (3) and “slightly agree” (5) response options. Internal reliability of the scale was found to be good in the study sample, as indicated by a Cronbach’s alpha coefficient of .78.

4.2.2.7 Measure of coping self-efficacy consisted of four direct questions used in the study by Sümer et al. (2005) for the assessment of domain-specific coping self-efficacy for coping with the earthquake experience in survivors of the 1999 Marmara earthquake. The items were formed through modifying and rewording

questions used by Cozzarelli, Sumer, & Major (1998; as cited in Sümer et al., 2005) for measuring the self-efficacy for coping with abortion. The items were “I believe that I will overcome the difficulties of this earthquake experience”, “I have the resources and belief I need to successfully handle this earthquake experience”, “I’m able to think about the earthquake and those I lost more comfortably”, and “I believe that my daily life has been normalized”. Instead of a 3-point scale in Sümer et al.’s study, the questions were rated on a 5-point Likert-type scale in order to achieve consistency between responding formats of instruments used in the present study. Response options ranged between “Totally disagree” (1) and “Totally agree” (5). Cronbach’s alpha for the sample in their study was found to be .74. In the present study, Cronbach’s alpha coefficient was .66, indicating an acceptable level of internal consistency.

4.2.2.8 Measure of perception of damage preventability and attributions of damage and control was formed on the basis of measures from McClure et al.’s (2001) study and findings obtained in the qualitative study. This brief instrument included two sections. The first section included two questions: (1) How likely is it that something could have been done to prevent the damage caused by the 2011 Van earthquakes?; and (2) In general, how likely is it that something could have been done to prevent the damage caused by earthquakes? The second section included two questions targeted at assessing post-quake damage attributions. The third question asked about the best explanation for the damage occurred (How much do you think the following item plays a role in the damage caused by the earthquakes in Van?). The fourth question was about perceived control (How much do you think you have control on the following cause?). In this section, participants responded to three types of attributions for the causes of earthquake damage. These attributions were extracted from the results of the qualitative phase of this study. These were acts of God, natural causes (magnitude of the earthquakes), and sturdy design and non-resistance of buildings. Response options were “None” (1), “A little” (2), and “Very much” (3), directly corresponding to the score for each type of attribution.

4.2.2.9 Ways of Coping Inventory (WCI; Folkman & Lazarus, 1980) is a measure of coping strategies employed by individuals in the face of stressful situations. The initial checklist included 68 items assessing emotion-focused and problem-focused coping. Later, the checklist was revised by Folkman & Lazarus (1985). It included 66 items assessing cognitive and behavioral coping strategies with four response options to indicate whether respondents used a particular strategy or not (1 = not used, 4 = used a great deal). Eight factors were identified which grouped under categories of problem-focused, emotion-focused and social support coping style.

WCI was translated and adapted into Turkish by Siva (1991). Eight items were added to the scale in order to reflect the reliance on superstitions and fatalism in Turkish individuals. In addition, response format was changed to a 5-point Likert-type scale. Internal consistency of the 74-item total scale was found to be high, with a coefficient of .91. Examination of the scale construct revealed seven factors: planned behavior, fatalism, mood regulation, being reserved, acceptance, maturation, and helplessness-seeking help.

Karanci, Alkan, Aksit, Sucuoglu, and Balta (1999) modified WCI in their study of earthquake survivors. The modifications were reducing the item count to 61 and changing the instructions of the scale. They asked participants to use the scale for rating coping as a general way of approaching events they encountered. They also changed the response format following their preliminary study; a 3-point scale (1 = never, 2 = sometimes, 3 = always) was used instead of the original 4-point scale. Kesimci (2003) further reduced the item count to 42 by only including items having a larger loading than .40. The present study used the form by Kesimci.

In Kesimci's (2003) study, factor analysis revealed four factors with items loading on each factor above .40, explaining 47.2% of all variance. Four items had loadings below .35 and they were not included in any of the factors. The first factor was labeled as fatalistic coping (items 1, 2, 9, 10, 14, 15, 16, 20, 24, 29, 30, 33, 34, 37). The second factor was labeled as optimistic/seeking social support

coping (items 3, 4, 6, 7, 8, 21, 23, 27, 42). The third factor was problem-solving coping (items 5, 19, 22, 25, 28, 31, 38, 39, 41) and finally, the fourth factor was helplessness coping (items 12, 17, 26, 35, 36, 40). Scores for each factor were calculated through summing up the responses to each item in a factor and dividing the total by the number of items in each factor.

The reliability estimates for the subscales and the total scale in the current study ranged between acceptable and good values. Cronbach's alpha coefficients were .81 for fatalistic coping, .69 for optimistic/seeking social support coping, .76 for problem-solving coping, and .72 for helplessness coping/self-blame, respectively.

4.2.2.10 Impact of Event Scale-Revised (IES-R; Weiss & Marmar, 1997) was used to assess the impact of the earthquakes on three major symptom dimensions, avoidance, intrusion, and also hyperarousal which was included in the revised version of the scale. Avoidance is characterized by effortful attempts not to think and talk about the traumatic event, to avoid reminders of the event and to divert attention from it using strategies such as increasing drinking or overworking; on the other hand, intrusion is "characterized by nightmares, unbidden visual images of the trauma or its aftermath, unbidden thoughts about aspects of the traumatic event, and variations thereof" (Weiss, 2004, p. 168). Hyperarousal items in the scale target domains of anger and irritability, jumpiness and heightened startle response, hypervigilance, psychophysiological arousal to reminders of the traumatic event, and difficulty in concentrating (Weiss, 2004). The IES-R can be modified for any specific type of stressor or trauma. Therefore, stressful event is specified as earthquakes in the present study.

The original IES scale (Horowitz, Wilner, & Alvarez, 1979) is one the most widely used validated instruments for the assessment of traumatic distress. The scale was published before the formal diagnostic criteria of PTSD (American Psychological Association); therefore, it only addressed avoidance and intrusion subscales during the past seven days. The scale consisted of 15 items (7 intrusion and 8 avoidance items) rated on a 4-point scale (scoring 0, 1, 3, and 5 for the responses of "Not at all", "Rarely", "Sometimes", and "Often"). Scores ranged

between 0- 40 for avoidance, 0-35 for intrusion, and 0-75 for the total IES. The psychometric properties of the two subscales was satisfactory (Cronbach's alpha for intrusion = .79, for avoidance = .82). Split-half reliability for total scale was high ($r = .86$). Two subscales were small ($r = .42$) and explained only 18% of the variance indicating that two subscales did not measure identical dimensions. Test-retest reliability of the scale was also satisfactory with coefficients .79 for avoidance and .87 for intrusion. The sensitivity of the scale was supported assessing change and relevant differences in patient samples and different populations who experienced different life events and the results were satisfactory.

Weiss and Marmar (1997) later revised the scale and added seven items. Six items were added for addressing hyperarousal which was not included in the original form and one item was added to parallel the DSM-III-R diagnostic criteria for PTSD. This one item targeting flashbacks was added to the Intrusion subscale. The double-barreled item "I had trouble falling asleep or staying asleep" was changed into two separate items "I had trouble falling asleep" which was in the Intrusion subscale as in the original form and "I had trouble staying asleep" which was assigned to the new hyperarousal subscale. In addition, in the IES-R, three major modifications were done. Participants were asked about the degree of distress caused by the symptom in the past seven days instead of frequency of symptoms, response intervals were modified to equal (from 0 to 4), and subscale scoring was changed from the sum of responses to the mean of responses. The psychometric properties of the scale were examined in two different samples: rescue workers from the 1994 Northridge earthquake in Los Angeles and emergency personnel exposed to a freeway collapse caused by the 1989 Loma Prieta earthquake in California. A principal component analysis with varimax rotation revealed a unidimensional solution explaining 49% of the variance. Weiss and Marmar (1997) explained that this result might be obtained because only some participants experienced medium or high symptom levels and the organization of symptoms as presented in the DSM-IV diagnosis of PTSD remains to be carefully documented. Coefficient alphas ranged from .84 to .85 for

avoidance, .79 to .90 for hyperarousal, and .87 to .92 for intrusion indicating good internal reliability. Test-retest reliability coefficients were .51 and .89 for avoidance, .59 and .92 for hyperarousal, and .57 and .94 for intrusion in two samples which completed the scale after 3.1 years or 6 weeks after the traumatic event. In both samples, there was a 6-months interval between measurements.

The IES-R was translated and adapted into Turkish by Çorapçioğlu, Yargıç, Geyran, and Kocabaşoğlu (2006) in a sample of 104 participants diagnosed with PTSD and 65 participants without PTSD. Cronbach's alpha was .94 for the total scale. For purposes of testing validity, Spearman analyses were conducted and it was shown that scores on the Clinician Administered Post Traumatic Stress Disorder Scale (CAPS) were positively correlated with the total IES-R score ($r = .71, p < .001$) and intrusion ($r = .69, p < .001$), hyperarousal ($r = .64, p < .001$), avoidance ($r = .49, p < .001$) IES-R subscale scores. The area under the ROC curve was defined as 0.878 ± 0.031 ($p < .001$). Both sensitivity and specificity were over 70% for cut-off points of IES-R between 24 and 33. In IES-R, intrusion subscale was defined by items 1, 2, 3, 6, 9, 14, 16, 20, avoidance subscale was defined by items 5, 7, 8, 11, 12, 13, 17, 22, and hyperarousal subscale was defined by items 4, 10, 15, 18, 19, 21.

In the present study, the total scale was found to have excellent internal consistency. Cronbach's alpha coefficients were .90 for the total scale, .87 for the hyperarousal subscale, .87 for the intrusion subscale, and .65 for the avoidance subscale.

4.2.2.11 Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) is a measure of stress-coping ability (or ability to cope with adversity). The original scale consists of 25 items rated on a 5-point scale ranging from “not true at all” (0) to “true nearly all the time” (4). Higher scores indicate higher levels of resilience. In the sample of general population, the scale yielded five factors. Factor 1 was related to personal competence, high standards, and tenacity; factor 2 to trust in one's instincts, tolerance of negative affect, and strengthening effects of stress; factor 3 to the positive acceptance of change, and secure relationships;

factor 4 to control; and factor 5 to spiritual influences. Connor and Davidson (2003) tested the psychometric properties of the scale with over 1000 participants in different samples. Cronbach's alpha for the full scale was 0.89 in general population indicating good internal consistency. Favorable test-retest reliability of the scale was demonstrated in GAD and PTSD clinical trial subjects who showed a high level of agreement (intraclass correlation coefficient = .87). Convergent validity of the scale was tested using measures of hardiness, perceived stress, perceived stress vulnerability, disability, and social support. The scale was positively correlated with hardiness (psychiatric outpatient group, $n = 30$; Pearson $r = .83$, $p < .0001$), and social support ($n = 589$, Spearman $r = .36$, $p < .0001$), and negatively correlated with perceived stress (psychiatric outpatient group, $n = 24$; Pearson $r = -.76$, $p < .001$), with stress vulnerability (combined sample, $n = 591$, Spearman $r = -.32$, $p < .0001$), with disability (psychiatric outpatient and GAD clinical trial subject groups, $n = 40$, Pearson $r = -.62$, $p < .0001$). Finally, the scale had discriminant validity as shown by its lack of significant correlation with Arizona Sexual Experience Scale in GAD clinical trial subjects. The authors concluded that the scale has sound psychometric properties and can be used in both clinical practice and research as a brief, self-rated measure of resilience. Moreover, the scale was not developed for a specific population; therefore, can be applied in various settings.

The scale has two shorter versions: the 10-item CD-RISC (Campbell-Sills & Stein, 2007) and the 2-item CD-RISC designed for the possible increased usage and the assessment for pharmacological modification of resilience (Vaishnavi, Connor, & Davidson, 2007). In the present study, the 10-item CD-RISC by Campbell-Sills & Stein (2007) was used because this abridged version showed excellent psychometric properties and a very high correlation with the original scale ($r = .92$). This version was formed using a subset of the original 25-item scale (items 1, 4, 6-8, 11, 14, 16, 17, 19). The internal consistency of the abridged scale, as indicated by Cronbach's alpha value of .85, was good. Although exploratory factor analysis yielded a 2-factor solution with factors labeled as persistence and hardiness, very high correlations ($> .80$) between persistence and

hardiness factors raised concerns about discriminant validity and confirmatory factor analysis showed that a single-factor solution was superior to the 2-factor solution. Therefore, a single-factor solution that fitted the data well and contained items with minimal redundancy was chosen. The selected items were reported to reflect “the ability to tolerate experiences such as change, personal problems, illness, pressure, failure, and painful feelings...to bounce back from the variety of challenges that can arise in life” (Campbell-Sills & Stein, 2007, p. 1026). Construct validity was also investigated using measures of childhood maltreatment and psychiatric symptoms, and it was found that resilience moderated the impact of childhood maltreatment on current psychiatric symptoms. The authors concluded that the abridged version had excellent psychometric properties compared to the 25-item version of which the factor structure was not stable.

25-item CD-RISC was translated and adapted into Turkish by Karairmak (2010) in a sample of 246 individuals exposed to the devastating effects of the 1999 Marmara Earthquake. Although the scale yielded five factors, the factor loadings were dissimilar to the original scale and there were only two items in two factors. Therefore, the exploratory factor analysis was extracted a second time with three factors explaining 52% of the variance, and item 2 was excluded since the factor loading for this item did not exceed .30. The factors were named as tenacity and personal competence (15 items), tolerance of negative affect (6 items) and tendency toward spirituality (3 items). Evidence for convergent and discriminant validity of the scale was obtained through testing the scale’s correlations with related constructs. CD-RISC scores were positively correlated with positive affect scores ($r = .69, p < .001$) and negatively correlated with negative affect scores ($r = .44, p < .001$). Moreover, self-esteem ($r = .53, p < .001$), optimism ($r = .55, p < .001$) and hope ($r = .68, p < .001$) were positively correlated with resilience. Cronbach’s alpha for the total scale was found to be .92 indicating good internal reliability. The coefficients were .93, .79, and .50 for the subscales labeled as tenacity and personal competence, tolerance of negative affect and tendency toward spirituality, respectively. The reliability coefficient for the last factors was

discussed as adequate since the number of items in that subscale was three. Finally, confirmatory factor analysis yielded acceptable fit to the data for the current sample as indicated by a significant Chi-square of the measurement model, $\chi^2(223) = 450.87, p < .001$.

Psychometric properties of the 10-item CD-RISC have not been investigated before in Turkish samples. Therefore, reliability and construct validity of the scale was investigated in the current study. An exploratory factor analysis revealed initially two factors with eigenvalues exceeding 1, accounting for 47.17 percent of the total variance. However, this two-factor solution was rejected because the second factor was defined by a single item. A confirmatory factor analysis showed that the unitary latent construct was reliably measured by the observed variables in the final model. Cronbach's alpha coefficient for the scale was .80, indicating good internal consistency. Results of the factor analysis for CD-RISC are presented in detail in Appendix D.

4.2.3 Procedures

For the quantitative phase, the selected instruments were administered to the participants. For administration of the instruments, permission was obtained from the Governorate of Van and managers of container cities.

Participants were recruited through using quota sampling procedures (Fink, 2006; Sturgis, 2012). In quota sampling, the attempt to create a representative sample by specifying quotas of particular individuals that need to be included in the study for generalizability purposes. Each subgroup of the target population is assigned a quota (percent). Once quotas are defined, researcher approaches people confirming their eligibility to be included in the sample and selects participants for each quota based on a specified proportion. People are recruited until the quota is filled. Although this method is associated with selection biases and people who are not physically present at the sampling point may never be represented in the sample, it is advantageous because no population listing is required and a sample which looks like the population in terms of key

characteristics is drawn economically and very quickly (Sturgis, 2012). Participants in each quota were then selected using convenience sampling procedures (Fink, 2006). Convenience sampling is also referred to as accidental or opportunity sampling and is among the non-probability sampling methods. In this method, sampling is drawn from the population based on its being readily available and convenient. Only individuals who are willing and nearby and available are recruited for study participation.

The survey form was administered to the participants by a group of ten interviewers including the researcher herself and another researcher employed in the emBRACE project (CD). The interviewers were undergraduate students from the sociology department of Van Yuzuncu Yil University. The interviewers were given a half-day training in Van on administration of the survey form by the researcher and CD.

Households in each selected district were selected accidentally based on the availability of household members and volunteering for participation. Households were visited in groups of two interviewers and only one member in each household was set to be eligible to participate in the study. Upon contacting member(s) in a household, the interviewers introduced themselves and informed the potential participants about the scope and the purposes of the study. The survey instrument was administered to volunteering participants by the interviewers and participants' responses were recorded on the survey form. The choice of interviewer-administered application over self-report assessment was made because of the anticipated difficulty of some participants in filling out the survey form due to low levels of educational attainment and high illiteracy rates in Van (TUIK, 2012) and a desire to standardize the application procedure across participants.

The order of the presentation of the scales and questionnaires were counterbalanced to avoid possible sequence effects and three different versions of the survey form were developed. The survey forms were distributed randomly to the interviewers and hence to the participants. Furthermore, a colorful visual

rating scale was used to ease responding if the participant reported difficulty about responding to Likert-type scales. This rating scale included five bars corresponding to five response options in the scales. Color of the bars got darker and the height increased as the response options increased in number (e.g., response option “5” – highest bar with darkest color). An example for the rating scale is presented in Appendix E. The total time for the administration of the survey was thirty minutes on the average. Data were collected approximately nineteen months following the first earthquake in Van between 25 June and 2 July 2013.

4.2.4 Data Analysis

In the present study, analysis on quantitative data was performed using the IBM SPSS v20.0 Computer Software (SPSS Inc., 2011) and LISREL 8.8 Computer Software (Jöreskog & Sörbom, 2006). In order to examine the construct validity for the two scales which were not adapted into Turkish (i.e., the SASCAT and the 10-item CD-RISC), factor analysis was conducted. Exploratory factor analysis was conducted on the items of the SASCAT and the CD-RISC using SPSS. Confirmatory factor analysis on the items of the CD-RISC was conducted using LISREL 8.8. Following factor analyses, all other analyses were conducted using SPSS. After the inspection of the data and relevant data cleaning procedures, descriptive analyses were conducted to examine the characteristics of the participants and also descriptive information for study variables. Pearson product-moment correlation coefficient analyses were performed to examine the relations among study variables. Main analyses included hierarchical multiple regression analyses in three sets to reveal the associates of indices of psychological resilience.

4.2.5 Data Screening and Cleaning

Prior to the main analyses, all data was checked for accuracy of data entry, missing values, existing outliers, and fit between the distributions of values and assumptions of analysis, namely normality, linearity, and homoscedasticity using

ungrouped data. Examination of missing values revealed no missing values in the data; participants fully completed all of the measures. Data were then analyzed for univariate and multivariate outliers. No cases were found to be univariate outliers having extremely high z scores on measures in the study; however four cases were identified as multivariate outliers investigating Mahalanobis distance with $p < .001$. Data from these four participants were excluded from the data set, leaving 356 participants to be included in further analyses. The characteristics of those participants were as follows: (1) male, aged 30, from a low-damage district (Şemsibey); (2) male, aged 43, from a high-damage district (Kalecik TOKİ); (3) female, aged 54, from a medium-damage district (Hafiziye); and (4) female, aged 21, from a medium-damage district (Alipaşa).

Study variables were tested for normality through investigation of values of skewness and kurtosis and histograms; and for homoscedasticity through investigation of bivariate scatterplots. The impact of departure from zero kurtosis and skewness is known to diminish in cases where the sample size is large (>200) (Tabachnick & Fidell, 2001); therefore, high skewness and kurtosis values obtained for some variables (i.e., pre- and post-disaster social capital and subjective disaster impact severity) were ignored. Normal and detrended probability plots were also investigated for the assumption of linearity. Linearity and homoscedasticity were assumed to be met since none of the variable pairs were suspected to be in a non-linear and heteroscedastical relation with each other. Finally, variables were evaluated for multicollinearity and singularity, and none of the study variables were found to be highly correlated with each other, with r over .90, except for the correlations between total score and two subscales of IES-R. Those expectedly high correlations were ignored because those scores were not included in any analysis simultaneously.

4.3 Results

4.3.1 Descriptive Statistics and Correlation Analysis for the Study Variables

Descriptive statistics (means, standard deviations and ranges for continuous variables, and frequencies and percentages for categorical variables) for the main study variables are presented in Tables 4.5 and 4.6 respectively. The minimum and maximum values in the table represent the values obtained for the study sample. In the tables, the superscript letter “^a” indicates that the obtained mean value was higher than the scale’s absolute midpoint, and the superscript letter “^b” indicates that the obtained mean value was lower than the absolute midpoint.

For continuous measures, each scale’s absolute midpoint was roughly compared with observed mean scores of the scales in the present study in order to examine whether scores on each variable were closer or farther from the mean scores of the scales in a Turkish sample of earthquake survivors. Scores on the level of religiousness (2.96) were slightly higher than the scale midpoint (2.5). Similarly, scores on both self-reported physical health (3.93) and mental health (3.99) were higher than the scale midpoint scores (2.5). Mean scores on neuroticism (3.29) and extraversion (4.04) were lower than the absolute midpoint score for these scales (9). Scores on the measure of optimism (19.88) were slightly higher than the midpoint (20). Scores on the measure of satisfaction with life (14.71) were higher than this scale’s absolute midpoint (12.50). Scores on the measure of objective earthquake exposure severity (1.67) were lower than the scale midpoint (3.5), while mean scores of subjective severity of exposure (3.47) were higher than the midpoint (2). Similar to objective exposure severity, scores on the measure of post-quake adversity (1.73) were lower than the scale midpoint (2.5). Scores on both pre- and post-quake cognitive social capital (7.22 and 8.48, respectively) were higher than the absolute midpoint of the scale (6). On the other hand, scores on both pre- and post-quake structural social capital (20.81 and 21.93, respectively) were lower than the midpoint for this scale (30.5). Moreover, investigation of change in social capital from pre- to post-disaster phase revealed that both structural and cognitive social capital slightly increased in the post-

quake phase. Mean scores on the measure of coping styles were higher than the absolute midpoint score of 1.50 (1.95 for helplessness coping/self-blame, 2.53 for problem-focused coping, 2.47 for optimistic/seeking social support coping, and 2.35 for fatalistic coping). In addition, the mean score for coping self-efficacy was higher than the scale midpoint (2.5). Scores on the measure of attributions about preventability of earthquakes in general (2.38) and preventability of the Van earthquakes (2.33) were higher than the scale midpoint (1.5). Scores on the measure of reasons for earthquake damage were higher for all reasons (attribution to God: 2.69, attribution to natural causes: 2.69, attribution to building design: 2.74) than the scale midpoint (1.5). Scores on the measure of controllability of reasons for earthquake damage (5.38) were higher than the scale midpoint (4.5). Specifically, scores on controllability of all three reasons for damage, namely attribution to God (1.58), to natural causes (1.58), and to design of buildings (2.22), were higher than the scale midpoint (1.5). Finally, mean scores on the IES-R, namely hyperarousal (10.85), re-experiencing (15.38), avoidance (12.07), were lower than the scale's midpoint for these variables (12, 16, and 16 respectively). Thus, total score of the IES-R for the participants (38.31) was also lower compared to the midpoint of the total scale (44). Scores on the measure of resilience (22.31) were higher than the midpoint (16).

For dichotomous measures, percentages were examined to understand trends in the data. Descriptive analyses revealed that while all participants were selected in order to achieve an equal distribution among different levels of earthquake damage in their neighborhood, majority of the households, even in the districts with high damage, were only slightly damaged or not damaged at all during the earthquakes (55.6%). Most participants had not experienced any earthquakes (62.2%) or any other disaster types (91.7%) prior to the Van earthquakes in 2011. When asked about changes in the level of religiousness following the earthquakes, more than half of the participants (59.2%) reported no change in their religious beliefs. Only a minority of participants (4.2%) reported a decrease, while 36.6% of all participants reported an increase in their level of religiousness.

Table 4.5 Descriptive statistics for continuous variables

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>Minimum</i>	<i>Maximum</i>
Level of religiousness	2.96 ^a	1.04	1	5
Self-reported level of physical health	3.93 ^a	0.66	2	5
Self-reported level of mental health	3.99 ^a	0.64	2	5
Personality				
Neuroticism	3.29 ^b	1.72	0	6
Extraversion	4.04 ^b	1.75	0	6
Optimism	19.88 ^a	4.19	7	31
Satisfaction with life	14.71 ^a	4.43	5	25
Severity of earthquake exposure				
Objective severity of exposure	1.67 ^b	1.53	0	7
Subjective severity of exposure	3.47 ^a	0.93	0	4
Post-earthquake adversity	1.73 ^b	1.38	0	5
Pre-earthquake social capital				
Structural cognitive capital	20.81 ^b	3.21	18	42
Cognitive social capital	7.22 ^a	1.45	4	11
Post-earthquake social capital				
Structural social capital	21.93 ^b	3.73	18	42
Cognitive social capital	8.48 ^a	2.09	4	12
Change in social capital following earthquakes (post-pre)				
Structural social capital	1.12 ^a	2.11	-12	7
Cognitive social capital	1.26 ^a	1.74	-6	6

Table 4.5 (continued)

Coping				
Helplessness coping/Self-blame	1.95 ^a	0.46	1	3
Problem-solving coping	2.53 ^a	0.35	1.33	3
Optimistic/Seeking social support coping	2.47 ^a	0.33	1.11	3
Fatalistic coping	2.35 ^a	0.37	1.21	3
Coping self-efficacy	3.79 ^a	0.71	1	5
Attributions about preventability				
Attributions about the general preventability of earthquakes	2.38 ^a	0.69	1	3
Attributions about the specific preventability of the Van earthquakes	2.33 ^a	0.69	1	3
Attributions of reasons for damage				
Attribution to God	2.69 ^a	0.64	1	3
Attribution to natural causes/magnitude of the earthquakes	2.69 ^a	0.57	1	3
Attribution to sturdy design of buildings	2.74 ^a	0.55	1	3
Attributions of controllability of reasons for damage				
Attribution to God	5.38 ^a	1.97	3	9
Attribution to natural causes/magnitude of the earthquakes	1.58 ^a	0.84	1	3
Attribution to sturdy design of buildings	1.58 ^a	0.79	1	3
Attribution to sturdy design of buildings	2.22 ^a	0.87	1	3
Psychological distress				
Post-traumatic stress symptoms	38.31 ^b	17.50	1	83
Avoidance	12.07 ^b	5.68	0	32
Hyperarousal	10.85 ^b	6.99	0	24
Re-experiencing	15.38 ^b	8.42	0	32
Resilience				
	22.31 ^a	7.15	4	40

^a The obtained mean value was higher than the scale's absolute midpoint.

^b The obtained mean value was lower than the scale's absolute midpoint.

Table 4.6 Descriptive statistics for categorical variables

<i>Variable</i>	<i>f</i>	<i>%</i>
Household damage status		
None / Slight damage	198	55.6
Medium damage	69	19.4
High damage / Collapsed	89	25.0
Previous hazard exposure		
Previous earthquake exposure		
Yes	136	37.8
No	224	62.2
Previous exposure to other types of hazards		
Yes	30	8.3
No	330	91.7
Change in the level of religiousness after the earthquakes		
Decreased very much	4	1.1
Decreased a little bit	11	3.1
Did not change	213	59.2
Increased a little bit	88	24.4
Increased very much	44	12.2

Correlations between major study variables were examined through computing Pearson product-moment correlation coefficients. Examination of coefficients for the indicators of psychological resilience, namely resilience and (low levels of) posttraumatic stress symptoms, surprisingly revealed that scores of resilience and total PTS were positively correlated ($r = .13, p < .05$). However, when the subscales were examined, resilience was only correlated with the avoidance subscale of IES-R ($r = .18, p < .01$), but not with hyperarousal ($r = .08, ns$) or re-experiencing ($r = .09, ns$) subscales. It was found that valance of the computed correlation coefficients between other variables were mostly in the expected direction. However, size of the coefficients was generally lower than expected. Table 4.7 presents bivariate correlations between variables of the present study.

4.3.2 Main Analyses: Variables Associated with Psychological Resilience

In the present study, it was hypothesized that certain pre-disaster, within-disaster and post-disaster variables would be associated with psychological resilience. Psychological resilience was assessed by means of the participants' self-reported resilience capacity and severity of posttraumatic stress symptoms. Four hierarchical multiple regression analyses were performed to identify predictors of psychological resilience and to determine if addition of various variables into the regression equation would improve prediction of resilience above and beyond the previously entered variables. In all regression analyses, variables were entered into the equation via three steps. Pre-disaster variables were entered in the equation in the first step. These included various personal characteristics and qualities such as sociodemographic characteristics, personality variables, and social capital. In the second step, within-disaster variables were entered. In the final step, post-disaster variables including coping and post-disaster adversity, social capital were entered into the equation. Full list of variables in each step is presented in Table 4.8. Due to limitations of space, only statistically significant predictors were reported in relevant sections and shown in tables.

Table 4.7 Bivariate correlations between study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1. Age	1																		
2. Gender	.13*	1																	
3. Education (years)	-.22**	.38**	1																
4. Religiousness	.10*	-.06	-.17**	1															
5. Physical health	-.14**	.10	.19**	.01	1														
6. Mental health	-.05	.04	.01	.11*	.64**	1													
7. Income	.01	.01	.26**	-.01	.17**	.18**	1												
8. Neuroticism	-.16**	-.25**	-.14**	.04	-.09	-.14*	-.21**	1											
9. Extraversion	.07	.01	.10	.09	.09	.16**	.10	-.16**	1										
10. Optimism	.16**	.02	-.03	.10	-.02	.04	.06	-.24**	.19**	1									
11. Satisfaction with life	.12*	.05	.10	.15**	-.03	.07	.20**	-.23**	.14**	.30**	1								
12. Objective exposure severity	-.13*	.27**	.20**	-.11*	.01	-.05	-.15**	.06	.17**	-.07	-.01	1							
13. Subjective exposure severity	.02	-.20**	-.11*	-.01	-.10	-.12*	-.11*	.15**	.08	-.04	.01	-.01	1						
14. Prior quake experience	.35**	.08	.03	-.06	.02	.01	.01	-.03	.08	.16**	.05	.05	.04	1					
15. Prior disaster experience	.02	.05	-.02	-.04	-.01	.01	.01	.08	.01	-.03	-.06	-.01	.01	.17**	1				
16. Post-quake adversity	-.02	-.10	.01	-.03	-.15**	-.15**	-.19**	.27**	.11*	-.20**	-.20**	.32**	.20**	-.01	-.05	1			
17. Pre-quake structural SC	-.19**	.10	.29**	-.16**	.01	-.05	-.01	-.07	.11*	-.04	.05	.32**	.01	-.04	-.09	.14**	1		
18. Pre-quake cognitive SC	.16**	.10	.01	.07	.08	.03	-.04	-.10	.12*	.11*	.09	.08	.13*	.05	-.11*	.02	.25**	1	

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1. Age	-.23**	.11*	-.12*	.01	.27**	.23**	.21**	.07	.07	.05	-.06	.09	-.04	.01	-.03	-.03	.13*
2. Gender	.10	.05	.02	-.03	-.28**	-.02	.06	-.24**	.12*	.01	-.02	-.05	-.29**	.03	-.27**	-.24**	.16**
3. Education	.28**	-.02	.06	-.02	-.49**	-.09	-.06	-.27**	.14*	.08	.01	-.01	-.16**	-.11*	-.20**	-.19**	.21**
4. Religiousness	-.17**	.09	-.06	.05	.19**	.12*	.11*	.06	-.04	.01	-.04	.02	.15**	.01	.14**	.13*	.04
5. Physical health	.05	.10	.08	.06	-.17**	-.01	.01	-.20**	-.04	.12*	.08	-.03	-.15**	-.03	-.21**	-.17**	.04
6. Mental health	-.01	.08	.05	.08	-.08	.07	.05	-.18**	.02	.08	.10	.01	-.17**	-.04	-.18**	-.17**	.13*
7. Income	-.06	.01	-.09	.04	-.15**	-.05	.02	-.19**	.14**	.04	-.01	.03	-.20**	-.14*	-.21**	-.22**	.11*
8. Neuroticism	-.04	-.22**	.04	-.18**	.14**	-.17**	-.16**	.37**	-.19**	-.04	-.04	-.04	.32**	.11*	.34**	.33**	-.14**
9. Extraversion	.08	.16**	-.02	.09	-.05	.14*	.16**	-.03	.11*	.08	.03	.06	.07	-.01	.07	.06	.28**
10. Optimism	-.07	.17**	-.05	.11*	.07	.31**	.33**	-.16**	.21**	.14**	.01	.05	-.14**	-.19**	-.08	-.16**	.17**
11. Satisfaction with life	.05	.14**	.02	.09	.02	.22**	.19**	-.17**	.27**	.09	.03	.20**	-.09	-.04	-.08	-.09	.25**
12. Objective exposure severity	.32**	.01	.08	-.05	-.15**	.04	.06	.02	.05	.02	.04	-.04	.15**	.16**	.13*	.18**	.25**
13. Subjective exposure severity	.01	.07	.01	-.02	.13*	.04	-.03	.22**	-.07	-.02	.03	.02	.28**	.05	.29**	.26**	-.03
14. Prior quake experience	-.06	-.01	-.06	-.05	.06	.11*	.10	.01	.01	.11*	.04	.04	.01	.08	-.05	.01	.16**
15. Prior disaster experience	-.07	-.10	.02	-.03	-.05	-.01	-.10	.05	.05	.03	.02	-.04	-.06	-.06	.02	-.04	-.06
16. Post-quake adversity	.09	-.11*	-.06	-.15**	.04	-.04	-.03	.24**	-.15**	.04	.06	-.01	.31**	.14**	.33**	.33**	.06
17. Pre-quake structural SC	.83**	.07	-.06	-.12*	-.27**	-.02	-.03	-.04	.04	.05	.03	.06	.06	.02	.03	.05	.18**
18. Pre-quake cognitive SC	.14**	.57**	-.13*	-.15**	.03	.16**	.06	-.04	-.06	.03	.04	-.05	.06	.06	.01	.05	.07

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
19. Post-quake structural SC	1																
20. Post-quake cognitive SC	.04	1															
21. Change in structural SC following earthquakes	.51**	-.03	1														
22. Change in cognitive SC following earthquakes	-.07	.73**	.07	1													
23. Fatalistic coping	-.26**	.11*	-.06	.11*	1												
24. Optimistic/Seeking social support coping	-.05	.20**	-.06	.10	.34**	1											
25. Problem-solving coping	-.07	.11*	-.07	.09	.27**	.67**	1										
26. Helplessness coping/Self-blame	-.03	-.03	.01	-.01	.46**	.13*	.05	1									
27. Coping self-efficacy	.05	.04	.03	.09	-.09	.19**	.21**	-.15**	1								
28. Attributions of general preventability	.03	.12*	-.03	.13*	-.14**	.11*	.09	-.08	.06	1							
29. Attributions of specific preventability	.01	.15**	-.04	.15**	-.16**	.08	.01	-.07	.09	.57**	1						
30. Attributions of controllability	.07	.04	.03	.09	.01	.07	.02	-.03	-.02	.23**	.21**	1					
31. Severity of symptoms of re-experiencing	.06	-.04	.01	-.10	.23**	.08	.01	.43**	-.24**	-.05	-.08	-.01	1				
32. Severity of symptoms of avoidance	.02	.01	.01	-.04	.14**	.12*	.16**	.17**	-.01	-.06	-.02	-.13*	.27**	1			
33. Severity of symptoms of hyperarousal	.05	-.06	.05	-.08	.28**	.12*	.08	.47**	-.16**	-.08	-.10	-.06	.88**	.31**	1		
34. Severity of total PTS	.05	-.04	.02	-.09	.27**	.13*	.09	.45**	-.18**	-.08	-.09	-.07	.92**	.58**	.92**	1	
35. Resilience	.13*	.12*	-.04	.08	-.04	.31**	.40**	-.09	.28**	.15**	.07	.04	.09	.18**	.08	.13*	1

Note. SC = social capital.

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

Table 4.8 List of variables in the three steps of the regression equations

Steps	Predictors
Step 1: Pre-disaster variables	Gender Age Education Income Pre-quake physical health Pre-quake mental health Religiousness Neuroticism Extraversion Optimism Satisfaction with life Pre-quake structural social capital Pre-quake cognitive social capital Prior quake experience Prior disaster experience
Step 2: Within-disaster variables	Objective severity of exposure Subjective severity of exposure Attributions about preventability of earthquakes in general Attributions about preventability of the Van earthquakes Attributions about controllability of earthquake damage
Step 3: Post-disaster variables	Post-quake adversity Post-quake structural social capital Post-quake cognitive social capital Coping self-efficacy Fatalistic coping Optimistic/seeking social support coping Problem-solving coping Helplessness coping/Self-blame

4.3.2.1 Variables Associated with Resilience

The first regression analysis revealed that when all variables were in the equation, after the third step, the R^2 value of .36 (adjusted $R^2 = .30$) indicated that more than one third of the variability in resilience was explained by some of the variables entered into the equation. Table 4.9 presents a summary of results for this regression analysis.

Table 4.9 Variables associated with resilience

	<i>F</i> change for set	<i>t</i> (within set)	<i>df</i>	β	Model R^2 change
Dependent variable					
Resilience					
Step 1: Pre-disaster variables	6.06 ^{***}		15,340		.21
Education		2.37 [*]	352	.14	
Pre-quake mental health		2.21 [*]	349	.14	
Extraversion		3.69 ^{***}	346	.19	
Satisfaction with life ^a		2.73 ^{**}	344	.15	
Pre-quake structural social capital ^a		2.66 ^{**}	343	.15	
Step 2: Within-disaster variables	3.54 ^{**}		5,335		.04
Objective severity of exposure		3.70 ^{***}	339	.20	
Step 3: Post-disaster variables	6.91 ^{***}		8,327		.11
Coping self-efficacy		2.86 ^{**}	331	.14	
Problem-solving coping		4.38 ^{***}	328	.28	

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

^a The predictor was no longer significantly associated with the DV in the final step.

The first step with pre-disaster variables explained 21% of variance in resilience (F change[15,340]= 6.06, $p < .001$). In this step, education ($\beta = .14$, $t[352] = 2.37$, $p < .05$), pre-quake mental health ($\beta = .14$, $t[349] = 2.21$, $p < .05$), extraversion ($\beta = .19$, $t[346] = 3.69$, $p < .001$), satisfaction with life ($\beta = .15$, $t[344] = 2.73$, $p < .01$), and pre-quake structural social capital ($\beta = .15$, $t[343] = 2.66$, $p = .01$) were positively associated with resilience.

Among within-disaster variables in the second step of the equation, only objective severity of exposure was positively associated with resilience ($\beta = .20$, $t[339] = 3.70$, $p < .001$). This step resulted in a significant increment in R^2 explaining additional 4% of variance (F change[5,335] = 3.54, $p < .01$).

The third step including post-disaster variables additionally explained 11% of the total variance (F change[8,327] = 6.91, $p < .001$), improving the explained total

variance to 36%. Coping self-efficacy ($\beta = .14$, $t[331] = 2.86$, $p < .01$) and problem-solving coping ($\beta = .28$, $t[328] = 4.38$, $p < .001$) were positively associated with resilience in this step.

In the final step when all variables were entered into the equation, satisfaction with life ($\beta = .09$, $t[344] = 1.76$, *ns*) and pre-quake structural social capital ($\beta = .13$, $t[343] = 1.51$, *ns*) were no longer significantly associated with resilience while education ($\beta = .13$, $t[352] = 2.21$, $p < .05$), pre-quake mental health ($\beta = .14$, $t[349] = 2.38$, $p < .05$), extraversion ($\beta = .12$, $t[346] = 2.39$, $p < .05$), and objective severity of exposure ($\beta = .15$, $t[339] = 2.77$, $p < .01$) were still in significant association with resilience.

4.3.2.2 Variables Associated with Severity of Total PTS

According to the results of the second regression analysis, when all variables were in the equation, after the third step, the R^2 value of .38 (adjusted $R^2 = .33$) indicated that more than one third of the variability in the severity of total PTS was explained by some of the variables entered into the equation. Table 4.10 below presents a summary of results for this regression analysis.

The first step with pre-disaster variables explained 24% of variance in severity of total PTS (F change[15,340] = 7.03, $p < .001$). In this step, gender ($\beta = -.14$, $t[354] = -2.56$, $p < .05$), level of income ($\beta = -.13$, $t[351] = -2.41$, $p < .05$), and dispositional optimism ($\beta = -.15$, $t[345] = -2.79$, $p < .01$) were negatively associated with total PTS severity. Level of religiousness ($\beta = .12$, $t[348] = 2.41$, $p < .05$) and two personality variables, neuroticism ($\beta = .24$, $t[347] = 4.40$, $p < .001$) and extraversion ($\beta = .14$, $t[346] = 2.77$, $p < .01$) were positively related to total PTS severity. However, extraversion was not significantly correlated with the severity of total PTS in bivariate correlation analysis ($r = .06$, *ns*), suggesting a possible suppressor effect.

Table 4.10 Variables associated with severity of total PTS

	<i>F</i> change for set	<i>t</i> (within set)	<i>df</i>	β	Model R^2 change
Dependent variable					
Severity of total PTS					
Step 1: Pre-disaster variables	7.03 ^{***}		15,340		.24
Gender (1=female, 2=male)		-2.56 [*]	354	-.14	
Income ^a		-2.41 [*]	351	-.13	
Religiousness		2.41 [*]	348	.12	
Neuroticism		4.40 ^{***}	347	.24	
Extraversion ^a		2.77 ^{**}	346	.14	
Optimism		-2.79 ^{**}	345	-.15	
Step 2: Within-disaster variables	5.06 ^{***}		5,335		.05
Objective severity of exposure		3.29 ^{**}	339	.17	
Subjective severity of exposure		3.23 ^{**}	338	.16	
Step 3: Post-disaster variables	6.14 ^{***}		8,327		.09
Post-quake adversity		2.08 [*]	334	.11	
Helplessness/Self-blame		4.21 ^{***}	327	.23	

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

^aThe predictor was no longer significantly associated with the DV in the final step.

Among within-disaster variables in the second step of the equation, both objective ($\beta = .17$, $t[339] = 3.29$, $p = .001$) and subjective severity of earthquake exposure ($\beta = .16$, $t[339] = 3.23$, $p = .001$) were positively associated with severity of total PTS. This step resulted in a significant increment in R^2 explaining additional 5% of variance (F change[5,335] = 5.06, $p < .001$).

The third step including post-disaster variables additionally explained 9% of the total variance (F change[8,327] = 6.14, $p < .001$), improving the explained total variance to 38%. Post-quake adversity ($\beta = .11$, $t[334] = 2.08$, $p < .05$) and helplessness coping/self-blame ($\beta = .23$, $t[327] = 4.21$, $p < .001$) were positively associated with severity of total PTS in this step. In the final step when all variables were entered into the equation, level of income ($\beta = -.05$, $t[351] = -1.10$,

ns) and extraversion ($\beta = .07$, $t[346] = 1.41$, *ns*) variables from previous steps were no longer significantly associated with severity of total PTS while gender ($\beta = -.11$, $t[354] = -2.00$, $p < .05$), level of religiousness ($\beta = .11$, $t[348] = 2.27$, $p < .05$), neuroticism ($\beta = .12$, $t[347] = 2.21$, $p < .05$), optimism ($\beta = -.12$, $t[345] = -2.26$, $p < .05$), objective impact severity ($\beta = .11$, $t[339] = 2.19$, $p < .05$), subjective impact severity ($\beta = .11$, $t[338] = 2.34$, $p < .05$) were still in significant association with PTS severity.

4.3.2.3 Variables Associated with Severity of Hyperarousal Symptoms

According to the results of the third regression analysis, when all variables were in the equation, after the third step, the R^2 value of .40 (adjusted $R^2 = .35$) indicated that more than one third of the variability in the severity of hyperarousal symptoms was explained by some of the variables entered into the equation. Table 4.11 presents a summary of results for this regression analysis.

The first step with pre-disaster variables explained 24% of variance in severity of hyperarousal symptoms (F change[15,340]= 7.10, $p < .001$). In this step, gender ($\beta = -.17$, $t[354] = -3.06$, $p < .01$) and level of income ($\beta = -.11$, $t[351] = -2.16$, $p < .05$) were negatively associated with severity of hyperarousal symptoms. Level of religiousness ($\beta = .12$, $t[348] = 2.32$, $p < .05$), neuroticism ($\beta = .26$, $t[347] = 4.84$, $p < .001$), and extraversion ($\beta = .15$, $t[346] = 2.88$, $p < .01$) were positively related to severity of hyperarousal symptoms. However, extraversion was not significantly correlated with the severity of hyperarousal symptoms in bivariate correlation analysis ($r = .07$, *ns*), suggesting a possible suppressor effect.

Among within-disaster variables in the second step of the equation, both objective ($\beta = .15$, $t[339] = 2.78$, $p < .01$) and subjective severity of earthquake exposure ($\beta = .19$, $t[338] = 3.85$, $p < .001$) were positively associated with severity of hyperarousal symptoms. This step resulted in a significant increment in R^2 explaining additional 6% of variance (F change[5,335] = 5.32, $p < .001$).

Table 4.11 Variables associated with severity of hyperarousal symptoms

	<i>F</i> change for set	<i>t</i> (within set)	<i>df</i>	β	Model R^2 change
Dependent variable					
Severity of hyperarousal symptoms					
Step 1: Pre-disaster variables	7.10 ^{***}		15,340		.24
Gender (1=female, 2=male)		-3.06 ^{**}	354	-.17	
Income ^a		-2.16 [*]	351	-.11	
Religiousness		2.32 [*]	348	.12	
Neuroticism		4.84 ^{***}	347	.26	
Extraversion ^a		2.88 ^{**}	346	.15	
Step 2: Within-disaster variables	5.32 ^{***}		5,335		.06
Objective severity of exposure ^a		2.78 ^{**}	339	.15	
Subjective severity of exposure		3.85 ^{***}	338	.19	
Step 3: Post-disaster variables	6.90 ^{***}		8,327		.10
Post-quake adversity		2.65 ^{**}	334	.14	
Helplessness/Self-blame		4.72 ^{***}	327	.26	

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

^aThe predictor was no longer significantly associated with the DV in the final step.

The third step including post-disaster variables additionally explained 10% of the total variance (F change[8,327] = 6.90, $p < .001$), improving the explained total variance to 40%. Post-quake adversity ($\beta = .14$, $t[334] = 2.65$, $p < .01$) and helplessness coping/self-blame ($\beta = .26$, $t[327] = 4.72$, $p < .001$) were positively associated with severity of hyperarousal symptoms in this step.

In the final step when all variables were entered into the equation, level of income ($\beta = -.04$, $t[351] = -0.80$, *ns*), extraversion ($\beta = .07$, $t[346] = 1.51$, *ns*), and objective exposure severity ($\beta = .08$, $t[339] = 1.53$, *ns*) from previous steps were no longer significantly associated with severity of hyperarousal symptoms while gender ($\beta = -.12$, $t[354] = -2.22$, $p < .05$), level of religiousness ($\beta = .10$, $t[348] = 2.23$, $p < .05$), neuroticism ($\beta = .13$, $t[347] = 2.43$, $p < .05$), and subjective

severity of exposure ($\beta = .13$, $t[338] = 2.85$, $p < .01$) were still in significant association with hyperarousal symptom severity.

4.3.2.4 Variables Associated with Severity of Re-experiencing Symptoms

According to the results of the fourth regression analysis, when all variables were in the equation, after the third step, the R^2 value of .38 (adjusted $R^2 = .33$) indicated that more than one third of the variability in the severity of re-experiencing symptoms was explained by some of the variables entered into the equation. Table 4.12 presents a summary of results for this regression analysis.

Table 4.12 Variables associated with severity of re-experiencing symptoms

	<i>F</i> change for set	<i>t</i> (within set)	<i>df</i>	β	Model R^2 change
Dependent variable					
Severity of re-experiencing symptoms					
Step 1: Pre-disaster variables	7.76***		15,340		.26
Gender (1=female, 2=male)		-4.18***	354	-.23	
Income ^a		-2.28*	351	-.12	
Mental health ^a		-2.02*	349	-.13	
Religiousness		3.04**	348	.15	
Neuroticism ^a		4.18***	347	.22	
Extraversion ^a		2.73**	346	.14	
Optimism ^a		-2.44*	345	-.13	
Step 2: Within-disaster variables	4.35***		5,335		.05
Objective severity of exposure		2.89**	339	.15	
Subjective severity of exposure		3.39***	338	.16	
Step 3: Post-disaster variables	5.18***		8,327		.08
Coping self-efficacy		-2.90**	331	-.14	
Helplessness/Self-blame		4.12***	327	.23	

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

^a The predictor was no longer significantly associated with the DV in the final step.

The first step with pre-disaster variables explained 26% of variance in severity of re-experiencing symptoms (F change[15,340] = 7.76, $p < .001$). In this step, gender ($\beta = -.23$, $t[354] = -4.18$, $p < .001$), level of income ($\beta = -.12$, $t[351] = -2.28$, $p < .05$), self-reported pre-quake mental health ($\beta = -.13$, $t[349] = -2.02$, $p < .05$), and optimism ($\beta = -.13$, $t[345] = -2.44$, $p < .05$) were negatively associated with severity of re-experiencing symptoms. Level of religiousness ($\beta = .15$, $t[348] = 3.04$, $p < .01$), neuroticism ($\beta = .22$, $t[347] = 4.18$, $p < .001$), and extraversion ($\beta = .14$, $t[346] = 2.73$, $p < .01$) were positively related to severity of re-experiencing symptoms. However, extraversion was not significantly correlated with the severity of re-experiencing symptoms in bivariate correlation analysis ($r = .07$, ns), suggesting a possible suppressor effect.

Among within-disaster variables in the second step of the equation, both objective ($\beta = .15$, $t[339] = 2.89$, $p < .01$) and subjective severity of earthquake exposure ($\beta = .16$, $t[338] = 3.39$, $p = .001$) were positively associated with severity of re-experiencing symptoms. This step resulted in a significant increment in R^2 explaining additional 5% of variance (F change[5,335] = 4.35, $p = .001$).

The third step including post-disaster variables additionally explained 8% of the total variance (F change[8,327] = 5.18, $p < .001$), improving the explained total variance to 38%. Coping self-efficacy ($\beta = -.14$, $t[331] = -2.90$, $p < .01$) and helplessness coping/self-blame ($\beta = .23$, $t[327] = 4.12$, $p < .001$) were associated with severity of re-experiencing symptoms in this step.

In the final step when all variables were entered into the equation, level of income ($\beta = -.05$, $t[351] = -0.99$, ns), pre-quake mental health ($\beta = .09$, $t[349] = -1.47$, ns), neuroticism ($\beta = .10$, $t[347] = 1.89$, ns), extraversion ($\beta = .08$, $t[346] = 1.61$, ns), and optimism ($\beta = -.07$, $t[345] = -1.43$, ns) from previous steps were no longer significantly associated with severity of re-experiencing symptoms while gender ($\beta = -.18$, $t[354] = -3.42$, $p = .001$), level of religiousness ($\beta = .14$, $t[348] = 2.94$, $p < .01$), and objective ($\beta = .11$, $t[339] = 2.15$, $p < .05$) and subjective

severity of exposure ($\beta = .12$, $t[338] = 2.54$, $p < .05$) were still in significant association with re-experiencing symptom severity.

4.3.2.5 Variables Associated with Severity of Avoidance Symptoms

The final regression analysis revealed that when all variables were in the equation, after the third step, the R^2 value of .17 (adjusted $R^2 = .10$) indicated that less than one fifth of the variability in the severity of avoidance symptoms was explained by some of the variables entered into the equation. Table 4.13 presents a summary of results for this regression analysis.

Table 4.13 Variables associated with severity of avoidance symptoms

	<i>F</i> change for set	<i>t</i> (within set)	<i>df</i>	β	Model R^2 change
Dependent variable					
Severity of avoidance symptoms					
Step 1: Pre-disaster variables	2.38**		15,340		.09
Education ^a		-2.37*	352	-.16	
Optimism		3.72***	345	-.21	
Prior quake experience		2.33*	341	.13	
Step 2: Within-disaster variables	2.15		5,335		.03
Objective severity of exposure ^a		2.22*	339	.13	
Attributions of controllability		-2.17*	335	-.12	
Step 3: Post-disaster variables	2.50*		8,327		.05
Problem-solving coping		2.57*	328	.19	

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

^aThe predictor was no longer significantly associated with the DV in the final step.

The first step with pre-disaster variables explained 9% of variance in severity of avoidance symptoms (F change[15,340] = 2.38, $p < .01$). In this step, years of education ($\beta = -.16$, $t[352] = -2.37$, $p < .05$) and dispositional optimism ($\beta = -.21$,

$t[345] = -3.72, p < .001$) were negatively associated with severity of avoidance symptoms. Prior quake experience was positively related to avoidance symptom severity ($\beta = .13, t[341] = 2.33, p < .05$); however, this variable was not significantly correlated with the severity of avoidance symptoms in bivariate correlation analysis ($r = .08, ns$), suggesting a possible suppressor effect.

Among within-disaster variables in the second step of the equation, objective severity of exposure ($\beta = .13, t[339] = 2.22, p < .05$) and attributions of controllability of earthquake damage ($\beta = -.12, t[335] = -2.17, p < .05$) were associated with severity of avoidance symptoms. This step resulted in a nonsignificant increment in R^2 explaining only additional 3% of variance (F change[5,335] = 2.15, ns).

The third step including post-disaster variables additionally explained 5% of the total variance (F change[8,327] = 2.50, $p < .05$), improving the explained total variance to 17%. Only problem-solving coping ($\beta = .19, t[328] = 2.57, p < .05$) was positively associated with severity of avoidance symptoms in this step.

In the final step when all variables were entered into the equation, from previous steps objective severity of exposure ($\beta = .09, t[339] = 1.46, ns$) and education ($\beta = -.13, t[352] = -1.94, ns$) were no longer significantly associated with severity of avoidance symptoms while optimism ($\beta = -.21, t[345] = -4.21, p < .001$), prior quake experience ($\beta = .13, t[341] = 2.23, p < .05$), and attributions of controllability ($\beta = -.11, t[335] = -2.02, p < .05$) were still in significant association with avoidance symptom severity.

Table 4.14 below presents a summary for five multiple hierarchical regression analyses which were conducted in order to understand factors associated with psychological resilience. Plus symbol (+) in the table indicates a positive association between the predictor and the dependent variable. Minus symbol (-) indicates a negative association between the predictor and the dependent variable. Blank cells indicate the absence of association. Values with the superscript letter “^a” indicate that the predictor was no longer significantly associated with the DV

when all variables entered into the regression equation in the final step. Values with the superscript letter ^{“b”} indicate that there was a potential suppressor effect observed for that relationship. These relationships with possible suppression were not interpreted during discussion of the findings.

4.3.3 Ad Hoc Analyses: Testing Mediational Links

The regression analyses showed that some of the pre-disaster factors in the first step were no longer associated with the two major indices of psychological resilience in the present study (i.e., resilience and severity of total PTS). Therefore, ad hoc mediation analyses were performed in order to understand the possible mediational links between variables leading to nonsignificance of that relationship for some variables. Hierarchical multiple regression analyses were used to test mediational links. According to Baron and Kenny (1986), there are four necessary conditions to establish mediation:

- Condition 1: The independent variables and mediating variables are significantly related.
- Condition 2: The independent variables and dependent variables are significantly related.
- Condition 3: The mediator variables and dependent variable are significantly related.
- Condition 4: The relationship between the independent variable and dependent variable becomes nonsignificant or weaker when the mediator is added.

To examine whether these four conditions were satisfied in the study data, the indirect effects of identified pre-disaster variables on different indices of psychological functioning via within-disaster and post-disaster factors were examined using a series of regression analyses. Mediator variables were selected based on their statistically significant correlations with the IV and the DV. For resilience, pre-quake structural social capital and satisfaction with life were investigated as independent variables; and for total PTS severity, pre-quake income level was the independent variable. The dependent variables were

Table 4.14 Summary of multiple hierarchical regression analyses on indices of psychological resilience

Predictors	DV	Resilience	Severity of Total PTS	Severity of Hyperarousal Symptoms	Severity of Re-experiencing Symptoms	Severity of Avoidance Symptoms
Step 1: Pre-disaster variables						
Gender (1=female, 2=male)			-	-	-	
Education		+				- ^a
Income			- ^a	- ^a	- ^a	
Pre-quake mental health		+			- ^a	
Religiousness			+	+	+	
Neuroticism			+	+	+ ^a	
Extraversion		+	+ ^{ab}	+ ^{ab}	+ ^{ab}	
Optimism			-		- ^a	-
Satisfaction with life		+ ^a				
Prior quake experience						+ ^b
Pre-quake structural social capital		+ ^a				
Step 2: Within-disaster variables						
Objective severity of exposure		+	+	+ ^a	+	+ ^a
Subjective severity of exposure			+	+	+	
Attributions about controllability of earthquake damage						-
Step 3: Post-disaster variables						
Post-quake adversity			+	+		
Coping self-efficacy		+			-	
Problem-solving coping		+				+
Helplessness coping/Self-blame			+	+	+	

^a The predictor was no longer significantly associated with the DV in the final step.

^b The relationship was not interpreted as significant due to potential suppression effect.

resilience and total symptom severity of PTS. Two blocks of variables were entered into the regression equations to examine mediation effects. In the first block, independent variable was entered. In the second block, the mediator variable was added to examine whether any significant relationship between the independent variable and the dependent variable weakened or became nonsignificant.

4.3.3.1 The Mediators of the Relationship between Pre-quake Structural Social Capital and Resilience

The first three conditions to establish mediation by Baron and Kenny (1986) were established for one variable in the within-disaster and post-disaster variable sets based on the inspection of the correlations between the IV, the mediator and the DV (see Table 4.7): objective severity of exposure. A mediation analysis were conducted to understand whether this variable mediated the relationship between pre-quake structural social capital and resilience, leading to the relationship between these two variables weakened to the level of nonsignificance in the final step.

According to results of the analysis, objective severity of exposure mediated the relationship between pre-quake structural social capital and resilience. Sobel test (Sobel, 1982) confirmed the mediational model ($z = 3.42, p < .01$). 39.67 percent of the path between the IV and the DV was accounted for by objective severity of exposure as partial mediator. Table 4.15 presents the results of this mediation analysis.

Table 4.15 Summary of regression models testing for objective severity of exposure as a mediator between pre-quake structural social capital and resilience

	<i>F</i> change	<i>t</i> (within)	<i>df</i>	β	<i>R</i> ²
Regression 1					
(DV: Resilience)					
Step 1:	11.56 ^{***}		1,354		.03
Pre-quake structural social capital		3.40 ^{***}	354	.18	

Table 4.15 (continued)				
Step 2:	14.19 ^{***}		2,353	.07
Pre-quake structural social capital		1.99 [*]	353	.11
Objective severity of exposure		4.04 ^{***}	353	.22
Regression 2				
(DV: Objective severity of exposure)				
Step 1:	40.87 ^{***}		1,354	.10
Pre-quake structural social capital		6.39 ^{***}	354	.32

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

4.3.3.2 The Mediators of the Relationship between Satisfaction with Life and Resilience

The first three conditions to establish mediation by Baron and Kenny (1986) were established for three variables in the within-disaster and post-disaster variable sets based on the inspection of the correlations between the IV, the mediator and the DV (see Table 4.7): optimistic coping/seeking social support, problem-solving coping, and coping-self-efficacy. Three different mediation analyses were conducted to understand whether these variables mediated the relationship between satisfaction with life and resilience, leading to the relationship between these two variables weakened to the level of nonsignificance in the final step.

According to results of the first analysis, optimistic coping/seeking social support mediated the relationship between satisfaction with life and resilience. Sobel test (Sobel, 1982) confirmed the mediational model ($z = 3.28, p < .01$). 24.06 percent of the path between the IV and the DV was accounted for by optimistic coping as partial mediator. Table 4.16 presents the results of this mediation analysis.

Table 4.16 Summary of regression models testing for optimistic coping/seeking social support as a mediator between satisfaction with life and resilience

	<i>F</i> change	<i>t</i> (within)	<i>df</i>	β	<i>R</i> ²
Regression 1					
(DV: Resilience)					
Step 1:	23.15***		1,354		.06
Satisfaction with life		4.81***	354	.25	
Step 2:	25.71***		2,353		.13
Satisfaction with life		3.72***	353	.19	
Optimistic coping/seeking social support		5.16***	353	.26	
Regression 2					
(DV: Optimistic coping/seeking social support)					
Step 1:			1,354		.05
Satisfaction with life	18.24***	4.27***	354	.22	

 $p < .001$.

According to results of the second analysis, problem-solving coping mediated the relationship between satisfaction with life and resilience. Sobel test (Sobel, 1982) confirmed the mediational model ($z = 3.35, p < .01$). 28.15 percent of the path between the IV and the DV was accounted for by problem-solving coping as partial mediator. Table 4.17 presents the results of this mediation analysis.

Table 4.17 Summary of regression models testing for problem-solving coping as a mediator between satisfaction with life and resilience

	<i>F</i> change	<i>t</i> (within)	<i>df</i>	β	<i>R</i> ²
Regression 1					
(DV: Resilience)					
Step 1:	23.15***		1,354		.06
Satisfaction with life		4.81***	354	.25	
Step 2:	41.05***		2,353		.19
Satisfaction with life		3.69***	353	.18	
Problem-solving coping		7.44***	353	.36	
Regression 2					
(DV: Problem-solving coping)					
Step 1:	12.71***		1,354		.04
Satisfaction with life		3.57***	354	.19	

 $p < .001$.

According to results of the third analysis, coping self-efficacy mediated the relationship between satisfaction with life and resilience. Sobel test (Sobel, 1982) confirmed the mediational model ($z = 3.45, p < .01$). 25.26 percent of the path between the IV and the DV was accounted for by coping self-efficacy as partial mediator. Table 4.18 presents the results of this mediation analysis.

Table 4.18 Summary of regression models testing for coping self-efficacy as a mediator between satisfaction with life and resilience

	<i>F</i> change	<i>t</i> (within)	<i>df</i>	β	<i>R</i> ²
Regression 1					
(DV: Resilience)					
Step 1:	23.15***		1,354		.06
Satisfaction with life		4.81***	354	.25	
Step 2:	22.33***		2,353		.11
Satisfaction with life		3.55***	353	.19	
Coping self-efficacy		4.50***	353	.23	
Regression 2					
(DV: Coping self-efficacy)					
Step 1:	27.45***		1,354		.07
Satisfaction with life		5.24***	354	.27	

p < .001.

4.3.3.3 The Mediators of the Relationship between Income Level and Severity of PTS Symptoms

The first three conditions to establish mediation by Baron and Kenny (1986) were established for four variables in the within-disaster and post-disaster variable sets based on the inspection of the correlations between the IV, the mediator and the DV (see Table 4.7): post-quake adversity, fatalistic coping, helplessness coping/self-blame, and coping-self-efficacy. Four different mediation analyses were conducted to understand whether these variables mediated the relationship between pre-disaster income level and severity of PTS symptoms, leading to the relationship between these two variables weakened to the level of nonsignificance in the final step.

According to results of the first analysis, post-quake adversity mediated the relationship between income level and severity of PTS symptoms. Sobel test (Sobel, 1982) confirmed the mediational model ($z = -3.07, p < .01$). 24.82 percent

of the path between the IV and the DV was accounted for by post-quake adversity as partial mediator. Table 4.19 presents the results of this mediation analysis.

Table 4.19 Summary of regression models testing for post-quake adversity as a mediator between income level and severity of PTS symptoms

	<i>F</i> change	<i>t</i> (within)	<i>df</i>	β	<i>R</i> ²
Regression 1					
(DV: Severity of PTS symptoms)					
Step 1:	18.66***		1,354		.05
Income level		-4.32***	354	-.22	
Step 2:	27.31***		2,353		
Income level		-3.34***	353	-.17	
Post-quake adversity		5.85***	353	.30	
Regression 2					
(DV: Post-quake adversity)					
Step 1:	13.02***		1,354		.04
Income level		-3.61***	354	-.18	

p ≤ .001.

According to results of the second analysis, fatalistic coping mediated the relationship between income level and severity of PTS symptoms. Sobel test (Sobel, 1982) confirmed the mediational model ($z = -2.44, p < .05$). 16.10 percent of the path between the IV and the DV was accounted for by fatalistic coping as partial mediator.

According to results of the third analysis, helplessness coping/self-blame mediated the relationship between income level and severity of PTS symptoms. Sobel test (Sobel, 1982) confirmed the mediational model ($z = -3.43, p < .01$). 36.42 percent of the path between the IV and the DV was accounted for by helplessness coping/self-blame as partial mediator. Table 4.21 presents the results of this mediation analysis.

Table 4.20 Summary of regression models testing for fatalistic coping as a mediator between income level and severity of PTS symptoms

	<i>F</i> change	<i>t</i> (within)	<i>df</i>	β	<i>R</i> ²
Regression 1 (DV: Severity of PTS symptoms)					
Step 1:	18.66 ^{***}		1,354		.05
Income level		-4.32 ^{***}	354	-.22	
Step 2:	21.09 ^{***}		2,353		.11
Income level		-3.69 ^{***}	353	-.18	
Fatalistic coping		4.73 ^{***}	353	.24	
Regression 2 (DV: Fatalistic coping)					
Step 1:	8.08 ^{**}		1,354		.02
Income level		-2.84 ^{**}	354	-.15	

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

Table 4.21 Summary of regression models testing for helplessness coping/self-blame as a mediator between income level and severity of PTS symptoms

	<i>F</i> change	<i>t</i> (within)	<i>df</i>	β	<i>R</i> ²
Regression 1 (DV: Severity of PTS symptoms)					
Step 1:	18.66 ^{***}		1,354		.05
Income level		-4.32 ^{***}	354	-.22	
Step 2:	50.31 ^{***}		2,353		.22
Income level		-2.97 ^{**}	353	-.14	
Helplessness coping/self-blame		8.83 ^{***}	353	.42	
Regression 2 (DV: Helplessness coping/self-blame)					
Step 1:	13.72 ^{***}		1,354		.04
Income level		-3.71 ^{***}	354	-.19	

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

According to results of the fourth analysis, coping self-efficacy mediated the relationship between income and severity of PTS. Sobel test (Sobel, 1982) confirmed the mediational model ($z = -2.02$, $p < .05$). 9.93 percent of the path between the IV and the DV was accounted for by coping self-efficacy as partial mediator. Table 4.22 presents the results of this mediation analysis.

Table 4.22 Summary of regression models testing for coping self-efficacy as a mediator between income level and severity of PTS

	<i>F</i> change	<i>t</i> (within)	<i>df</i>	β	<i>R</i> ²
Regression 1					
(DV: Severity of PTS symptoms)					
Step 1:	18.66 ^{***}		1,354		.05
Income level		-4.32 ^{***}	354	-.22	
Step 2:	14.01 ^{***}		2,353		.07
Income level		-3.89 ^{***}	353	-.20	
Coping self-efficacy		-2.99 ^{**}	353	-.16	
Regression 2					
(DV: Coping self-efficacy)					
Step 1:	7.49 ^{**}		1,354		.02
Income level		2.74 ^{**}	354	.14	

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

To conclude, ad hoc mediation analyses were conducted to understand why some pre-disaster variables were no longer associated with main indices of psychological resilience in the final step. For purposes of parsimony and frugality, mediational links for specific symptom domains were not investigated. The results revealed that objective severity of earthquake exposure mediated the relationship between pre-quake structural social capital and resilience; and optimistic coping/seeking social support, problem-solving coping, and coping-self-efficacy mediated the relationship between satisfaction with life and resilience, while post-quake adversity, fatalistic coping, helplessness coping/self-blame, and coping self-efficacy acted as mediator variables between pre-disaster income level and severity of PTS symptoms.

4.4 Discussion

The quantitative strand of the present study aimed to explore factors associated with psychological resilience as defined by low levels of PTS and high levels of resilience (i.e., stress-coping ability). In order to achieve this aim, the association between the broad factors (i.e., pre-disaster, within-disaster, and post-disaster factors) taken from the Multivariate Risk Factor (MRF) Model of Freedy et al.

(1992a) and psychological resilience was investigated in a group of earthquake survivors exposed to the 2011 Van earthquakes.

The sample initially consisted of 360 earthquake survivors with equal representation of each gender and each earthquake damage category. The analyses were conducted on the data from 356 survivors due to the existence of multivariate outliers for four cases. Majority of the participants were born and raised in Van, married, high school graduates, unemployed and reported having medium level of income. Considering each scale's own absolute midpoint, the participants scored above the midpoint on levels of religiousness, optimism, satisfaction with life, and coping self-efficacy, experienced lower than the midpoint on levels of neuroticism and extraversion, and subjective impact severity and post-quake adversity, and reported high levels of pre-quake mental and physical health, low severity of PTS, and high resilience. Together, these suggest that survivors in the sample experienced lower levels of earthquake impact, and had relatively good mental health functioning. This might be at least partly due to the cross-sectional design of the present study which did not allow for observing the resilient trajectory in time.

The Association between Indices of Psychological Resilience

In the present study, psychological resilience was defined as the ability to bounce back from and withstand adversities and threatening situations by maintaining healthy levels of psychological functioning. Specifically, low levels of posttraumatic distress and resilience as measured by the ability to cope with stress were used as indices to assess psychological resilience. Previous studies have mostly used only one of the widely known resilience indicators (e.g., ability to cope with adversity, psychopathology, or adjustment) to measure psychological resilience. This study extended the traditional ways of resilience assessment by including two different indicators simultaneously and provided a way to examine whether these assessments were overlapping. The findings showed that they were indeed not redundant.

When the association between selected indicators of psychological resilience was examined, it was found that resilience was unexpectedly positively correlated with posttraumatic symptom severity scores after the earthquakes. A further investigation of the relationship between resilience and PTS symptom domains showed that resilience was correlated with severity of total PTS and avoidance symptoms, but not with the two other symptom domains. The avoidance subscale also seemed different from the other two symptom domains when correlations between and alpha coefficients of each subscale were investigated. Avoidance severity scores were only moderately correlated with the total score and subscale scores for the severity of hyperarousal and re-experiencing symptoms, while scores on hyperarousal and re-experiencing subscales were very highly correlated with scores on the total scale. In the regression analyses, scores on both hyperarousal and re-experiencing subscales were associated with very similar variables. Moreover, internal reliability of the avoidance subscale was relatively lower compared to the values for the total, hyperarousal and re-experiencing subscales. Furthermore, while regression analyses explained 38 to 40 percent of variance in other symptom severity indices, only 17 percent of variance in severity of avoidance symptoms was explained using the variables included in the analyses. These all suggested that the avoidance symptom domain was somehow different from other symptom domains. This difference was also evident during data collection while some participants' responding to items of the IES-R (Weiss & Marmar, 1997). Investigation of the field diaries by the interviewers revealed that some of the participants were surprised by some items of the avoidance subscale, responding by saying "Why would I ever think/talk about the earthquakes?" (Item 11 "I tried not to think about it" and Item 22 "I tried not to talk about it") or "Of course, I want to erase those horrible memories from my mind" (Item 17 "I tried to remove it from my memory"). Coupled with the statistical data, these implied that avoidance might have been considered as something non-pathological or non-distressing by the participants compared to other symptom domains. This supports the idea by Snape (2007) that avoidance may be an element of processing the event experience along with intrusions, rather than being a psychopathological outcome. These outcomes are positively

correlated with posttraumatic growth and may indeed be necessary to, or part of, the processing which is involved in growth experiences (Snape, 2007). Avoidance may be activated following sudden and highly stressful traumas including disasters and may be more likely to be observed in intense experiences (Ibañez et al., 2004). Avoidance may increase hope, reduce distress, and act as a positive coping strategy especially for short-term stressors; it may also be a communal and a pro-social construct unlike other symptom domains which help distract others from thinking about the disaster (Ibañez et al., 2004). Overall, this strongly reflects the utility of carefully examining symptom clusters of PTS, in addition or separately from the PTSD diagnosis, particularly in disaster contexts. Consistently, evolving conceptualizations of PTSD posit that it may be comprised of distinct symptom representations that are dependent on the individual and the trauma experience (Asmundson et al., 2000).

Although a negative correlation was originally expected between scores on the CD-RISC and the IES-R based on large number of studies pointing out that resilience and psychopathological indices such as posttraumatic symptom severity are inversely associated (e.g., Hobfoll, Mancini, Hall, Canetti, & Bonanno, 2011; Streb, Häller, & Michael, 2013), there are also some studies showing that psychological resilience and posttraumatic symptomatology including PTSD diagnosis may not be necessarily negatively related with each other or even related at all. In a study with veterans who served in the South African border war, Connell, Omole, Subramaney, and Olorunju (2013) found no association between the CD-RISC scores and the IES-R scores. A similar finding was obtained in the study by Ssenyonga, Owens, and Olema (2013) in which there were no significant differences in the resilience levels of refugees with and without PTSD. In a comprehensive review on 500 articles dealing with resilience and PTSD conducted by Almedom and Glandon (2007), it was found that resilience rarely has a negative correlation with PTSD and that resilience is primarily based on psychological, domestic, economic and environmental factors (Cenat & Derivois, 2014). Therefore, although psychological resilience has been primarily conceptualized in this study as low levels of posttraumatic symptoms in

addition to the self-reported resilience, these two indicators may be relatively conceptually independent of each other or even if they are dependent on each other at all, existence of posttraumatic symptoms in disaster survivors may not exclude the possibility of psychological resilience. Resilience is characterized by having relatively mild and short-lived disruptions and stable trajectory of healthy functioning across time (Bonanno, 2004). In the sample of this study, the severity of PTS was relatively mild with a mean score of 38.31 (maximum score: 83). Therefore, the earthquake survivors in the sample might have experienced some minimal disruptions in psychological functioning while maintaining a trajectory of healthy functioning across time. Due to the cross-sectional design and timing (e.g., data collection nineteen months after the first earthquake) of the present study, it is possible that only a part of a trajectory reflecting the relationship between resilience and posttraumatic symptoms might have been captured. Therefore, it may be misleading to treat severity of PTS symptoms as a negative indicator of psychological resilience; those with adaptive coping may show a reduction in severity of PTS over time. This reflects the need for longitudinal studies in the future to capture the trajectory as a whole and the relationship of resilience and severity of PTS over time, as also strongly advocated by Bonanno (2012).

Furthermore, wording of the items in the CD-RISC might have contributed to the occurrence of this unexpected finding. In this scale, although the participants were instructed to respond thinking about a specific traumatic experience, i.e. the earthquakes, the items are presented using simple present tense as consistent with the original scale. Use of the simple present tense may have resulted in some participants to respond in a more general sense and therefore, partially in obtaining findings which would not have been reached if asked otherwise because resilience in the face of trauma may be very different from resilience in the face of normative adversity (Davey et al., 2003). In addition, among ten items in the CD-RISC, the item “coping with stress can strengthen me” had the highest factor loading (.78). The strengthening effect of stressful events has also been highly pronounced in the PTG literature; in PTG, a transformation occurs when

the individual is struggling with adverse events (Tedeschi & Calhoun, 2004). This suggests that psychological resilience assessed by the CD-RISC may be similar to stress-related growth following trauma to some extent. Such view may further assist in understanding the unexpected positive association between scores on the CD-RISC and symptom severity scores because PTG has been shown in a number of previous studies to increase with the severity of posttraumatic symptoms (e.g., Cadell, Regehr, & Hemsworth, 2003; Tomich & Helgeson, 2004).

To conclude, this study reached a partially unexpected finding by showing a positive association between resilience and severity of PTS. This association might have been observed partly due to the research design, i.e., the cross-sectional design employed in the study or the instruments used, especially the CD-RISC. It is also possible that avoidance, the symptom domain mainly accounting for the association to be observed, may be a distinct symptom category or might have been perceived by the sample as different from other symptom domains and as an adaptive response. Finally, resilience and severity of PTS may be independent of each other and having –mild levels of– PTS may actually not exclude the possibility of resilience in disaster contexts including extreme exposure. Therefore, the severity of PTS in survivors was regarded as independent of their resilience capacity, and both the severity of PTS and resilience were treated as different indices of psychological resilience. In the following sections, factors which were found to be associated with psychological resilience in the regression analyses will be discussed in the light of previous research findings.

Pre-disaster Factors Associated with Psychological Resilience

In the regression analyses, a number of pre-disaster factors were found to be associated with psychological resilience. Firstly, female gender was associated with higher severity of total PTS, hyperarousal, and re-experiencing symptoms following the earthquakes, as consistent with previous findings in disaster contexts (e.g., Freedy, Shaw, Jarrell, & Masters, 1992b; Norris et al., 2002a).

Being a woman was shown to be associated with a perception of more threat and a sense of danger during the event (Meyerson et al., 2011). Women also tend to have increased self-awareness; therefore, they may perceive changes more easily and report more symptoms compared to men (Merecz et al., 2012). This is also complementary with the finding that men may underreport their symptoms, possibly due to gender roles about males' being tough or men being actually less affected by stressful events. Higher levels of education were also found to be associated with higher levels of resilience and lower levels of avoidance symptoms. Education was previously shown in many empirical studies to be associated with higher resilience (e.g., Bonanno et al., 2006; Bonanno & Mancin, 2008; Campbell-Sills et al., 2006; Pietrzak et al., 2014). Level of income was another important sociodemographic variable for resilience, specifically for severity of symptom indices. Lower levels of severity of total PTS, hyperarousal and re-experiencing symptoms were associated with higher levels of pre-quake income. It is acknowledged in the literature that impact of a disaster would be reduced by abundance of monetary resources (Cutter et al., 2008) and higher income is associated with less psychological distress (Freedy et al., 1992b); hence, the perceived importance of having financial resources for psychological adjustment can be understood as a means to mitigate the disaster impact. Education and income may also be considered as resources (Hobfoll, 1989; Hobfoll & Lilly, 1993) which facilitate resilience. Nevertheless, level of income was no longer associated with symptom indices after within- and post-disaster variables were accounted for in the analyses. Ad hoc analyses showed that a number of post-disaster factors mediated the relationship between income level and severity of PTS symptoms. Specifically, lower levels of income before the earthquakes increased the use of fatalistic coping and helplessness coping/self-blame as well as experiences of post-quake adversity which in turn increased severity of psychological symptoms. On the other hand, higher income levels were associated with higher levels of coping self-efficacy which in turn decreased severity of symptoms. This further underlines the importance of economic resources for psychological resilience in disaster contexts. Individuals with low levels of economic resources may engage in relatively more maladaptive coping

strategies when exposed to traumatic events and thus, experience a higher severity of symptoms and may suffer more adversity in the post-quake period due to lack of resources, and thus may have lower resilience.

Similar to female gender and pre-quake income levels, religiousness was found to be positively associated with three symptom indices: severity of total PTS, hyperarousal, and re-experiencing symptoms. This finding is contrary to previous literature (Brewer-Smyth & Koenig, 2014) stating that religion offers emotional release and social support and can increase hope, forgiveness, meaning, and comfort. Peres et al. (2007) underlined that “religious beliefs and practices may reduce loss of control and helplessness, provide a cognitive framework that can decrease suffering, and strengthen one’s purpose and meaning in the face of trauma” (pp. 347-348). In addition, religiousness may be associated with less psychological distress and higher resilience (Brown & Thomas, 2013; Javanmard, 2013). However, religiousness may also entail a negative side. Especially, when the relationship with God is characterized by insecurity and mistrust (as in negative religious coping), individuals may engage in negative thinking and experience difficulty in assigning meaning to stressors (Pargament, Smith, Koenig, & Perez, 1998). Negative religious coping has been consistently found to be associated with poor mental health outcomes (Peres et al., 2007). Similarly, in a review of 11 empirical studies, Shaw, Joseph and Linley (2005) showed that experience of trauma can destroy pre-existing spiritual and religious beliefs and moreover, religion is not always beneficial to people in dealing with the aftermath of trauma. However, since the severity of PTS symptoms and resilience (i.e., stress-coping ability) are considered in the present study as possible independent indicators of resilience, it is also possible that religiousness may not decrease trauma-related symptoms in the aftermath of disasters but may increase the acceptance or tolerance of such symptoms.

The results also underlined the importance of personality characteristics in determining the severity of trauma-related symptoms in the aftermath of a natural disaster. Neuroticism predicted increases in severity of total PTS, hyperarousal, and re-experiencing symptoms, and extraversion was associated with higher

levels of resilience. This finding is similar to what Campbell-Sills et al. (2006) found; resilience was positively related to extraversion and negatively related to neuroticism. Neuroticism has been identified in the literature as a precursor of psychological distress and anxiety disorders, and has been consistently shown to be positively associated with PTSD (Holeva & Tarrier, 2001; Jakšić, Brajković, Ivezić, Topić, & Jakovljević, 2012). Holeva and Tarrier (2001) stated that vulnerability to posttraumatic stress reactions may be increased by neuroticism “through a propensity to become aroused and conditioned more quickly, focus attention to the threat stimuli associated with the event and its consequences, attend and exaggerate further threat, and use worry and self-blame and other negative coping methods” (p. 687). On the other hand, extraversion is “characterized by being outgoing, social, talkative, and high on positive affect” (Jakšić et al., 2012, p. 258) and mostly viewed by researchers as a positive personality factor and enhance ability of disaster survivors to cope with stressors. For example, in a review of studies focusing on personality and PTSD between 1980 and 2012, Jakšić et al. (2012) found that neuroticism was consistently positively related to PTSD while extraversion was negatively related to the disorder in a relatively less consistent manner because several studies found positive correlations between extraversion and PTSD resilience. Miller (2003), in his three-factor model for the etiology and expression of PTSD, asserted that negative emotionality/neuroticism is the primary personality risk factor for the development of the disorder whereas positive emotionality/extraversion acts as a moderating factor and interacts with negative emotionality to influence the form and expression of PTSD. However, the association between extraversion and PTSD was not evident in some studies (Holeva & Tarrier, 2001). Breslau, Davis, Andreski, and Peterson (1991) showed that extraversion was indeed a risk factor for exposure to traumatic events among young adults. Nevertheless, the positive relationship between extraversion and posttraumatic stress reactions observed in the present study is confusing. This relationship may be explained by a possible suppressor effect in regression analyses. The fact that severity of total PTS, hyperarousal symptoms and re-experiencing symptoms were very highly correlated with each other might have caused a suppressor effect in some

analyses. Specifically, extraversion was not correlated with any of the three indices in correlation analyses but significantly associated with all in regression analyses. Therefore, the positive relationship between extraversion and symptom indices may be disregarded. Finally, in relation to personality, analyses also revealed that dispositional optimism predicted lower levels of severity of total PTS, re-experiencing and avoidance symptoms, as consistent with the literature (e.g., Jakšić et al., 2012; Riolli et al., 2002). Optimists, as opposed to pessimists, might derive benefits from adversity, use adaptive coping strategies flexibly, and continue to engage in the face of stressors (Jakšić et al., 2012). Optimism might also give a more positive outlook and increase resilience (Riolli et al., 2002).

Satisfaction with life was found to be associated with only resilience. Life satisfaction is considered to be not simply a by-product of positive experiences in life, but also a factor actively fostering resilience and may function as a true psychological strength (Huebner, Suldo, & Gilman, 2006). Rossi, Bisconti, and Bergeman (2007) found a strong negative correlation between perceived stress and satisfaction with life and resilience mediated the relationship between these two variables. This suggests that high levels of satisfaction with life might facilitate resilience through decreasing perceived stress and therefore enabling the individual to better cope with the stressor. The present study also showed that optimistic coping/seeking social support and problem-solving coping as well as coping self-efficacy mediated the relationship between satisfaction with life and resilience, suggesting that survivors who reported higher life satisfaction engaged in more adaptive coping strategies or believed more in their capacity to cope with adversities which in turn increased their level of resilience and supporting Huebner et al.'s (2006) view that satisfaction with life may be a psychological strength.

Finally, pre-quake structural social capital including group membership, social support from individuals or groups, and participation in citizenship activities before the earthquakes was associated with higher levels of self-reported resilience. Structural social capital is known to have inverse associations with mental disorders (De Silva et al., 2005). Social capital is a critical source for

promotion of health and well-being; it promotes collaborative problem solving, facilitates social interaction and individuals gain resources from their connection to each other (Mitchell & LaGory, 2002). An important component of structural social capital, social support, is a critical resource for adaptation following disasters. In an earthquake context, pre-existing social support networks may help to decrease psychological distress (Sümer et al., 2005) by increasing survivors' ability to cope with stressors.

To conclude, the two indices of resilience used in the present study seemed to have different associated factors. While high levels of education, pre-quake mental health, extraversion, satisfaction with life, and pre-quake structural social capital were associated with higher levels of resilience, female gender, higher levels of religiousness and neuroticism, lower levels of optimism were associated with higher severity of total PTS. Thus, resilience as measured by stress-coping ability seems to be related to resources and strength, whereas low levels of symptomatology studied is related to personality, low levels of religiousness, and gender.

Within-disaster Factors Associated with Psychological Resilience

Within-disaster, or event-related, factors were the next variable group in the study. Among variables entered into the regression analyses, exposure severity appeared as an important variable. Indeed, objective severity of exposure tapping experiencing, witnessing, or being confronted with actual or threatened death or serious injury, or a threat to the physical integrity of self or others during the earthquake was the only variable significantly and positively associated with the two selected indices of psychological resilience (i.e., resilience as measured by stress-coping ability and severity of PTS symptoms). On the other hand, subjective severity of exposure was found to be associated with only the symptom severity indices except the symptoms of avoidance. Although there has been little discussion about the effects of severity of disaster exposure on resilience and also on specific post-traumatic stress reactions in the aftermath, overall, studies investigating the relationship between exposure to disasters and

psychological adjustment have reported a dose-response effect, whereby greater exposure was associated with lower levels of psychological adjustment (Bonanno et al., 2010; Neria et al., 2008). Similarly, Lee, Ahn, Jeong, Chae, and Choi (2014) showed that resilience may buffer the impact of traumatic events on the development of PTS symptoms, protecting individuals from both direct and indirect effects of traumatic stress. This may explain why higher levels of self-reported resilience were associated in the present study with higher objective severity of exposure, reflecting the possible protective effect of resilience when encountered with high-impact disasters such as earthquakes. Individuals who were more exposed to the effects of the earthquakes such as losing close ones, being injured, or witnessing death or injury of others were also the ones who perceived themselves as more able to cope with these stressful experiences. Moreover, this finding may also reflect stress-related growth following traumatic experiences, supporting that psychological resilience assessed by the CD-RISC may be similar to PTG. Struggling with adverse events may lead to a transformation and strengthening of trauma-exposed individuals (Tedeschi & Calhoun, 2004). Another finding in the present study was that pre-quake structural social capital was associated with higher levels of objective impact severity which in turn increased survivors' resilience. It is possible that the survivors reporting to have larger social networks and more associations with other people may have experienced greater impact to their social circle including loss or injury of close ones.

Cognitive attributions about controllability of earthquake damage was only associated with lower levels of severity of avoidance symptoms. Perceived controllability is viewed by Foa et al. (1989) as critical factor for human adaptation to stress and may be more important than predictability of outcomes for predicting PTSD. Appraisals of low control are also considered by Freedy et al. (1992a) as a risk factor for adjustment following disasters. According the McClure et al. (2001), although the damage from earthquakes can be reduced by preparedness, people living in earthquake-prone regions often hold the fatalistic belief that the earthquake damage is uncontrollable and fatalism hinders

preparation. Thinking that earthquake damage is controllable might have led individuals to have been more prepared for hazard risks (e.g., Rogers, 1983; Mulilis & Duval, 1995) before the earthquakes, resulting in the survivors to better deal with the consequences without showing cognitive and behavioral avoidance. This finding may also be understood in terms of an approach-avoidance model of coping (Ruth & Cohen, 1986). Approach and avoidance are metaphors for activity (cognitive and emotional) that is oriented towards or away from threatening situations. According to the authors, “avoidant strategies...may reduce stress and prevent anxiety from becoming crippling. Approach strategies...allow for appropriate action and/or the possibility for noticing and taking advantage of changes in a situation that might make it more controllable” (p. 813). There is also evidence that approach is better than avoidance when the situation is controllable and avoidance is better than approach in uncontrollable situations (Ruth & Cohen, 1986). This helps to explain why individuals attributing the earthquake damage as controllable showed lower avoidance in the study sample. Linking to the previous section, it also supports that avoidance might act as a coping strategy under severe trauma exposure as in natural disasters.

Among factors during the disasters, severity of earthquake exposure and cognitive attributions about controllability of damage were found to be associated with psychological resilience. Severity of exposure was related to higher severity of symptoms but also to higher levels of self-reported coping ability with the adversity. On the other hand, the survivors attributing the earthquake damage as controllable experienced lower severity of avoidance symptoms. Only objective severity of exposure was a common factor related to both resilience and severity of total PTS. Subjective severity of exposure was only associated with higher severity of total PTS but not with resilience. The next section provides a discussion of research findings for post-disaster factors associated with psychological resilience.

Post-disaster Factors Associated with Psychological Resilience

In this study, the association of post-disaster factors with psychological resilience was also examined. The results indicated that post-quake life events, namely adversities following the disaster, were only associated with the severity of total PTS and hyperarousal symptoms, suggesting that conditions following the earthquakes were more important to understand psychopathology following disaster in contrast to resilience. In disaster contexts, chronic problems in living in the months following the disaster are typically observed and these secondary stressors may influence psychological functioning negatively (Norris et al., 2002a). In an empirical study by Maes, Mylle, Delmeire, and Janca (2001), survivors who later developed PTSD had higher number of adverse life events such as loss of work and broken relationships in the post-disaster period suggesting that additional post-disaster life events and chronic distressing life conditions may precipitate PTSD. Another study also showed the relative importance of post-disaster experiences compared to initial exposure. In a community sample affected by an earthquake in northern China, survivors who experienced initial lower exposure but then received less help in the post-disaster period reported poorer quality of life and psychological well-being while survivors receiving more help showed improvements in well-being from 3 months to 9 months post-earthquake (Wang et al., 2000).

Higher scores on the coping-self efficacy measure were associated with higher scores on the measure of resilience and lower scores on the measure of severity of re-experiencing symptoms. This finding is consistent with what Benight and colleagues (1999) highlighted; an individual's judgment on her/his capability to manage stressful and demanding situations after natural disasters is important for psychological outcomes. In addition, self-efficacy, as a cognitive variable, is very similar to the perception of resilience. Therefore, the positive association between the two variables seems to reflect this similarity. The critical importance of CSE for resilience was also demonstrated through its mediating role for the

relationship between some pre-disaster factors (level of income and satisfaction with life) and psychological resilience. An interesting point is that CSE was only associated with severity of trauma-related intrusions among all symptom indices. Sümer et al. (2005) found that perceived threat affected earthquake survivors differently depending on whether survivors had high or low CSE. In their study, they concluded that CSE does not serve as a buffer for intrusions unless there is low exposure. However, on the contrary, CSE seemed to decrease the severity of intrusive symptoms in the present study sample. This result is consistent with previous studies showing CSE to be associated with intrusive thoughts (Benight, Ironson, & Durham, 1999; Sümer et al., 2005) and may reflect a high sense of control for perturbing unwanted thoughts in survivors (Benight & Bandura, 2004).

Among ways of coping assessed in the present study, only problem-solving coping and helplessness coping/self-blame were associated with indicators of psychological resilience. Specifically, problem-solving coping predicted higher levels of resilience and higher severity of avoidance symptoms. Problem-solving coping style, as also referred to as task-oriented coping, approach coping, direct coping, active coping or control coping in the literature, has been consistently shown to be associated with high levels of resilience (e.g., Agaibi & Wilson, 2005; Campbell-Sills et al., 2006; Lever et al., 2012; Riolli et al., 2002). What is unexpected is the positive association between problem-solving coping and avoidance symptoms. This finding is interesting because while there are few studies showing no relationship between problem-focused and avoidant coping styles (Endler & Parker, 1994), approach coping (problem-solving coping) and avoidant coping are usually viewed as contradicting styles of coping (Lazarus & Folkman, 1984; Roth & Cohen, 1986). Avoidant coping is characterized by efforts to avoid the stressful situation by minimizing the problem, escaping from the situation (Moos & Schaefer, 1993). Nevertheless, there is evidence that some avoidance may be inherent to adaptive coping strategies; there are at least two types of avoidant styles within problem-focused coping (Heppner, Cook, Wright, & Johnson, 1995); “one style can be conceptualized as avoiding problem-solving

tasks by suppressing and denying coping activities, and another style can be conceptualized as distorting, acting impulsively, and emotionally depleting problem-focused activities” (p. 291). In the context of Van, cumulative effects of exposure to stress and traumatic events of survivors from Van due to long history of existing vulnerabilities (i.e., low human development rates, high rates of unemployment, low educational attainment and high rates of outmigration) and ongoing political and ethnic conflicts in the region (Hale, 2014) might have contributed to an increased reliance on avoidance since it may function to control emotional responses to stressful life events. In addition, the responses of the survivors (e.g., “Why would I ever want to think about the earthquakes?”) seemed to imply that avoidance is regarded as something positive and even necessary for post-disaster adjustment. Freedy et al. (1992b) asserted that in the post-disaster environments which does not allow for instrumental control, active coping may not be as effective in replenishing resources; “increased emotion focused and disengagement focused behavior can lead to an increased sense of control and less psychological distress, particularly when resource loss in the postdisaster environment is not amenable to personal control” (Baum et al., 1987; as cited in Freedy et al., 1992b, p. 452). This increased sense of control would in turn help survivors of the disasters to engage in problem-solving more efficiently, hence maintaining healthy psychological functioning in the long-term. Another coping style that was significantly associated with indices of psychological resilience in the analyses was helplessness coping or self-blame. Helplessness/self-blame predicted an increase in the severity of PTS (total PTS, and symptoms of hyperarousal and re-experiencing). Helplessness/self-blame is characterized by blaming oneself for the problem and feeling helpless and trapped. Exposure to traumatic events may hinder individuals’ ability to cope with the stressors, leading to an increase in use of maladaptive coping strategies (Emmelkamp, Komproe, Van Ommeren, & Schagen, 2002). The present study also showed that this coping style mediated the relationship between low levels of economic resources in the pre-disaster period and trauma-related symptomatology, suggesting that having low levels of economic resources before the earthquakes renders survivors helpless and result in self-blame in the post-

disaster phase, and thereby negatively affecting post-disaster mental health adjustment. In addition, helplessness may also act as a predisposition effecting the perception of events as more stressful (Seligman, 1975), leading to an increase in stress-related symptoms in the post-disaster phase. The finding is also consistent with the findings in the literature emphasizing that although accepting the responsibility or blame for their trauma may help survivors to better cope with the aftermath than those who blame others, this is only therapeutic when there is personal control over the traumatic events and when events are beyond one's control, self-blame is destructive (Voges & Romney, 2003). Finally, although fatalistic coping was not directly associated with severity of PTS symptoms in regression analyses possibly due to shared variance with other variables in the analyses, this coping style, as helplessness coping/self-blame, acted as a mediator between low levels of economic resources and higher severity of PTS symptoms. In contrast to helplessness coping, fatalistic coping "does not necessarily imply being submissive or helpless, but implies that God has a plan for the individual and one needs to accept this after taking all necessary actions" (Karanci & Acarturk, 2005, p. 317). It involves believing in God and externalizing adversities to spiritual themes. Survivors with lower levels of economic resources might have coped through attributing the challenges in life they experienced to God. Therefore, as higher levels of religiousness were found to be related to higher severity of trauma-related symptoms in the present study, such adherence to fatalistic coping might have increased symptom severity reported by survivors.

In sum, some of the coping styles and coping self-efficacy were found to be important predictors of psychological resilience in the post-earthquake phase. In addition, adverse events and conditions to which survivors were exposed to after the quakes also hindered psychological adjustment. There were no common factors which were related to both resilience (i.e., stress-coping ability) and severity of total PTS. All factors were differently related to the two indices of psychological resilience. While high levels of coping self-efficacy and problem-solving coping were associated with perceptions of resilience, high levels of post-

quake adversity and helplessness coping were associated with higher severity of total PTS symptoms.

Limitations and Directions for Future Research

The quantitative phase of the study had a number of limitations. Firstly, the sample was recruited based on gender and household earthquake damage categories and it was not possible to collect systematic representational data from the earthquake survivors in Van. Reaching a representative sample of survivors was not possible due to high rates of temporary migration in the aftermath of the earthquakes. Therefore, using statistical inferences, generalizations were made using data from the selected sample to the entire population (Iversen, 2004).

Another limitation in the quantitative phase concerns data collection procedures. Self-report measurement is popular in social science studies but also continues to be a concern. It is criticized in resilience research especially because individuals are not considered to be perfect judges of their own resilience (Campbell-Sills, Cohan, & Stein, 2006). This concern is doubled especially when using self-report instruments with low-literate populations (Bernal, Wooley, & Schensul, 1997), as in the case of Van where literacy levels of the population are shown to be low (TUIK, 2012). More than 10 percent of survivors in the sample in the quantitative study were illiterate and 37.2% of the participants had educational attainment below high school. There may be specific response trends in such populations with lower levels of education including social desirability responses, excessive use of endpoints in the scale, and missing responses; moreover, lower education levels and lower acculturation may be associated with difficulty completing Likert-type scales (D'Alonzo, 2011). Effort was given to reduce the effects of this limitation through the use of visual aids in responding to Likert-type scales and choice of interviewer-administered application of the instruments. Furthermore, religiousness and resource loss variables were assessed using questions constructed by the researcher and this might have decreased the validity of these measures. It would be important in future studies to include validated and standardized instruments to assess selected variables. In addition, using relatively

objective measures of resilience and adjustment would be fruitful. For example, going back to normal routines such as resumption of school or work can also be addressed in resilience research.

Furthermore, the participants were not asked about whether they experienced psychological or psychiatric problems requiring treatment after the earthquakes. Possible inclusion of participants with mental health problems in the sample might limit the generalizability of findings to community samples. Therefore, future studies using community samples should try to exclude data from participants with mental health problems requiring treatment.

Finally, while findings revealed important associations between included variables and psychological resilience, still with all variables in the regression analyses, only up to two fifth of the variance in the selected indices of psychological resilience was explained. This suggests that there might be other important variables that were not included in the quantitative study which may have contributed to explaining psychological resilience in earthquake survivors. Future efforts may concentrate on identifying other factors possibly associated with psychological resilience that were not addressed in this study. For example, many types of social support were identified including listening support, emotional support, emotional challenge, reality confirmation support, task appreciation support, task challenge support, tangible assistance support, and personal assistance (Rosenfeld & Richman, 1997). Therefore, a deeper analysis of social support and the other variables included in this study would be valuable for understanding the concept of psychological resilience better and for gaining a deeper and more comprehensive understanding of each component included in the present study.

Conclusion

Overall, the findings obtained in the quantitative phase of the present study showed that a number of factors related to before, during, and after the earthquakes predicted psychological resilience of earthquake survivors in the

sample. This suggests that psychological resilience is influenced by a multitude of variables and any resilience, or risk, assessment in disaster contexts should include multivariate factors in order to gain a complete understanding of the concept at hand. In sum, these findings may shed light on future studies focusing on resilience facilitating factors, and have theoretical and practical implications. The implications for clinical practice and applied field for both of the phases of the study are presented in the final chapter along with a general discussion of findings from the two phases of the study.

CHAPTER 5

GENERAL DISCUSSION

This chapter is composed of three sections. In the first section, research findings from both phases of the present study are brought together and discussed in line with the existing literature. The second section presents implications of the present study for clinical practice and post-disaster psychosocial support applications. The final section presents the overall limitations of the current study and discusses future directions for research.

5.1 General Discussion of Research Findings

The aim of the present study was to investigate psychological resilience in the survivors of the 2011 earthquakes in Van, Turkey. A mixed-methods design was employed to achieve this aim; the two phases of the study, i.e. the qualitative and the quantitative phases, were conducted to be able to gain a complete understanding of psychological resilience and to ensure comprehensiveness of the study findings. The purpose of the qualitative study was to understand perceptions of psychological resilience in a sample of survivors of the 2011 earthquakes in Van, Turkey and to formulate a revised model for the quantitative phase by adding possible potential variables uncovered in the qualitative phase. On the other hand, the quantitative study aimed to identify factors associated with psychological resilience. The findings from both phases of the study were discussed in the chapters devoted to the presentation of the results in the qualitative and quantitative phases.

The findings from both the qualitative and the quantitative phases of the study provided support for the frameworks which guided this study, i.e. the framework of Schaefer and Moos (1992) and the Multivariate Risk Factor Model of Freedy

et al. (1992a). The most important difference between the elements of these frameworks and the study findings was the prominence of religiousness in the findings. Religiousness and religious coping, especially in the qualitative phase, emerged as an important facilitating factor for psychological resilience based on survivors' perceptions. The findings suggested that religious beliefs and practices may serve a protective value for psychological health of survivors and their adaptation in the aftermath of disasters, hence fostering resilience. These beliefs and practices may increase acceptance of the negative experiences. Belief in a controlling religious deity may restore a sense of external control when personal or external sources of control are low; compensatory religious control may help people find salvation from anxious uncertainties inherent in human life (Kay, Gaucher, McGregor, & Nash, 2010).

However, some seemingly conflicting findings regarding religiousness were obtained from the different strands of the study. In the qualitative study, the purpose was to investigate perceptions of psychological resilience. To achieve this aim, a definition of resilience was provided in which resilience was defined as being able to bounce back and put up with difficulties encountered after disasters despite some psychological distress and adversities. Being religious and religious coping was pronounced by the participants as factors which facilitate resilience in the qualitative phase. On the other hand, more objective testing in the quantitative study in which the majority of participants reported themselves as highly resilient and the majority reported no change in the level of religiousness after the quakes revealed that self-reported level of religiousness was related with higher levels of PTS in the aftermath of the Van earthquakes. Although these two findings may seem conflicting, they were indeed acknowledged as complementary. It is possible that existence of trauma-related symptoms does not exclude the possibility of resilience. It is acknowledged in the literature that religiousness may be associated with increased resilience (e.g., Brown & Thomas, 2013; Javanmard, 2013). It can foster hope, forgiveness, meaning, and comfort (Brewer-Smyth & Koenig, 2014). Therefore, religiousness may not lower the distress associated with the traumatic experience; however, it may

foster the acceptance of thoughts, emotions and distress reactions associated with it. However, severity of psychological symptoms may be increased in some individuals reporting high levels of religiousness due to an adherence to negative religious coping. According to Pargament and colleagues (1998; 2000), individuals using negative religious coping have negative feelings including anger towards God, engage in negative thinking (e.g., thoughts of injustice), and have difficulty in meaning making following the stressful events. The relationship with God involves insecurity and mistrust in negative religious coping; stressful events are viewed as a punishment from God (Pargament et al., 1998). Nevertheless, still, religiousness may offer a source of strength to accept, tolerate and put up with psychological distress. In addition, the sample in the quantitative study was characterized by high levels of religiousness, low levels of PTS symptoms and high levels of resilience, coping self-efficacy and optimism when the scores on these scales were compared to their absolute midpoint. Therefore, although it cannot be known for sure due to the cross-sectional design of the study, holding religious beliefs and engaging in practices, an optimistic outlook, and a strong belief in one's ability to cope with stress might have actually decreased the severity of psychological symptoms of survivors in time between the events and data collection.

Although they may seem conflicting, the findings obtained in different phases of the present study regarding religiousness and psychological resilience are therefore considered to complement each other. The mixed-methods design of the present study allows for a comprehensive understanding of the relationship between these two variables which would not have been identified with a single-method study. Specifically, in the absence of the quantitative study, one would have directly concluded that religiousness facilitates resilience while in the absence of the qualitative study, one would have concluded that it hinders resilience. The present study contributes to the literature by providing a more complete and a richer picture of the association between religiousness and psychological resilience. This picture suggests that to be able to understand this association, the meaning of religion and religiousness for the disaster survivors

and also, how religiousness affects living with PTS symptoms should be well-understood. Although symptoms may occur in the aftermath of traumatic events such as earthquakes, an accepting attitude may result in higher resilience as well as being able to put up with those symptoms and accept them.

The findings from both phases of the present study also show that psychological resilience is a multifactorial construct and provides theoretical support for resilience models which suggest a multifactorial structure for the concept (e.g., Machida et al., 2013). Findings from both the qualitative and the quantitative phases of the study showed that many variables in the pre-, within-, and post-disaster phases affect resilience. Similar to perceived resilience factors in the qualitative phase of the study, sociodemographic characteristics (male gender), resources (higher education and income, better pre-disaster mental health), personality, life satisfaction, existence of social networks and relationships, severity of disaster exposure and post-disaster adversities, coping self-efficacy and coping were found to be associated with psychological resilience in the quantitative phase. These findings support the multifactorial nature of psychological resilience and suggest that all these variables should be considered as important when addressing resilience. This lends further support to the view that in order to understand resilience comprehensively, a multifactorial model is necessary which includes trait factors and mechanisms translating these factors into effective adaptation (Benight & Cieslak, 2011). Development and empirical validation of multifactorial models specific to the disaster context would further contribute to the disaster field and the resilience research. Furthermore, it is also necessary to use multiple measures of psychological resilience to gain a complete understanding, and understanding of resilience should not be merely limited to low levels of PTS symptom severity in empirical studies, as also advocated by Bonanno (2012). Different findings were prominent for the two measures of psychological resilience in the present study; different factors were related to different outcome measures. In addition, in the qualitative study, outcome-, process-, and attribute-based understandings of psychological resilience were evident in responses of survivors. Therefore, measures assessing different

dimensions of psychological resilience should be incorporated in studies aiming to understand the concept fully. The findings also showed that various personality variables, social and economic factors, health-related variables, cognitive attributions, and coping strategies were perceived as associated with resilience. This suggests that psychological resilience may be promoted from different sources. This particularly holds promise for clinical practice and applied field.

5.2 Implications for Clinical Practice and Applied Field

The findings provide important information about potential consequences of disaster experiences including trauma-related symptoms and resilience. It showed that ability to cope with stressful circumstances may be simulatenously observed with some PTS symptoms; therefore, indicating resilience with either coping ability or low levels of symptomatology alone may only give limited information about resilient capacities of survivors. It is important that practitioners dealing with disaster survivors should avoid labeling all symptomatic individuals as non-resilient. As attributions of controllability were shown in the quantitative study to facilitate the strength of belief in one's ability to cope after trauma, psychoeducation programmes may focus on the meaning of the disaster event for the survivors and the survivors' expectations about their roles, thereby restoring their sense of control and increasing resilience.

The results of this study may also contribute to an understanding of how survivors perceive the impacts of earthquakes and how resilience is conceptualized by survivors, which may lend support in planning psychosocial interventions for survivors. In addition, identification of factors associated with psychological resilience would help clinicians and other health professionals working with traumatized populations to attempt to foster resilience in survivors of trauma. The role of several variables at different phases of disasters including factors such as personality, social support, coping or disaster exposure were found to be associated with psychological resilience. Professionals may put this knowledge into use to guide their work in the field such as fostering problem-focused coping, combatting helplessness, and providing social support.

The findings also provide information on possible risk factors for the development of PTS symptoms following traumatic events. This information may guide in the identification of survivors at risk for developing psychopathological symptoms. In the present study, some special vulnerable groups at risk for PTS symptoms were identified. People who had high severity of exposure and who experienced post-quake adversity as well as women reported higher severity of PTS symptoms. Chandra and colleagues (2010) stated that development and maintenance of resilience becomes much more difficult when vulnerable groups are concentrated geographically, and vulnerable groups tend to recover more slowly following a disaster. Therefore, it is important to provide psychoeducation and focused psychosocial interventions for these vulnerable groups following disasters to make them actively cope with stress. Guidelines for psychosocial interventions following disasters should include specific detailed instructions for vulnerable or disadvantaged groups. Those groups usually have different psychosocial needs and concerns, and appropriate assessment of practical and urgent needs and whether special attention or advanced support is needed is critical for psychological first-aid interventions (World Health Organization, War Trauma Foundation, & World Vision International, 2013).

As mentioned in the previous paragraph, the present study showed that adversities in post-disaster context may hinder resilience. This is consistent with previous studies showing that problems of living after disasters are associated with low levels of psychological adjustment (e.g., Maes et al., 2001; Norris et al., 2002a). This especially requires minimization of adversities in post-disaster phase and calls for attention from central and local disaster management authorities. In disaster contexts, people may be exposed to multiple adverse living conditions and require different kinds of support. Therefore, development of a multi-layered support system which responds to different needs of different groups is key to organizing mental health and psychosocial support (Inter-Agency Standing Committee [IASC], 2007). This system should function in tandem with a programme for proper needs assessment. It is important that individuals with psychosocial difficulties are assessed formally for their physical, psychological,

and social needs before any psychosocial intervention (The European Network for Traumatic Stress [TENTS], 2008). Such formal assessment allows for identification of survivor groups requiring different kinds of psychosocial support. This is important because social resources and support are considered as potential activators of resilience both at the individual and the community levels; they provide knowledge and assistance on practical needs and promote problem solving (Abramson et al., 2014). One study which focused on the needs of disaster survivors was conducted by Karanci, Gokler-Danisman, Yilmaz and Aker (2011) and aimed to identify the pathways to provide psychosocial support for disaster survivors in Turkey. They found that survivors of the 1999 Marmara earthquake reported various material needs (e.g., food, water, shelter), psychological/spiritual needs (e.g., emotional/social support, sharing the experiences, help to overcome negative emotions), social needs (e.g., solidarity, returning to normal life), and informational needs (e.g., disaster preparedness, contact and communication) after the 1999 earthquake. Their responses were also widely varied in terms of what psychosocial services should be comprised of and whom such services should target, supporting the view that different needs of survivors emerge in the post-disaster period and these needs should be properly assessed.

The identification of individuals who show resilience or who are at risk for developing psychological symptoms similarly requires appropriate assessment in the post-disaster period. Resilience studies show that only a small minority of exposed individuals are candidates for psychotherapeutic interventions and for this reason, appropriate assessment and diagnosis are the central tasks before referral (Bonanno & Mancini, 2008). However, tools for assessment of psychological resilience are limited in number and in scope due to the complexity of the concept and lack of consensus between researchers about what to assess in order to understand it. Most empirical studies in the literature assessed resilience using scales, checklists or interviews; however, use of some tools for assessment may not be appropriate to the conditions in the disaster aftermaths and most are general measures instead of being context-specific. Although any development in

resilience assessment should be in tandem with the development of definitions with consensus, it may be fruitful to direct future research on the development and standardization of disaster context-specific assessment methods and tools for psychological resilience to be used in the field.

Some positive personality characteristics were found to be associated with psychological resilience in the quantitative phase of the current study. Accordingly, extraversion and optimism was positively associated with the self-reported resilience in the aftermaths of the earthquakes. This was consistent with what survivors in the qualitative study said: individuals who are patient, grateful, hopeful, optimistic, extraverted, etc. would be more resilient in the face of adverse events. Extraverted individuals are “outgoing, social, talkative, and high on positive affect” (Jakšić et al., 2012, p. 258), and as a factor of positive emotionality, extraversion may influence the form and expression of PTS through its interaction with negative emotionality (Miller, 2003). High trait extraversion would be associated with increased active participation in activities in the post-disaster period. Social participation in the post-disaster period may also strengthen social ties and networks between the community members. Different phases of the present study showed that structural social capital and participation in volunteer work facilitate psychological resilience. Disaster survivors with high trait extraversion may be invited to act as helping actors which would facilitate participation as well as healthy dissemination of information between stakeholders. In addition, optimism is known to be associated with using adaptive coping strategies flexibly and continuing to engage in the face of stressors (Jakšić et al., 2012). It may also provide a more positive outlook and increase resilience (Riulli et al., 2002). Therefore, interventions which foster group activities and sharing, and optimism of survivors following disaster events may help to increase adaptive coping responses and in turn, psychological resilience. Helping survivors to feel hopeful, calm, connected to others are among essential parts of psychological first-aid and psychosocial support after disasters and crises (TENTS, 2008; World Health Organization, War Trauma Foundation, & World Vision International, 2013), which support the above suggestion.

In the quantitative study, psychological resilience was also found to be associated with problem-solving coping and helplessness coping/self-blame. Problem-solving coping was associated with higher levels of resilience, while helplessness coping/self-blame was associated with higher level of PTS symptoms in the aftermath of the earthquakes. Traumatic exposure may be associated with increase in the use of maladaptive coping strategies (Emmelkamp et al., 2002) such as helplessness coping. Maladaptive coping, especially helplessness, may lead to the perception of events as more stressful, and thus increase PTS (Seligman, 1975). On the other hand, problem-solving coping style has been consistently shown to be associated with high levels of resilience (e.g., Agaibi & Wilson, 2005; Campbell-Sills et al., 2006; Lever et al., 2012; Riolli et al., 2002). Post-disaster environments should foster problem-solving coping capabilities of the survivors and decrease self-blame and sense of helplessness. Empowering survivors by giving information related to disaster management activities and involving them in decision-making processes would foster their hope and combat helplessness. This is consistent with guidelines for psychosocial support after disasters and emergencies. Supporting problem management and empowerment by helping survivors clarify their problems and brainstorm on ways of coping are among the key actions in the post-disaster phase (IASC, 2007). In the IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings (IASC, 2007), it has been suggested that participation is one of the core principles of psychosocial support in emergency settings and that it “should enable different sub-groups of local people to retain or resume control over decisions that affect their lives, and to build the sense of local ownership that is important for achieving programme quality, equity and sustainability” (p. 10). Such participation in post-quake activities and decision-making processes may give survivors a sense of ownership (Karanci & Acarturk, 2005). Increasing the level of coping self-efficacy through psychosocial interventions in the disaster aftermath would also be an important step since coping self-efficacy was found to be associated in the present study with high levels of problem-solving coping and low levels of helplessness coping/self-blame.

Another implication of the study findings is about religiousness. The present study showed discrepant findings in different phases of the study and suggested that religiousness may entail two sides: it may increase hope, comfort, and acceptance of the adversities in the survivors of disaster but it may also be associated with increased severity of psychological symptoms. Survivors may feel tested or punished for their mistakes. Therefore, it is important to understand in that context what religion and religiousness would mean for the exposed populations. It would be critical to include religious leaders in psychosocial and community-based programs and to plan and conduct seminars or educational programmes with local authorities, community leaders, and non-governmental organizations about the abovementioned two sides of religiousness. An inspiring example for such kind of initiative is “The mobilization of community leaders in natural disasters project and disaster risk reduction programme” by the Turkish Red Crescent which started in 2007. This programme aims to build the capacity of the organizational branches to raise community awareness about disaster preparedness and risk reduction through community leaders (imams, teachers, village heads and community police officers). Such programmes may open the pave for future initiatives in this field of study which would focus on meaning of religiousness for the survivors and the community rather than merely taking it as a positive or a negative factor for resilience. The importance and meaning of religiousness may also be included as a component in resilience training programmes which have become increasingly popular in the last decade. In addition, acceptance of adversities and even psychological problems through religion may give survivors a chance to foster their resilience. Psychological interventions which would increase acceptance may be beneficial in empowering survivors to modulate their emotions and thereby to enable them engage in adaptive coping strategies (Karanci & Acarturk, 2005).

Finally, the positive relationship between self-reported mental health before the quakes and resilience suggests that pre-quake mental health is important for psychological resilience. Consistent with the principle of continuity, pre-impact period is viewed as an important source for post-impact changes (Quarantelli &

Dynes, 1977). Therefore, developing and following a general strategy to facilitate mental health resources of individuals living in communities-at-risk before disaster impact is important. This brings out the need to integrate educational knowledge and practices and formally assess resource levels of disaster-stricken communities, and to develop social policies to combat poverty and increase education and awareness in the community. Planning of multi-agency psychosocial care should be done in each disaster-prone area as part of planning and preparation for disasters and major incidents (TENTS, 2008).

5.3 General Limitations and Future Directions for Research

The present study is believed to contribute to the literature especially by examining psychological resilience in an earthquake context, selecting a mixed-methods research design, aiming to understand perceptions of survivors regarding the concept which was focused on, and utilizing two different indicators of psychological resilience simultaneously in the quantitative phase. However, there are a number of general limitations. Based on the findings of the current study, it is not possible to draw conclusions about psychological resilience in samples with other types of trauma exposure. Therefore, future research is necessary to replicate the findings in samples exposed to different types of disasters in different regions of Turkey and around the world, such as other natural disasters including floods, hurricanes, landslides, etc. or technological disasters.

The present study examined the association between psychological resilience and a wide range of variables. All phases of the disaster event, namely the period before, during, and after the disaster, were covered in this study together with several psychological variables. Future studies can extend the present study by including other potentially important variables such as a wider range of psychosocial resources or health-related variables. Understanding the influence and importance of these variables may help to clarify the role of resilience in post-disaster adaptation. It may also be important to use different outcome measures to clarify resilience. For example, a clearer picture of psychological resilience would also be achieved through a comparison with posttraumatic

growth which is likely to be observed following traumatic events. Investigating the relationship between psychological resilience and another positive outcome, posttraumatic growth, is important because through identifying differences and similarities between such concepts, the scope and the content of the resilience concept would be understood better. In addition, a variety of benefits may occur following traumatic events, some of which would not be related to positive changes such as PTG (Vishnevsky et al., 2010). For example, one might perceive benefits from experiencing a natural disaster such as financial compensation, but may not experience an enduring positive change (e.g., personal growth). Therefore, understanding how resilience is distinguished from benefit-finding would also provide meaningful information about how to conceptualize resilience and whether such benefits should be inherent in resilience or not.

A major limitation is about the research design used in the present study. The cross-sectional design of the study might have resulted in obtaining this finding; severity of trauma-related symptoms might have changed in time between the disaster event and data collection and the findings about severity would have appeared differently if trajectories of functioning were examined with assessments at different time points. The severity of PTS symptoms was found to be relatively low in the quantitative study; but it is unknown whether this resulted from the characteristics of the sample or a change in symptom severity over time. Bonanno (2012) strongly advocates the use of repeated longitudinal and if possible prospective assessments of psychological resilience in order to be able to distinguish the resilient outcome trajectory from trajectories of recovery or delayed elevations in symptoms as well as other unique trajectories that may emerge in different samples. Furthermore, assessment of some variables using single-item measures or with measures which are not validated in Turkish culture poses a threat to validity of the results of the present study. Future studies should include validated and standardized measures. For example, as it was shown in the present study that religiousness may have different associations with different indices of psychological resilience (i.e., a facilitating factor for psychological resilience if resilience is taken as bouncing back after adversity or hindering

factor for psychological resilience if resilience is taken as low levels of PTS symptomatology), future studies may use the religious coping scale (the RCOPE) by Pargament et al. (2000) for assessing positive and negative dimensions of religious coping.

Assessment of psychological resilience in the second phase of the current study extended the traditional assessment methods in previous empirical studies by including more than one indicator of psychological resilience simultaneously. The quantitative phase of the present study relied on a quantitative measure of resilience and severity of posttraumatic symptoms for the assessment of psychological resilience. Unexpectedly, scores on these assessment tools showed a positive correlation instead of the expected negative association between resilience and severity of PTS symptomatology. This may suggest that existence of posttraumatic symptoms in disaster survivors may not exclude the possibility of resilience following stressful circumstances. This implies that relying on a single indicator of psychological resilience may only provide limited insight and information; therefore, future studies should incorporate comprehensive measures of resilience during assessment. For example, coping self-efficacy was used as a predictor of resilience in the quantitative study; however, items of this measure included expressions of 'bouncing back'. Therefore, it can also be used as an outcome indicator of resilience in future studies in combination with other outcome measures. In addition, as consistent with the conceptualizations and definitions of the concept in the literature, process- and trait-based psychological assessments of resilience are likely to provide valuable contribution to the mere use of outcome measures. Similarly, Davey et al. (2003) suggested that resilience may not be a single variable; it is a complex set of variables which act as a protective factor against vulnerability to risk. Furthermore, considering the unexpected association between indices of resilience in the quantitative study together with the finding that some participants' attributing personality traits reflecting insensitivity to resilient individuals in the qualitative study, it is also possible that conceptualization and assessment of psychological resilience in this study might have been problematic. This calls for a relatively more objective

criterion to assess psychological resilience. It would be fruitful if future studies rely on behavioral or psychophysiological indicators of resilience, as also suggested by some researchers such as Campbell-Sills and colleagues (2006), together with ability to cope with stress and low levels of PTS symptom severity.

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APPENDICES

APPENDIX A

INFORMED CONSENT AND DEBRIEFING FORMS

GÖNÜLLÜ KATILIM FORMU

Sayın Katılımcı,

Bu çalışma Avrupa Komisyonu Yedinci Çerçeve Programı ‘Avrupa’daki Toplumlarda Doğal Afetlere Karşı Dayanıklılığın Geliştirilmesi Projesi: emBRACE’ dahilinde Orta Doğu Teknik Üniversitesi, Psikoloji Bölümü’nden proje yürütücüsü Prof. Dr. A. Nuray Karancı danışmanlığında Van ve Sakarya illerinde yürütülmektedir. Çalışmanın genel amacı, depremlere dayanıklılığı belirleyen faktörlerin değerlendirilmesidir.

Araştırma sonrasında depremlere sosyal dayanıklılığı belirleyen faktörlerin belirleneceği ve bu şekilde, depremlere dayanıklılığın ortaya çıkmasına katkı sağlayan değişkenlerin ve mekanizmaların ortaya konacağı düşünülmektedir. Dayanıklılık ile ilişkili faktörlerin belirlenmesi ve buna uygun kuramsal modellerin geliştirilebilmesi ve test edilebilmesi için vereceğiniz cevaplar çok değerli olacaktır. Elde edilen bilgiler yalnızca bilimsel araştırma ve yazılarda kullanılacaktır. Ayrıca, bilgiler Uzman Psikolog Gözde İkizer’in doktora tezine katkı sağlayacaktır.

Anket deprem deneyiminiz ve dayanıklılık ile ilgili değişkenleri değerlendiren sorular içermektedir. Lütfen sorulara dikkatle ve samimiyetle cevap veriniz. Vereceğiniz tüm cevaplar, anketin uygulandığı bütün kişiler için grup halinde değerlendirilecek ve hazırlanacak rapora yalnızca grup bilgileri yansıtılacaktır. Katılımınıza dair kayıtlar tamamen gizli tutulacaktır. Bu belgedeki kimlik bilgileriniz ile anket kayıtlarınız eşleştirilmeyecektir. Anket kayıtlarınız numaralandırılacaktır ve o şekilde saklanacaktır. Kimlik bilgilerinize araştırmacılar dışında hiç kimsenin erişimi olmayacaktır.

Katılım tamamen gönüllüdür. Anket yaklaşık olarak yarım saat sürecektir. Anketi cevaplarken herhangi bir nedenle kendinizi rahatsız hissederseniz, anketi yarıda kesebilirsiniz ve yanıtlamak istemediğiniz soruları yanıtlamayabilirsiniz. Bu durumda anketi uygulayan araştırmacıya görüşmeyi tamamlamayacağınızı söylemeniz yeterlidir.

Katılmayı kabul ediyorsanız lütfen aşağıdaki alanı doldurunuz.

İsim	Tarih	İmza
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İsim	Tarih	Görüşmecinin İmzası
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Katılımınız için çok teşekkür ederiz.

Prof. Dr. A. Nuray Karancı (Proje yürütücüsü - ODTÜ, Psikoloji Bölümü)
Prof. Dr. Mehmet Ruhi Köse (Araştırmacı – Yüzüncü Yıl Üniversitesi, Sosyoloji Bölümü)
Yrd. Doç. Dr. Suvat Parin (Araştırmacı – Yüzüncü Yıl Üniversitesi, Sosyoloji Bölümü)
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KATILIM SONRASI BİLGİ FORMU

Bu çalışma, katılım öncesinde de belirtildiği üzere, Avrupa Komisyonu Yedinci Çerçeve Programı Avrupa'daki Toplumlarda Doğal Afetlere Karşı Dayanıklılığın Geliştirilmesi Projesi: emBRACE dahilinde Orta Doğu Teknik Üniversitesi, Psikoloji Bölümü'nden proje yürütücüsü Prof. Dr. A. Nuray Karancı danışmanlığında yürütülmektedir. Çalışmanın genel amacı, depremlere dayanıklılığı belirleyen faktörlerin değerlendirilmesidir.

Araştırma sonrasında depremlere dayanıklılığı belirleyen faktörlerin belirleneceği ve şekilde, depremlere dayanıklılığın ortaya çıkmasına katkı sağlayan değişkenlerin ve mekanizmaların ortaya konacağı düşünülmektedir. Bu çalışmadan alınacak ilk verilerin Ocak 2013 sonunda elde edilmesi amaçlanmaktadır. Elde edilen bilgiler yalnızca bilimsel araştırma ve yazılarda kullanılacaktır. Ayrıca, bilgiler Uzman Psikolog Gözde İkizer'in doktora tezine katkı sağlayacaktır. Çalışmanın sonuçlarını öğrenmek ya da bu araştırma hakkında daha fazla bilgi almak için aşağıdaki isme başvurabilirsiniz. Bu araştırmaya katıldığımız için tekrar çok teşekkür ederiz.

İletişim:

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APPENDIX B

THE QUANTITATIVE SURVEY FORM



ODTÜ PSİKOLOJİ BÖLÜMÜ
ve **AVRUPA BİRLİĞİ**
KOMİSYONU



Depremlere Karşı Dayanıklılığın
Değerlendirilmesi Araştırması

Ziyaret Bilgisi	
Uygulayıcı(lar)	1. 2.
Tarih	_____(Gün)/_____(Ay)/_____(Yıl)
Mahalle Adı	
Mahalle Hasar Durumu	<input type="checkbox"/> Hasar yok/Az hasar <input type="checkbox"/> Orta hasar/Güçlendirilmiş <input type="checkbox"/> Ağır hasar/Yıkılmış <input type="checkbox"/> TOKİ Konutları / Deprem sonrası yapılmış
Yer (örneğin, ev, konteyner, çadır, iş yeri, kahvehane)	
Zaman	Başlama: _____ Bitiş: _____
Ziyaret Sonucu	<input type="checkbox"/> Tamamlandı <input type="checkbox"/> Yarıda kaldı <input type="checkbox"/> Diğer (Açıklayınız):.....

Katılımcı No.	
Katılımcının deprem öncesinde yaşadığı ev	<input type="checkbox"/> Kira <input type="checkbox"/> Kendisine ait <input type="checkbox"/> Diğer: _____
	<input type="checkbox"/> Hasar yok/Az hasar <input type="checkbox"/> Orta hasar/Güçlendirilmiş <input type="checkbox"/> Ağır hasar/Yıkılmış
Hanede yaşayan toplam kişi sayısı	
Hanede yaşayan 18 yaş ve üstündeki kişi sayısı	
Görüşülen kişinin evdeki konumu	

• **Aslen nerelisiniz?**

Van

Van'ın dışından (lütfen belirtiniz): _____

• **Cinsiyetiniz:**

Kadın

Erkek

• **Yaşınız:** _____

• **Mesleğiniz:** _____ **Yaptığınız iş:** _____

• **Eğitim durumunuz nedir? (Son aldığınız diplomaya göre)**

Okuma yazmam yok

Okuma yazmam var

İlkokul

Ortaokul

Lise

Yüksekokul

Üniversite

Lisansüstü

• **Medeni durumunuz nedir?**

Bekâr

Evli

Boşanmış

Dul

• **Halen ücret ya da mal karşılığı bir işte çalışıyor musunuz?**

Çalışıyorum

Hiç çalışmadım (ev hanımı vs.)

Şu anda çalışmıyorum (Ne kadar süredir çalışmıyorsunuz? _____)

Emekliyim

• **Sağlık sigortanız var mı? Varsa hangi kuruma bağlı sigortalısınız?**

Sigortalı değilim

Yeşil kart

SGK (Emekli Sandığı, BAĞ-KUR, SSK)

Özel sigorta

Diğer _____

• **Hanenize giren geliri değerlendirdiğinizde aylık toplam geliriniz ne düzeydedir?**

Çok düşük

Düşük

Orta

Orta üstü

Yüksek

• **Depremler öncesinde fiziksel sağlığınız nasıldı?**

- Çok kötü
 Kötü
 Ne kötü ne iyi
 İyi
 Çok iyi
-

• **Depremler öncesinde ruh sağlığınız nasıldı?**

- Çok kötü
 Kötü
 Ne kötü ne iyi
 İyi
 Çok iyi
-

• **Kendinizi ne kadar dindar biri olarak tanımlarsınız?**

- Hiç
 Biraz
 Fazla
 Oldukça fazla
 Çok fazla
-

• **Depremden sonra dini inancınızda değişiklik oldu mu?**

- Çok azaldı
 Biraz azaldı
 Değişiklik olmadı
 Biraz güçlendi
 Çok güçlendi
-

23 Ekim ve 9 Kasım 2011 tarihlerinde Van'da yaşanan depremler öncesinde,		
1. Herhangi bir deprem yaşamış mıydınız?	Evet	Hayır
2. Deprem dışında herhangi bir afet yaşamış mıydınız?	Evet	Hayır
Depremler sırasında,		
3. Hayatınızın tehlikede olduğunu düşündünüz mü?	Evet	Hayır
4. Yakınlarınızdan ya da tanıdıklarınızdan bir kişinin hayatının tehlikede olduğunu düşündünüz mü?	Evet	Hayır
5. Kendinizi çaresiz hissettiniz mi?	Evet	Hayır
6. Büyük bir korku ya da dehşet duygusu yaşadınız mı?	Evet	Hayır
7. Fiziksel bir yara aldınız mı?	Evet	Hayır
8. Yakınlarınızdan ya da tanıdıklarınızdan biri fiziksel bir yara aldı mı?	Evet	Hayır
9. Yakınlarınızdan ya da tanıdıklarınızdan can kaybı oldu mu?	Evet	Hayır
10. Göçük altında kaldınız mı?	Evet	Hayır
11. Binaların yıkıldığına tanık oldunuz mu?	Evet	Hayır
12. Birinin ciddi şekilde yaralandığına tanık oldunuz mu?	Evet	Hayır
13. Birinin hayatını kaybettiğine tanık oldunuz mu ya da hayatını kaybetmiş birini gördünüz mü?	Evet	Hayır
Depremler sonrasında,		
14. Barınma/egitim gibi ihtiyaçlarınızı karşılamak için Van'dan ayrılmak zorunda kaldınız mı?	Evet	Hayır
15. Maddi yardım (para, gıda yardımı gibi destekler) aldınız mı?	Evet	Hayır
16. Manevi yardım (duygusal destek) aldınız mı?	Evet	Hayır
17. Çadırda ya da konteynerde kaldınız mı?	Evet	Hayır
18. Maddi (geçim giderleri için para, ev eşyası, mobilya gibi) kayıplarınız oldu mu?	Evet	Hayır
19. İş kaybınız ya da çalışma düzeninizde bozulma oldu mu?	Evet	Hayır
20. Aile ilişkilerinizde sorunlar/bozulma oldu mu?	Evet	Hayır
21. Aile dışı sosyal ilişkilerinizde sorunlar/bozulma oldu mu?	Evet	Hayır
22. Tedavi gerektiren fiziksel bir rahatsızlık geçirdiniz mi?	Evet	Hayır
23. Tedavi gerektiren ruhsal bir rahatsızlık geçirdiniz mi?	Evet	Hayır

Bu bölümde, stresli bir yaşam olayından sonra insanların yaşayabileceği bazı zorlukların bir listesi sunulmaktadır. Her cümleyi dikkatlice okuyunuz. **Geçtiğimiz yedi gün içerisinde, yaşadığınız depremi düşünerek**, bu zorlukların sizi ne kadar rahatsız ettiğini cümlelerin sağındaki beş kutucuktan birini işaretleyerek belirtiniz.

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

1. Van'da aşağıdaki gruplardan herhangi birinin çalışmalarına katıldınız mı? Bu gruplardan hiç duygusal yardım, maddi yardım ya da bir şeyi öğrenmenize ya da yapmanıza yardımcı olmak konusunda destek aldınız mı?

Grup kodu	Grup türü	Depremden önce				Depremden sonra			
		Hiç	Biraz	Çok	Yardım türü*	Hiç	Biraz	Çok	Yardım türü*
01	Mesleki grup/sendika	1	2	3		1	2	3	
02	Toplum örgütü/kooperatif	1	2	3		1	2	3	
03	Kadın grubu	1	2	3		1	2	3	
04	Siyasi grup	1	2	3		1	2	3	
05	Dini grup	1	2	3		1	2	3	
06	Hayır kuruluşu	1	2	3		1	2	3	
07	Spor grubu	1	2	3		1	2	3	

*Yardım türü "Biraz" ya da "Çok" yanıtını veren katılımcılar için duygusal (D), maddi (M), araçsal (A) veya geçerli değil (GD) olarak kodlanmalıdır. Araçsal destek, bir konuda bilgi veya beceri öğrenme, yol gösterme olarak tanımlanabilir.

2. Aşağıdakilerden herhangi birinden duygusal yardım, maddi yardım ya da bir şeyi öğrenmenize ya da yapmanıza yardımcı olmak konusunda yardım ya da destek aldınız mı?

		Depremden önce			Depremden sonra		
		Hiç	Biraz	Çok	Hiç	Biraz	Çok
01	Aile	1	2	3	1	2	3
02	Komşular	1	2	3	1	2	3
03	Komşu olmayan arkadaşlar	1	2	3	1	2	3
04	Toplumdaki liderler	1	2	3	1	2	3
05	Din adamları	1	2	3	1	2	3
06	Siyasetçiler	1	2	3	1	2	3
07	Hükümet yetkilileri/kamu hizmeti	1	2	3	1	2	3
08	Yardım kuruluşları/sivil toplum kuruluşları	1	2	3	1	2	3
09	Diğer: _____	1	2	3	1	2	3

	Depremden önce			Depremden sonra		
	Hiç	Biraz	Çok	Hiç	Biraz	Çok
3. Bir sorunu ya da ortak bir konuyu ele almak üzere diğer Vanlılar ile bir araya geldiniz mi?	1	2	3	1	2	3
4. Van'daki sorunlar hakkında yerel yönetim ile ya da hükümete bağlı bir kurum ile görüştünüz mü?	1	2	3	1	2	3
5. Sizce genel olarak, Van'daki insanların çoğuna güvenilebilir miydi? (güvenilebilir mi?)*	1	2	3	1	2	3
6. Sizce Van'daki insanların çoğu genellikle birbirleri ile geçinirler miydi? (geçinirler mi?)*	1	2	3	1	2	3

7. Sizce kendinizi Van'ın gerçekten bir parçası olarak hisseder miydiniz? (hissediyor musunuz?)*	1	2	3	1	2	3
8. Sizce Van'daki insanların genelinin fırsat bulsalar sizden yararlanmaya çalışacaklarını düşünür müydünüz? (düşünüyor musunuz?)*	1	2	3	1	2	3

*"Depremden sonra" için sorarken parantez içindeki soru kullanılacaktır.

Lütfen aşağıdaki her bir soruyu 'Evet' ya da 'Hayır'ı seçerek cevaplayınız. Doğru veya yanlış cevap ve çeldirici soru yoktur.

1. Duygu durumunuz sıklıkla mutlulukla mutsuzluk arasında değişir mi?	Evet	Hayır
2. Konuşkan bir kişi misiniz?	Evet	Hayır
3. Borçlu olmak sizi endişelendirir mi?	Evet	Hayır
4. Oldukça canlı (hareketli, enerjik) bir kişi misiniz?	Evet	Hayır
5. Hiç sizin payınıza düşenden fazlasını alarak açgözlülük yaptığınız oldu mu?	Evet	Hayır
6. Garip ya da tehlikeli etkileri olabilecek ilaçları kullanır mısınız?	Evet	Hayır
7. Aslında kendi hatanız olduğunu bildiğiniz bir şeyi yapmakla hiç başka birini suçladınız mı?	Evet	Hayır
8. Kurallara uymak yerine kendi bildiğiniz yolda gitmeyi mi tercih edersiniz?	Evet	Hayır
9. Sıklıkla kendinizi her şeyden bıkmış hisseder misiniz?	Evet	Hayır
10. Hiç başkasına ait olan bir şeyi (toplu iğne veya düğme bile olsa) aldınız mı?	Evet	Hayır
11. Kendinizi sınırlı bir kişi olarak tanımlar mısınız?	Evet	Hayır
12. Evliliğin modası geçmiş ve kaldırılması gereken bir şey olduğunu düşünüyor musunuz?	Evet	Hayır
13. Oldukça sıkıcı bir ortama kolaylıkla canlılık getirebilir misiniz?	Evet	Hayır
14. Kaygılı bir kişi misiniz?	Evet	Hayır
15. Sosyal ortamlarda geri planda kalma eğiliminiz var mıdır?	Evet	Hayır
16. Yaptığınız bir işte hatalar olduğunu bilmeniz sizi endişelendirir mi?	Evet	Hayır
17. Herhangi bir oyunda hiç hile yaptınız mı?	Evet	Hayır
18. Sınırlarınızdan şikayetçi misiniz?	Evet	Hayır
19. Hiç başka birini kendi yararınıza kullandınız mı?	Evet	Hayır
20. Başkalarıyla birlikte iken çoğunlukla sessiz misinizdir?	Evet	Hayır
21. Sık sık kendinizi yalnız hisseder misiniz?	Evet	Hayır
22. Toplum kurallarına uymak, kendi bildiğinizi yapmaktan daha mı iyidir?	Evet	Hayır
23. Diğer insanlar sizi çok canlı biri olarak düşünürler mi?	Evet	Hayır
24. Başkasına önerdiğiniz şeyleri kendiniz her zaman uygular mısınız?	Evet	Hayır

Aşağıda insanların sıkıntılarını gidermek için kullanabilecekleri bazı yollar belirtilmektedir. Cümlelerin her birini dikkatlice okuduktan sonra, **deprem yaşantınızı düşünerek**, bu yolları hiç kullanmıyorsanız hiçbir zaman, kimi zaman kullanıyorsanız bazen, çok sık kullanıyorsanız her zaman seçeneğini belirtiniz.

	Hiçbir zaman	Bazen	Her zaman
1. Aklımı kurcalayan şeylerden kurtulmak için değişik işlerle uğraşırım.	1	2	3
2. Bir mucize olmasını beklerim.	1	2	3
3. İyimser olmaya çalışırım.	1	2	3
4. Çevremdeki insanlardan sorunları çözmemde bana yardımcı olmalarını beklerim.	1	2	3
5. Bazı şeyleri büyütmeyp üzerinde durmamaya çalışırım.	1	2	3
6. Sakin kafayla düşünmeye ve öfkelenmemeye çalışırım.	1	2	3
7. Durumun değerlendirmesini yaparak en iyi kararı vermeye çalışırım.	1	2	3
8. Ne olursa olsun direnme ve mücadele etme gücünü kendimde hissederim.	1	2	3
9. Olanları unutmaya çalışırım.	1	2	3
10. Başa gelen çekilir diye düşünürüm.	1	2	3
11. Durumun ciddiyetini anlamaya çalışırım.	1	2	3
12. Kendimi kapana sıkışmış gibi hissederim.	1	2	3
13. Duygularımı paylaştığım kişilerin bana hak vermesini isterim.	1	2	3
14. 'Her işte bir hayır var' diye düşünürüm.	1	2	3
15. Dua ederek Allah'tan yardım dilerim.	1	2	3
16. Elimde olanlarla yetinmeye çalışırım.	1	2	3
17. Olanları kafama takıp sürekli düşünmekten kendimi alamam.	1	2	3
18. Sıkıntılarımı içimde tutmaktansa paylaşmayı tercih ederim.	1	2	3
19. Mutlaka bir çözüm yolu bulabileceğime inanıp bu yolda uğraşırım.	1	2	3
20. 'İş olacağına varır' diye düşünürüm.	1	2	3
21. Ne yapacağıma karar vermeden önce arkadaşlarımın fikrini alırım.	1	2	3
22. Kendimde her şeye yeniden başlayacak gücü bulurum.	1	2	3
23. Olanlardan olumlu bir şeyler çıkarmaya çalışırım.	1	2	3
24. Bunun alın yazım olduğunu ve değişmeyeceğini düşünürüm.	1	2	3
25. Sorunlarıma farklı çözüm yolları ararım.	1	2	3
26. 'Olanları keşke değiştirebilseydim' diye düşünürüm.	1	2	3
27. Hayatla ilgili yeni bir bakış açısı geliştirmeye çalışırım.	1	2	3
28. Sorunlarımı adım adım çözmeye çalışırım	1	2	3
29. Her şeyin istediğim gibi olamayacağını düşünürüm	1	2	3
30. Dertlerimden kurtulayım diye fakir fukaraya sadaka veririm.	1	2	3
31. Ne yapacağımı planlayıp ona göre davranırım.	1	2	3
32. Mücadele etmekten vazgeçerim.	1	2	3
33. Sıkıntılarımın kendimden kaynaklandığını düşünürüm.	1	2	3

34. Olanlar karşısında 'kaderim buymuş' derim.	1	2	3
35. 'Keşke daha güçlü bir insan olsaydım' diye düşünürüm.	1	2	3
36. 'Benim suçum ne' diye düşünürüm.	1	2	3
37. 'Allah'ın takdiri buymuş deyip' kendimi teselli etmeye çalışırım.	1	2	3
38. Temkinli olmaya ve yanlış yapmamaya çalışırım.	1	2	3
39. Çözüm için kendim bir şeyler yapmak isterim.	1	2	3
40. Hep benim yüzümden oldu diye düşünürüm.	1	2	3
41. Hakkımı savunmaya çalışırım.	1	2	3
42. Bir kişi olarak olgunlaştığımı ve iyi yönde geliştiğimi hissedirim.	1	2	3

Lütfen aşağıdaki cümleleri okuduktan sonra kendinize en uygun olan seçeneği işaretleyin.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
1. Ne olacağının önceden kestirilemediği durumlarda hep en iyi sonucu beklerim.	0	1	2	3	4
2. Kolayca gevşeyip rahatlayabilirim.	0	1	2	3	4
3. Bir işimin ters gitme olasılığı varsa mutlaka ters gider.	0	1	2	3	4
4. Her şeyi hep iyi tarafından alırım.	0	1	2	3	4
5. Geleceğim konusunda hep iyimserimdir.	0	1	2	3	4
6. Arkadaşlarımla birlikte olmaktan hoşlanırım.	0	1	2	3	4
7. Yapacak şeylerimin olması benim için önemlidir.	0	1	2	3	4
8. İşlerin istediğim gibi yürüyeceğini neredeyse hiç beklemem.	0	1	2	3	4
9. Hiçbir şey benim istediğim yönde gelişmez.	0	1	2	3	4
10. Moraliğim öyle kolay kolay bozulmaz.	0	1	2	3	4
11. Her türlü olayda bir iyi yan bulmaya çalışırım.	0	1	2	3	4
12. Başıma iyi şeylerin geleceğine pek bel bağlamam.	0	1	2	3	4

Aşağıda deprem hasarı hakkında çeşitli sorular bulunmaktadır. Lütfen her soru için ne düşündüğünüzü “Hiç”, “Biraz” ya da “Çok” şeklinde belirtiniz. Doğru ya da yanlış cevap söz konusu değildir.

	Hiç	Biraz	Çok	Hiç	Biraz	Çok
1. 2011 yılında Van’da yaşanan depremlerin yol açtığı hasarlar ne kadar önlenebilirdi?	1	2	3			
2. Genel olarak, depremlerin yol açtığı hasarların ne kadar önlenebilir olduğunu düşünüyorsunuz?	1	2	3			
	3. Van’daki depremlerde oluşan hasarda ne kadar rolü olduğunu düşünüyorsunuz?			4. Bu neden üzerinde ne kadar kontrolünüz olduğunu düşünüyorsunuz?		
	Hiç	Biraz	Çok	Hiç	Biraz	Çok
a. Allah / Takdir-i ilahi	1	2	3	1	2	3
b. Doğa / Depremin şiddeti	1	2	3	1	2	3
c. Binaların sağlam olmayışı	1	2	3	1	2	3

Aşağıda dört cümle verilmiştir. Her cümleyi dikkatle okuyarak beşli ölçek üzerinde size uygun olan dereceyi belirtiniz. ‘Doğru’ ya da ‘Yanlış’ cevap söz konusu değildir.

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
1. Deprem yaşantısının getirdiği zorlukları aşacağıma inanıyorum.	1	2	3	4	5
2. Deprem yaşantısı ile başa çıkmak için ihtiyacım olan kaynaklara ve inanca sahibim.	1	2	3	4	5
3. Depremler ve kaybettiklerim hakkında daha rahat düşünebiliyorum.	1	2	3	4	5
4. Günlük yaşamımın normale döndüğüne inanıyorum.	1	2	3	4	5

Aşağıdaki ifadelere katılıp katılmadığınızı görüşünüzü yansıtan rakamı işaretleyerek belirtiniz. Doğru ya da yanlış cevap yoktur. Sizin durumunuzu yansıttığını düşündüğünüz rakam bizim için en doğru yanıttır. Lütfen açık ve dürüst şekilde yanıtlayınız.

	Kesinlikle katılmıyorum	Katılmıyorum	Ne katılıyorum ne de katılmıyorum	Katılıyorum	Kesinlikle katılıyorum
1. Pek çok açıdan ideallerime yakın bir yaşamım var.	1	2	3	4	5
2. Yaşam koşullarım mükemmeldir.	1	2	3	4	5
3. Yaşam beni tatmin ediyor.	1	2	3	4	5
4. Şimdiye kadar, yaşamda istediğim önemli şeyleri elde ettim.	1	2	3	4	5
5. Hayatımı bir daha yaşama şansım olsaydı, hemen hemen hiçbir şeyi değiştirmezdim.	1	2	3	4	5

Yaşadığımız depremleri düşünerek, lütfen aşağıdaki ifadelerin geçtiğimiz ay içinde size ne kadar uyduğunu gösteriniz.

	Hiç doğru değil	Nadiren doğru	Bazen doğru	Sıklıkla doğru	Neredeyse her zaman doğru
1. Değişiklikler karşısında uyum sağlayabilirim.	0	1	2	3	4
2. Önüme çıkan her şeyle başa çıkabilirim.	0	1	2	3	4
3. Sorunlarla karşılaştığım zaman, olayların komik yönlerini görmeye çalışırım.	0	1	2	3	4
4. Stresle mücadele etmek durumunda kalmak, beni daha da güçlendirebilir.	0	1	2	3	4
5. Hastalık, yaralanma ya da benzeri güçlüklerden sonra çabuk normale dönerim.	0	1	2	3	4
6. Engeller olsa da, hedeflerime ulaşacağıma inanırım.	0	1	2	3	4
7. Stres altında dikkatim dağılmaz ve açık bir şekilde düşünebilirim.	0	1	2	3	4
8. Başarısızlıklar karşısında kolay pes etmem.	0	1	2	3	4
9. Yaşamdaki zorluklarla uğraşmada kendimi güçlü bir insan olarak görürüm.	0	1	2	3	4
10. Üzüntü, korku ve öfke gibi hoş olmayan ve acı verici duygularla baş edebilirim.	0	1	2	3	4

APPENDIX C

FACTOR ANALYSIS OF THE SASCAT

In order for providing evidence of the construct validity, exploratory factor analysis (EFA) with principal component analysis (PCA) with varimax rotation was performed on items from the SASCAT. The results of both Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity yielded that the measure included in the analysis was factorable.

The results of the first EFA for the pre-quake social capital revealed three factors with eigenvalues exceeding 1, accounting for 55.98 percent of the total variance. The first, the second and the third factors accounted for 22.79 percent, 21.64 percent and 11.54 percent of the variance, respectively. Three factors were also apparent when scree plots were examined. This factor solution well defined most of the variables because communality values tended to be moderate. All items loaded on one of the factors with factor loadings ranging between .54 and .86.

The results of the second EFA for the post-quake social capital again revealed three factors with eigenvalues exceeding 1, accounting for 54.48 percent of the total variance. The first, the second and the third factors accounted for 23.19 percent, 20.17 percent and 11.12 percent of the variance, respectively. Three factors were also apparent when scree plots were examined. This factor solution well defined most of the variables because communality values tended to be moderate. All items loaded on one of the factors with factor loadings ranging between .51 and .85.

In the two analyses, extracted factors were labeled as "group membership/social support", "citizenship activities", and "cognitive social capital". The correlational analysis of factor scores revealed that the factors were correlated significantly

and modestly with each other. Three items clustered under the label of “group membership/social support”, two items were under “citizenship activities”, and four items were under “cognitive social capital”. Item loadings and percents of explained variance for factors are shown in Table 6.1 below. Interpretive labels are suggested for each factor on the table.

Reliability analysis indicated that three factors had Cronbach’s alpha coefficients ranging between .46 and .70. Low ($< .50$) values obtained for “Citizenship activities” subscale were ignored because this subscale was defined by only two items and the inverse relationship between test length and reliability has long been recognized (Cortina, 1993).

The factor analysis showed that the SASCAT clearly distinguished the concepts forming the social capital construct. It especially distinguished between structural and cognitive components of the construct. High similarity between De Silva and colleagues’ (2006) findings in samples from Peru and Vietnam and the findings in the present study indicates the SASCAT measure the core components of social capital construct.

Table 6.1 Factor loadings, percent of variance, eigenvalues, and alpha values using principle components factor analysis with varimax rotation using Kaiser Normalisation on the items of the SASCAT

Item	Group membership/social support		Citizenship activities		Cognitive social capital	
	Pre-quake	Post-quake	Pre-quake	Post-quake	Pre-quake	Post-quake
Number of groups participant is a member of	.76	.69	.21	.30	-.02	-.01
Support from groups	.86	.85	.04	-.05	-.02	.01
Support from individuals	.55	.59	.07	.15	.03	.03
Talking to authorities about a problem in Van	.12	.19	.80	.74	.08	.01
Joining together with other members of community	.13	.14	.79	.78	-.07	.06
Trust in community members	-.01	.05	-.02	.01	.80	.79
Thinking that majority of people in Van generally get along with each other	.17	.07	-.03	.13	.79	.77
Feeling as a part of Van	.04	-.12	.12	.11	.66	.65
Thinking that majority of people in Van would try to take advantage of you if they got the chance	-.16	.08	-.06	-.27	.54	.51
Percent of variance	22.79	23.19	21.64	20.17	11.54	11.12
Eigenvalues	1.95	1.82	1.04	1.00	2.05	2.09
Alpha values	.70	.68	.46	.47	.65	.61

APPENDIX D

FACTOR ANALYSIS OF THE CD-RISC

In this study, the 10-item version of the scale was used. Turkish translations for the items were retrieved from the authors of the original CD-RISC (Jonathan R. T. Davidson, personal communication, March 17, 2013). In order for providing evidence of the construct validity, exploratory factor analysis with maximum-likelihood estimation (MLE) and promax rotation was performed on 10 items from the CD-RISC. The results of both Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity yielded that the measure included in the analysis was factorable.

The results revealed initially two factors with eigenvalues exceeding 1, accounting for 47.17 percent of the total variance. The first and the second factors accounted for 36.97 percent and 10.20 percent of the variance, respectively. The factors were correlated with each other ($r = .35, p < .001$). No item crossloaded on more than one factor with loadings over .30. However, this two-factor solution was rejected because the second factor was defined by a single item (item 1). A second analysis was run with a fixed number (1) of factors to extract. The single-factor solution explained 36.97 percent of the total variance. All items had salient loadings on the factor (.33 to .72), labeled as *resilience*. Cronbach's alpha coefficient for resilience was .80, indicating good internal consistency.

A confirmatory factor analysis (CFA) was then performed on the items of the CD-RISC. This model provided a suboptimal fit for the data, $\chi^2(35) = 103.25, p < .001$; RMSEA = .07, NNFI = .91, GFI = .95; AGFI = .91; CFI = .93. Investigation of the modification indices suggested that adding error variances between some indicator variables would significantly improve the model.

Therefore, post hoc model modifications were performed in an attempt to develop a better fitting model. Error covariances were added one at a time to the model between items 1-2 and 9-10. This model provided a good fit for the data, $\chi^2(33) = 70.03$, $p < .001$; RMSEA = .06, NNFI = .94, GFI = .96; AGFI = .94; CFI = .96. Although the chi-square statistic still indicated a significant difference between the observed and estimated parameters, the χ^2/df ratio was below the 5:1 ratio suggested by Bollen (1989). Therefore, the unitary latent construct was reliably measured by the observed variables in the final model. A chi-square difference test indicated that the model was significantly improved by the addition of these error covariances, $\chi^2_{diff}(2) = 33.22$, $p < .001$. All paths predicting items of CD-RISC were significant at $p < .05$ with standardized coefficients ranging between .36 and .78.

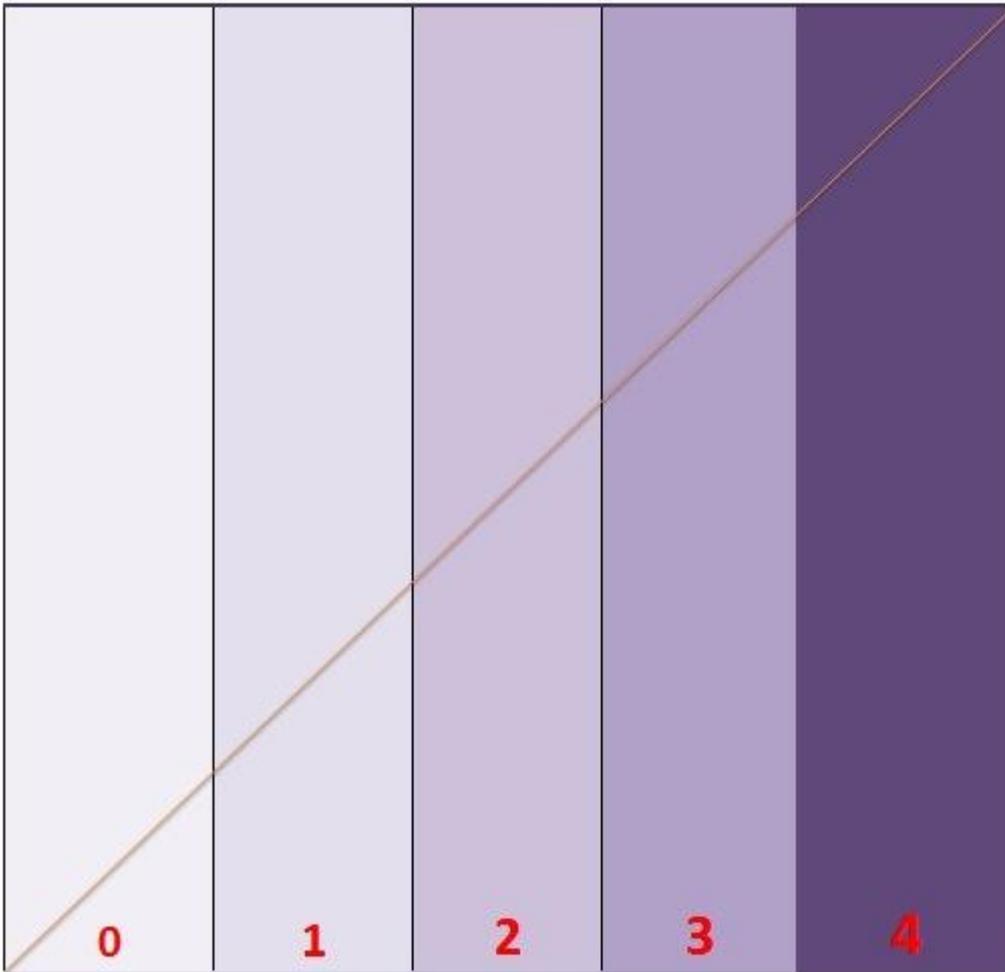
Loadings for the single-factor model are presented in Table 6.2.

Table 6.2 Loadings of the items of CD-RISC after CFA

Item description	Factor loading
Item 1 "Able to adapt to change"	.74
Item 2 "Deal with whatever comes"	.61
Item 3 "Try to see humorous side of things"	.70
Item 4 "Coping with stress can strengthen me"	.78
Item 5 "Bounce back after illness or hardship"	.47
Item 6 "Achieve goals after obstacles"	.36
Item 7 "Stay focused under pressure"	.63
Item 8 "Not easily discouraged by failure"	.47
Item 9 "Think of self as a strong person"	.36
Item 10 "Handle unpleasant feelings"	.63
Alpha value	.80
Mean	22.31
SD	7.15

APPENDIX E

**VISUAL RATING TOOL FOR AID IN RESPONDING TO THE LIKERT-
TYPE SCALES**



APPENDIX F

TURKISH SUMMARY

1. GİRİŞ

Bu çalışma Türkiye’de 2011 yılında meydana gelen Van depremlerini yaşayanlarda psikolojik dayanıklılığı arařtırmak üzere yapılmıřtır. Bu ilk bölümde dođal afetlere, psikolojik etkilerine ve çalışmanın ana odađı olan psikolojik dayanıklılıđa vurgu yaparak çalışmanın bağlamına yönelik bilgi sunulmaktadır.

Dođal Afetler ve Türkiye’deki Durum

Her yıl milyonlarca insan dođal tehlikelere maruz kalmaktadır. Bir dođal tehlike “yařam kaybı, yaralanma ya da diđer sađlık sorunları, mülk hasarı, yařam alanlarının ve hizmetlerin kaybı, sosyal ve ekonomik yıkım ya da çevresel zarara neden olabilecek dođal bir süreç ya da fenomen” olarak tanımlanmaktadır (UNISDR, 2009). Dođal tehlike bir afet öncesi durum olarak tanımlanabilir. Yakın dönemde dünyada çok sayıda dođal afet meydana gelmiřtir. Dünya Bankası ve Birleřmiř Milletler’in 2010 yılında yayınladıđı ‘*Natural Hazards, UnNatural Disasters: the Economic of Effective Prevention*’ bařlıklı rapora göre, 1970 ve 2010 yılları arasında bunlar 3,3 milyon kiřinin hayatını yitirmesine ve \$2,3 trilyon dolarlık ekonomik zarar neden olmuřtur.

Dođal afetler ülkemizde de bölgenin iklimi ve jeolojik ve topografik özellikleri nedeniyle sıklıkla yařanmaktadır. En çok yařanan tehlikeler sırasıyla deprem, toprak kayması, sel ve heyelandır (AFAD, 2014). Bu çalışmada ülkemizde yakın zamanda yařanan 2011 Van Depremlerine odaklanılmaktadır. Van’da 23 Ekim ve 9 Kasım 2011 tarihlerinde yařanan iki deprem 644 kiřinin yaşamını kaybetmesine ve iki bin civarında kiřinin yaralanmasına neden olmuřtur (AFAD, 2013). Büyük

miktarda maddi kayıp yaşanmıştır. Van'daki depremlerin bölgede ve bölgede yaşayanlar üzerinde yarattığı geniş çaplı olumsuz etkiler şehrin Türkiye'deki en az gelişmiş şehirler arasında oluşu (Baday Yıldız, Sivri, & Berber, 2010; Daniell ve ark., 2011; Dincer, Ozaslan, & Kavasoglu, 2003) ve yüksek düzeyde işsizlik ve düşük eğitim düzeyinin varlığı (TUIK, 2011; 2012) nedeniyle daha da artmış görünmektedir. Doğal afetlerin çok çeşitli psikolojik etkileri olabilmektedir. Van depremlerinin depremleri yaşayanlar üzerinde olumsuz psikolojik etkilerinin olduğu Tuna, Parin ve Tarhan (2012) tarafından gösterilmiştir. Aşağıda doğal afetlerin olası psikolojik etkileri anlatılmaktadır.

Doğal Afetlerin Maruz Kalanlar Üzerindeki Psikolojik Etkileri

Doğal afetler olası travmatik olaylardır ve sonrasında çeşitli psikolojik etkilere sahip olabilmektedirler. Yazında en çok üzerinde durulan etkilerden birisi travmatik olayların neden olduğu travma sonrası strestir (TSS). Travmatik olayların yaşam boyu yaygınlığı oldukça yüksektir; kapsamlı çalışmalar ülkemizde %84.2 (Karancı ve ark., 2012) ve Amerika Birleşik Devletleri'nde %69 (Norris, 1992) gibi yaygınlık oranları göstermişlerdir. Travmatik olaylar sonrasında anksiyete, üzüntü, uyku, yoğunlaşma ve iştah sorunları gibi sorunlara (Karancı, 2005) ek olarak, majör depresyon, yaygın anksiyete ve panik bozukluğu ile madde kötüye kullanımında artış (Norris ve ark., 2002a) bildirilmektedir. Travma sonrası stres bozukluğu (TSSB) ise travmatik olaylara maruz kalma sonrasında sık karşılaşılan bir bozukluktur. TSSB yeniden yaşama, kaçınma, bilişsel durumda ve duygudurumda olumsuz değişimler ve uyarılma ve reaktivitede değişimler ile karakterizedir (DSM-5, 2013). Epidemiyolojik çalışmalar afetlere doğrudan maruz kalanlarda TSSB %30 ve %40 arasında yaygınlık oranları gösterirken, genel popülasyonda %5 ve %10 arasında yaygınlık oranları göstermektedir (Neria, Nandi, & Galea, 2008). Başka bir çalışmada ise TSSB yaygınlık oranları %2.4 ve %33.6 aralığında bulunmuştur (Nugent, Brown, Stratton, & Amstadter, 2014).

Travma sonrası stres belirtileri ve TSSB gibi olumsuz etkilerin yanı sıra, doğal afetler gibi olası travmatik olaylar sonrasında daha olumlu etkilerin de varlığı

kanıtlanmıştır. Olumsuz yaşantılar sonrasındaki olumlu değişimlere yönelik bilimsel ilgi ilk olarak 1980'li yılların sonunda ve 1990'lı yılların başında ortaya çıkmıştır (Joseph & Butler, 2010). Yazında değinilen olumlu değişimlerden ilki travma sonrası gelişimdir (TSG). TSG travmatik olaylar sonrasında kişinin başa çıkma çabaları sonucunda deneyimlenen olumlu psikolojik değişimlerdir (Tedeschi & Calhoun, 1996; 2004). TSG'nin hayatın değerini anlama, başkalarıyla daha sıcak ve yakın ilişkiler kurma, yeni olasılıkların farkına varma, bireysel güçlülük hissi ve manevi değişim alt boyutları olduğu düşünülmektedir (Tedeschi & Calhoun, 1996). Yazında öne çıkan ve son yıllarda bilimsel ilginin arttığı başka bir olumlu etki ya da değişim ise psikolojik dayanıklılıktır. Dayanıklılık olumsuz olaylara maruz kalan yetişkinlerin psikolojik ve fiziksel işlevselliğin görece sabit sağlıklı düzeylerini koruma becerisi olarak tanımlanmaktadır (Bonanno, 2004). Mevcut çalışmanın ana odağı psikolojik dayanıklılık olduğundan, sonraki bölümde bunun üzerinde ayrıntılı olarak durulmaktadır.

Psikolojik Dayanıklılık

Dayanıklılığın tanımlanması ve kavramsallaştırılması konusunda hem kuramsal olarak hem de uygulama alanında uzun yıllardır uzlaşmaya varılamamıştır (Luthar, Cicchetti, & Becker, 2000). Son yirmi yılda, dayanıklılık birçok bağlamda araştırılmaya başlanmıştır. Psikoloji alanında ise, özellikle II. Dünya Savaşı sonrasındaki çocukluk ve psikopatoloji riski üzerine yapılan çalışmalar dayanıklılık paradigmasının önünü açmıştır (Masten, 2014). Psikolojide dayanıklılığın tanımlanmasına yönelik çok sayıda tanım ortaya atılmıştır. Bu tanımlar dayanıklılığı bir kişisel özellik, bir süreç ya da bir sonuç olarak ele alma eğilimindedir. Yazında, ayrıca, dayanıklılık kavramı ile ilgili süregiden tartışmalar bulunmaktadır. Bunlardan ilki dayanıklılığın bir süreç mi yoksa bir sonuç mu olduğu ile ilgilidir (Kaplan, 1999). Benzer şekilde, dayanıklılığın süreç ya da bir özellik olup olmadığı da tartışılmaktadır. Diğer tartışmalar ile dayanıklılık ve incinebilirliğin farklılığı (örn., Miller ve ark., 2010) ve dayanıklılığın doğuştan gelen bir özellik mi yoksa kazanılmış bir beceri mi

olduđu (Harvey & Delfabbro, 2004) hakkındadır. Bunların ötesinde, bazı arařtırmacılar dayanıklılıđın bir gidiřat/yol olarak tanımlanması gerektiđini savunmaktadırlar (örn., Bonanno, 2004; 2005; Watson & Neria, 2013). Dayanıklılık arařtırmacılar arasındaki tüm bu uzlařmazlık kavramın net ve üzerinde uzlařma sađlanmış řekilde tanımlanamamasına neden olmaktadır.

Psikolojik dayanıklılıđın nasıl deđerlendireceđi kavramın nasıl tanımlandıđı ile yakın iliřkilidir. Dayanıklılık sıklıkla psikopatolojinin olmayıřı olarak ya da çeřitli kiřilik özelliklerinin deđerlendirilmesi yoluyla incelenmektedir. Özgöl çalışmalarında kullanılmak üzere, çok azı dilimize çevrilmiř, çođunluđu özbildirime dayalı ölçekler ve anketler de bulunmaktadır. Son yıllarda, dayanıklılıđın deđerlendirilmesi için nitel arařtırmalar ve fizyobiyolojik ölçümler gibi daha nesnel deđerlendirmeler de yapılmaktadır.

Yazında psikolojik dayanıklılıđı açıklamaya yardımcı olacak çeřitli kuramlar ve modeller bulunmaktadır. Bu çalışmayı yönlendiren iki temel model Freedy, Resnick ve Kilkpatrick'in (1992a) Çok Deđerli Risk Faktörü Modeli ve Schaefer ve Moos'un (1992; Holahan, Schaefer, & Moos, 1996; Moos & Schaefer, 1993) bař etme, dayanıklılık ve geliřime yönelik genel kavramsal çerçevesidir. İlk modelde, ruhsal belirtilerin dođal afetlerin öncesindeki, sırasındaki ve sonrasındaki faktörlere bađlı olarak ortaya çıktıđı vurgulanmaktadır. Diđer modelde ise kiřisel ve çevresel etkenlerin afetle ilgili etkenler ve bař etme ile biliřsel deđerlendirmeler yoluyla dayanıklılıđa yol açtıđı ileri sürölmektedir. Bunlara ek olarak, yazında çeřitli etkenlerin vurgulandıđı farklı modeller de bulunmaktadır (örn., Agaibi & Wilson, 2005; Mancini & Bonanno, 2009).

Yukarıda belirtilen kuram ve modellerin dayanıklılık ile iliřkili olarak öne sürdüđu etkenler çeřitli özgöl çalışmalarında ele alınmıřtır. Bu çalışmalar incelendiđinde, çeřitli kiřisel, sosyal ve çevresel ve afete bađlı etkenler ile bař etmenin önemli olduđu görölmektedir. Psikolojik dayanıklılık ile iliřkili kiřisel etkenler arasında yař, cinsiyet, eđitim durumu, maddi durum gibi sosyodemografik özellikler, kiřilik özellikleri, zeka, olumlu duygu deneyimleme

kapasitesi, bağlanma tarzları, erken dönem olumsuz şemalar, maneviyat ve din öne çıkmaktadır. İlişkili sosyal ve çevresel etkenler içinde ise hazırlıklılığın da dahil olduğu çeşitli çevresel kaynaklar, sosyal sermaye ve destek ve bağlılık hissini önemli olduğu görülmüştür. Ayrıca, önceki afet deneyimleri ve afet sonrası yaşam olayları, afete maruz kalma şiddeti gibi afet ile ilgili etkenler de dayanıklılığı etkilemektedir. Son olarak, baş etme biçimleri ve etkinliği ile bilişsel değerlendirmelerin önemi de bu çalışmalarda ortaya konulmuştur.

Çalışmanın Amacı ve Kapsamı

Doğal afetler tüm dünyada oldukça yaygındır ve birçok insan yaşamları boyunca bir ya da daha fazla afete maruz kalmaktadır. Bireylerin afetler sonrasında uyum sağlama becerilerinin artırılması önemli bir ihtiyaç olarak kabul göstermektedir. Afetlere maruz kalmış bireylerin dayanıklılık kapasitesi hakkındaki bilgi kısıtlıdır ve ayrıca, bu kapasiteyi artırmayı yönelik her türlü çaba dayanıklılığın ne olduğunun anlaşılmasını gerektirmektedir.

Bu çalışma 2011 yılında Van'da yaşanan iki depremin sonrasında depremi yaşayanların psikolojik dayanıklılığını araştırmayı hedeflemektedir. Çalışmada dayanıklılığa katkı sağlayan etkenler iki aşamada araştırılmaktadır. Temel araştırma sorusu "Van depremleri sonrasında depremi yaşayanlarda psikolojik dayanıklılık ile ilişkili etkenler nelerdir?" olarak belirlenmiştir. İlk olarak nitel bir aşamada belirlenen kuramsal çerçevelerin Van depremleri bağlamında geçerliliği ve Türk kültüründe farklı etkenlerin belirip belirmeyeceği incelenmekte, ikinci nicel aşamada ise belirlenen etkenlerin psikolojik dayanıklılık ile ilişkisinin olup olmadığı araştırılmaktadır.

Çalışmanın Önemi ve Yansımaları

Yazında dayanıklılığın nasıl tanımlanacağı ve kavramsallaştırılacağı konusunda halen uzlaşma bulunmamaktadır. Bu çalışma doğal afetler sonrasında psikolojik dayanıklılığı daha iyi anlamaya yönelik çabalardan biridir. Ayrıca, Westphal ve Bonanno (2007) dayanıklılık hakkında öğrenilenlerin TSG'ye genişletilebileceğini ileri sürmüştür. Bu nedenle, dayanıklılık kavramının

netleştirilmesi travma sonrası olumlu deneyimler ve uyum üzerine ışık tutabilecektir.

Ülkemizde, dayanıklılık üzerine fazla çalışma olmayan bir araştırma konusudur. Farklı popülasyonlarda çeşitli çalışmalar bulunsa da (örn., Aydın, 2010; Kumartaşlı, 2014, Sipahioğlu, 2008), deprem bağlamında dayanıklılığı inceleyen yalnızca tek bir çalışma (Kararırmak, 2007) bulunmaktadır. Kararırmak'ın çalışmasında 1999 Marmara depremleri sonrası dayanıklılığa katkı sağlayabilecek kişisel özellikleri araştırılmıştır. Mevcut çalışma ise kişisel özellikler dışında sosyal sermaye, baş etme gibi çok çeşitli etkenleri ele almaktadır. Bu açıdan ülkemizde benzeri bulunmamaktadır.

Kuramsal yansımaların yanı sıra, bu çalışmanın uygulamaya yönelik yansımaları da bulunmaktadır ve sonuçlarının afet sonrası psikososyal klinik müdahaleler için umut verici olacağı düşünülmektedir çünkü dayanıklılık kavramı psikopatolojinin karmaşıklığını vurgulamakta, önleme olasılıklarını ortaya çıkarmaya yardım etmekte ve klinik uygulamada umut için neden sunmaktadır (Amering & Schmolke, 2007). Önceki çalışmaların gösterdiği üzere, dayanıklılık bir sonuç olarak nadir ya da beklenmedik değildir. Bu nedenle, dayanıklılığın daha iyi anlaşılması çok çeşitli bireysel ve kültürel risk etkenlerine sahip ruhsal bozuklukları önlemeye ve/veya tedavi etmeye yönelik özel müdahaleler geliştirmeye yardımcı olabilir (Connor & Zhang, 2006). Ayrıca, bu yalnızca belirtileri hafifletmeye değil psikolojik gücün artırılmasını vurgulayan müdahalelerin ve hatta risk altındaki bireylere yönelik farmakolojik müdahalelerin geliştirilmesine de yardımcı olabilir (Campbell-Sills, Cohan, & Stein, 2006; Tsuang, 2000). Bununla tutarlı olarak, çok çeşitli yapılandırılmış dayanıklılık müdahalesi geliştirilmiştir ve yenileri geliştirilmeye devam etmektedir. Bu da dayanıklılık kavramının iyi anlaşılmasının önemini daha da artırmaktadır.

2. GENEL YÖNTEMLER

Bu bölümde çalışmanın amaçlarına ulaşmak için kullanılan araştırma deseni hakkında bilgi sunulmaktadır.

Araştırma Deseni

Bu çalışmada, karışık yöntemi araştırma deseni uygulanmıştır. Karışık yöntemli araştırma desenleri hem nitel hem nicel araştırma geleneklerinden teknikleri bir araya getirmektedir ve bunları başka türlü yanıtlanamayacak araştırma sorularını yanıtlamak üzere benzersiz şekilde birleştirmektedir (Tashakkori & Teddlie, 1998). Bu araştırma prosedürü travma ile ilgili araştırmalar için de uygun kabul edilmektedir (Creswell & Zhang, 2009).

Bu çalışmanın amaçlarıyla uygun olarak ve psikolojik dayanıklılığa yönelik doğrulanmış bir çerçevenin olmayışı nedeniyle, ardışık açıklayıcı desen kullanılmıştır. Bu desen iki aşamayı içermektedir (Creswell, Plano Clark, Gutmann, & Hanson, 2003). İlk olarak, nitel veri toplanmaktadır ve analiz edilmektedir. İkinci olarak, nicel veri toplanmaktadır ve analiz edilmektedir. Nicel aşama nitel aşamanın üzerine inşa edilmektedir ve iki aşamadan elde edilen bulguların tartışılması için bu aşamalar birbirine bağlanmaktadır. Nitel ve nicel teknikler kullanıldığında bunların örneklem gereklilikleri farklı olduğundan (Carpenter, 2011) her aşamada farklı bir örneklem kullanılmıştır.

Genel İşlem

Bu çalışma Araştırma ve Teknolojik Geliştirme için 7. Çerçeve Programı teması altında Avrupa Birliği Komisyonu tarafından desteklenen “Building Resilience amongst Communities in Europe (emBRACE)” isimli daha büyük bir projenin bir parçası olarak yürütülmüştür. Projenin amacı disiplinler arası ve iş birliğine dayalı yöntemler kullanılarak Avrupa’daki toplumlarda afetlere dayanıklılığın geliştirilmesidir. Bu çalışmanın bulguları projenin Türkiye vaka çalışması raporlarında yer alacaktır. Çalışmada ifade edilenler yalnızca yazarın görüşlerini

yansıtmaktadır ve Avrupa Birliği burada geçen bilginin kullanımıyla ilgili sorumlu değildir.

Çalışma öncesinde insan katılımcılar ile araştırma yapmak için Orta Doğu Teknik Üniversitesi Uygulamalı Etik Araştırma Merkezi'nden ve ayrıca, Van Valiliği'nden izin alınmıştır.

Çalışmanın iki aşamasında da, 18 yaş ve üzerinde olmak, yaşanan depremler ve veri toplama anında Van'da yaşıyor olmak dahil etme kriterleri olmuştur. Her iki aşamada da katılımcılar bilgi formu verilmiştir ve ayrıca, gönüllü katılım ve katılım sonrası bilgi formları yoluyla çalışmanın amacı, çalışmadan ayrılma ve sonuçlar hakkında bilgi alma hakları ve gizlilik ve kişisel bilgilerin korunumu hakkında bilgi verilmiştir. Gönüllü katılım formları iki kopya halinde imzalanmıştır ve bir kopyası katılımcıya verilmiştir.

Araştırma Deseninin Kısıtlılıkları

Bu çalışmanın yazına olan olası anlamlı katkılarına rağmen, seçilen araştırma desenine bağlı olarak bazı kısıtlılıkları bulunmaktadır. Genel bir kısıtlılık iki farklı yöntemin epistemolojik ve ontolojik farklılıkları ve bu farklılıklar nedeniyle nasıl bir araya getirilecekleri ile ilgilidir; ancak farklı yöntemlerin birleştirilmesi bir yönteme özgü yanlılıkları yatıştırabilmektedir ve bir yöntem diğerinin yararlarını güçlendirebilmektedir (Hussein, 2009). Ayrıca, veri toplama ve örnekleme yöntemleri ile ilgili kısıtlılıklar da mevcuttur. Elde edilen veriler başka depremlere ya da afetlere genellenemeyebilir. Veriler depremlerden dokuz ila on dokuz ay arasında toplanmıştır. Travmatik olayların diğer olaylara kıyasla daha doğru hatırlandığı bildirilmiştir (Lalande & Bonanno, 2011). Ayrıca, psikolojik dayanıklılık oranlarının zaman içinde sabit kaldığı görülmüştür (Bonanno, Galea, Bucciarelli, & Vlahov, 2006; 2007) ve çalışma yapmak için travmatik olayın üzerinden zaman geçmesinin deneyimin işlenmesi için fırsat tanıyabileceği ileri sürülmüştür (Qureshi ve ark., 2007).

3. PSİKOLOJİK DAYANIKLILIK ALGISI: NİTEL ÇALIŞMA

Giriş

Bu çalışmanın nitel aşamasında deprem yaşamış bir Türk örnekleminde önceki kuramlar ve özgül çalışmalarda psikolojik dayanıklılık ile ilgili olarak gösterilmiş olan etkenler dışında etkenlerin var olup olmadığının ve Türk kültürüne özgü olası etkenlerin varlığının incelenmesi hedeflenmiştir. Ayrıca, bu çalışma belirlenen etkenler ile sonrasında yapılacak ve belirlenen etkenlerin dayanıklılığa nesnel olarak nasıl katkı sağladıklarını incelemeyi amaçlayan nicel çalışmaya katkı sağlayacaktır. Kültürler birbirlerinden jeolojik, tarihi ve sosyal bağlamları açısından farklı olduklarından, zor zamanlara yönelik gerçeklikler farklı kültürlerdeki bireyler için farklı olabilir (Yu & Zhang, 2007); bu nedenle, dayanıklılık evrensel bir kavram olmayabilir. Ancak, kayıp ve travma reaksiyonlarında ve hatta dayanıklılıkta kültürel farklılıkların olup olmadığı konusunda çok az şey bilinmektedir (Bonanno, 2005).

Dayanıklılığın bağlama ve kültüre bağlı olarak değişkenlik gösterebileceği özellikle Ungar (2005, 2008, 2011, 2013) tarafından ayrıntılı şekilde ele alınmıştır. Yazar zorluklarla kültür göz önünde bulundurulduğunda ilişkisel görüş açalarına sahip toplumlarda baş etmenin uygun yollarının bireyci toplumlara göre farklılık gösterebileceğine değinmiştir. Türkiye'nin ilişkisel bir toplum olduğuna yönelik bulgular (örn., Hofstede, 2001) düşünüldüğünde Ungar'ın fikirleri özellikle önem kazanmaktadır. Bu nedenle, çoğunluğu Batılı çalışmalar ve kuramlardan ortaya çıkan dayanıklılık ile ilişkili ek olarak, Türk kültürüne özgü olası etkenlerin varlığının da araştırılması önemlidir.

Örneklem

Çalışmaya Van depremlerini yaşayan 51 kişi katılmıştır. Örneklem 34 kadın (%66.7) ve 17 erkekten (%33.3) oluşmuştur. Katılımcıların ortalama yaşı 36.94 (SS = 11.41) olarak bulunmuştur. Katılımcıların çoğunluğu evliydi (%76.5), ilkokul mezunuydu (%39.2), işsizdi (%56.9) ve sağlık sigortası sahibiydi (%92.2). Katılımcıların yarısından fazlası kendisini düşük ya da çok düşük gelire

sahip olarak tanımlamıştır. Deprem sonrası gelirinde değişim bildirmeyen 25 katılımcıya karşın, 22'si düşüş ve 4'ü artış bildirmiştir.

Deprem anında katılımcıların çoğu evde olduklarını bildirmiştir. Depreme maruz kalmak katılımcılarda birçok kayba neden olmuştur. 13 katılımcı (%25.5) depremde bir yakını kaybettiğini, 15 katılımcı (%29.4) kendinin ya da bir yakınının yaralandığını bildirmiştir. Katılımcıların 37'si (%72.5) maddi kayıp yaşadığını belirtmiştir. Ayrıca, 10 katılımcı (%19.6) depremler sonrasında psikolojik rahatsızlıklar yaşamıştır.

Görüşme Formu

Çalışmada veri toplama aracı olarak yarı-yapılandırılmış bir görüşme formu kullanılmıştır. Görüşmeler öncesinde, katılımcıların sosyodemografik özelliklerine ve deprem maruziyeti ile ilgili değişkenler hakkında bilgi toplamak için bir katılımcı bilgi formu verilmiştir. Görüşme formu depremi yaşayanların psikolojik dayanıklılık ile ilgili olarak algıladığını etkenlere odaklanan sorular içermiştir. Görüşme sırasında gerekli olduğunda açma soruları yöneltilmiştir. Görüşmede kullanılan sorular aşağıdaki gibidir:

- Depremler insanlarda psikolojik sıkıntılara ve çeşitli zorluklara neden olabilir. Ancak bazı kişiler bu sıkıntılara rağmen, deprem öncesi düzenlerine daha kolay geri dönebilirler. Biz bu kişilere dayanıklı kişiler diyoruz. Siz kendinizi değerlendirdiğinizde ne kadar dayanıklı olduğunuzu düşünüyorsunuz? [*Katılımcılar bu soruya 'Hiç', 'Biraz' ya da 'Çok' kutularını işaretleyerek yanıt vermişlerdir.*]
- Bunu biraz açıklar mısınız?
- Sizce kimler depremler sonrasında daha dayanıklı olurlar?
- Bu dayanıklı kişilerin bu olayı atlattıklarını kolaylaştıran kişisel özellikleri nelerdir? Nasıl kişiler bu durumu daha kolay atlattır?
- Depreme karşı dayanıklı kişiler deprem neden oldu diye düşünürler? Depremi nasıl değerlendirirler?

- Dayanıklı olanlar deprem ile başa çıkmak için ya da depremin yarattığı sıkıntıları atlatmak için neler yaparlar?

İşlem

Çalışma için ODTÜ ve Van Valiliği'nden alınan izinlere ek olarak, Van şehir merkezindeki Anadolu ve Duhok konteynır kentlerin yöneticilerinden de izin alınmıştır. Çalışma afetten on bir ay sonra, 9-16 Eylül 2012 tarihlerinde gerçekleştirilmiştir.

Katılımcıların seçimi için araştırmacının belirli bir grup bireyi çalışmaya dahil etmeyi hedeflediği tesadüfi olmayan örnekleme stratejisi (Cohen, Manion, & Morrison, 2000) kullanılmıştır. Tüm görüşmeler araştırmacı ve bir meslektaşı tarafından alanda yüz yüze yapılmıştır. Görüşme öncesi, katılımcılar çalışma ve hakları hakkında bilgilendirilmiştir ve bir yazılı onam formu imzalamışlardır. Sorular bir formdan okunmuş ve yanıtlar elle kaydedilmiştir. Görüşmenin uygulanması ortalama yirmi dakika sürmüştür. Kaydedilen yanıtlar sonrasında bir kelime işlemcisi yazılımına girilerek deşifre edilmiştir.

Veri Analizi

Katılımcıların sözel yanıtları deşifre edildikten sonra, betimleyici analizler IBM SPSS v20.0 yazılımı (SPSS Inc., 2011) ve nitel içerik analizi MAXQDAplus 10 nitel araştırma yazılımı (MAXQDA, 2011) yardımıyla gerçekleştirilmiştir. Nitel içerik analizi Nastasi ve Schensul (2005) tarafından da önerildiği gibi, hem tümevarım ve tümdengelim yaklaşımları kullanılarak yapılmıştır. Üst kategoriler mevcut kuramsal bilgi temelinde belirlenmiştir ve tanımlanmıştır. Daha alt kategoriler ise ham veri kullanılarak açık kodlama yoluyla oluşturulmuştur ve bu kodların oluşturulmasında Thomas'ın (2003) önerileri dahilinde metindeki gerçek kelimelerden ve sıfatlardan yararlanılmıştır. Yazını tarama ve üst kategoriler oluşturma (tümdengelim) ve ham veriyi kategorilere ve üst kategorilere kodlama (tümevarım) işleme ve kodları ayrıntılı şekilde kontrol etme işlemi analiz boyunca sürdürülmüştür.

Üçüncü ve dördüncü sorulara verilen yanıtlar incelendiğinde yanıtların çok benzer oldukları görülmüştür ve yanıtların tekrar edilmemesi ve kod frekanslarının şişirilmemesi amacıyla, bu sorular birlikte analiz edilmiştir. Yanıtların içeriğinin yalnızca bir kez kodlanabildiği gözlemi üzerine her yanıt yalnızca tek bir kod içerisinde değerlendirilmiştir.

Bulgular

Nitel içerik analizinin bulguları dört konu çevresinde özetlenebilir: (1) katılımcıların kendi psikolojik dayanıklılık düzeylerine yönelik algısı ve bu düzey hakkındaki değerlendirmeleri, (2) katılımcıların psikolojik dayanıklılık ile ilişkili kişisel nitelikler ve özelliklere yönelik algısı, (3) depremin neden olduğu hasara yönelik değerlendirmeler ve (4) katılımcıların psikolojik dayanıklılık ile ilişkili baş etme stratejilerine ve tarzlarına yönelik algısı.

Katılımcıların yarısından fazlası (%52.9) kendini yüksek dayanıklılık düzeyine sahip olarak değerlendirmiştir. Daha azı (%29.4) orta derecede dayanıklı olduğunu ve yaklaşık beşte biri (%17.6) çok az dayanıklı olduğunu ya da hiç olmadığını belirtmiştir. Bu değerlendirmelerin sebebi sorulduğunda çok dayanıklı olduğunu söyleyen katılımcılar sırasıyla Tanrı inancı/dindar olma, ailenin sorumluluğunu alma, sabırlı ve iyimser olma, sosyal destek, depremde yakın kaybı olmaması, günlük rutine dönebilme, deprem sonrası gönüllü çalışmalara katılma, depremler sonrası Van'da kalmayı sürdürme, maddi kaynaklar, geçmiş deprem deneyimi ve sağlığın iyi oluşunu neden olarak bildirmişlerdir. Biraz dayanıklı olduğunu söyleyenler birtakım olumlu ve olumsuz nedenler bildirmişlerdir. Bunlar sırasıyla ailenin sorumluluğunu alma, deprem sonrası olumsuz fiziksel koşullar, yakın kaybı olmaması, deprem sonrası gönüllü çalışmalara katılma, maddi kaynakların olmayışı, geçmiş travmatik deneyimler, günlük rutine dönebilme ve ailedeki sorunlar olmuştur. Kendini çok az dayanıklı ya da dayanıksız olarak nitelendiren katılımcılar ise maddi kaynakların olmayışı, ailedeki sorunlar, fiziksel sağlık sorunlar, psikolojik sorunlar ve yakın kayıpları yaşamış olmayı neden olarak bildirmişlerdir.

Katılımcıların psikolojik dayanıklılık ile ilişkili kişisel nitelikler ve özelliklere yönelik algısı için yapılan analizde sekiz temel kategoriye ulaşılmıştır. Bunlar kod frekansına göre sırasıyla kişilik özellikleri, maddi kaynaklar, Tanrı inancı/dindarlık, geçmiş yaşantılar ve yaşam olayları, sosyal ağlar ve ilişkiler, cinsiyet, yaş ve ruh sağlığı olarak etiketlenmiştir.

Depremi neden olduğu hasara yönelik değerlendirmeler sorulduğunda katılımcıların neredeyse tamamı (%90) depreme Tanrı'nın neden olduğu şeklindeki değerlendirmenin dayanıklılığı artıracağı şeklinde yanıt vermiştir. Depremi Tanrı'dan gelen bir uyarı, ceza, sınama ya da kader olduğunu belirtmişlerdir. Ayrıca, az sayıdaki katılımcı depremin dayanıklı olmayan binaların ya da doğal sebeplerin sonucu olarak ya da depremin oluşumunda ve yarattığı hasarda hem Tanrı'nın hem doğal sebeplerin rolü olduğu şeklinde değerlendirmenin dayanıklılığa katkı sağlayacağını bildirmiştir.

Katılımcıların psikolojik dayanıklılık ile ilişkili baş etme stratejileri ve tarzlarına yönelik algısı için yapılan analizde ise altı temel kategoriye ulaşılmıştır. Bunlar din yoluyla baş etme, sosyal ağlar/ilişkiler yoluyla baş etme, aktif baş etme, hazırlıklılık ve zarar azaltma yoluyla baş etme, kaynakların kullanımı yoluyla baş etme ve edilgen baş etme olarak etiketlenmiştir.

Tartışma

Nitel çalışma 2011 Van depremlerini yaşayanların psikolojik dayanıklılık ile ilgili olarak algıladıkları etkenleri belirlemeyi hedeflemiştir. Elde edilen bulgulara göre, katılımcıların büyük çoğunluğu kendinin yüksek ya da orta düzeyde psikolojik dayanıklılığa sahip olduğunu belirtmiştir, az sayıda katılımcı dayanıklılığının az olduğunu söylemiştir. Bu, dayanıklılığın travmatik olaylar sonrasında yaygın bir tepki olduğunu gösteren diğer çalışmalar ile tutarlıdır (örn., Bonanno ve ark., 2011; Hobfoll ve ark., 2009; Pietrzak ve ark., 2014). Genel olarak, dayanıklılık ile ilişkili olarak algılanan kişisel nitelikler ve özellikler, hasar atıfları ve baş etme stratejileri ile ilgili bulgular önceki çalışmalar ve çalışmanın temel aldığı modeller ile büyük ölçüde tutarlı bulunmuştur. Bu

dayanıklılığın kültüre bağlı yönlerinin olmasına rağmen, evrensel özelliklerinin de olabileceğini düşündürmektedir. Kaynaklara sahip olma, sosyal ağlar ve ilişkiler, psikolojik ve fiziksel sağlık ile olumlu kişilik özellikleri psikolojik dayanıklılık ile en çok ilişkili olarak algılanan etkenlerdir.

Bu çalışmaların bulguları ve modeller içerisinde yer almayan Tanrı inancı ve din değişkeni depremi yaşayan bu Türk örneğinde önemli bir dayanıklılık etkeni olarak ortaya çıkmıştır. Dindarlığın bu çalışmada ortaya çıkan önemi Van depremleri bağlamına özgü olabilir çünkü Van depremleri sonrasında dini inançların ve ibadetlerin arttığı (Yılmaz & Işıtan, 2012), dua etmenin ve Kuran okumanın önemli günlük etkinlikler içinde yer aldığı (Tuna ve ark., 2012) görülmüştür. Ayrıca, bazı katılımcılar tarafından başkalarına yönelik duyarsızlığı yansıtan bazı kişilik özellikleri de dayanıklılık ile ilişkili olarak algılanmıştır. Bu kişilik özelliklerinin bu ifadesinin de bu örnekleme özgü olabileceği, bunun yüksek-etkili afetler sonrasında sıkıntıları ve olumsuz duygulanımı azaltmada kaçınmanın yararını yansıtır olabileceği düşünülmektedir.

Önemli katkılarına rağmen, nitel araştırmanın çeşitli kısıtlılıkları bulunmaktadır. Bunların ilki görüşmedeki ilk soruda terimin Türkçe karşılığı olmaması nedeniyle dayanıklılık ile ilgili bir tanım verilmesidir. Bu katılımcıların psikolojik dayanıklılığı kendi algıladıkları şekilde yanıt vermelerini engellemiş olabilir. Sorularda kişisel özelliklerin sorulması da yanıtların aralığının daralmasına neden olmuş olabilir. Gelecekteki çalışmaların daha kapsamlı görüşme formları kullanması önemlidir. Ayrıca, çalışmaya yalnızca katılımı kabul eden kişiler dahil edilmiştir. Bunun yanı sıra, lojistik nedenler ve olası güvenlik sorunları nedeniyle veriler sabah 9:00 ve akşam 19:00 arasında toplanmıştır. Bu da örnekleme ev kadınlarının ve çalışmayanların fazla temsil edilmiş olmasına neden olmuştur. Son olarak, görüşmelerdeki yanıtlar izin alınmadığı için kaydedilmemiştir, yalnızca elle forma kaydedilmiştir. Bu bazı hassas bilgilerin kaybedilmesine neden olmuş olabilir. Yazılan bilgilerin desteklenmesi için görüşmeciler görüşme aralarında ve sonlarında notlar almışlardır. Gelecekte yapılacak araştırmalarda uygun kayıt alınması bilginin daha sağlıklı kaydedilmesi için önemli olacaktır.

4. PSİKOLOJİK DAYANIKLILIK İLE İLİŞKİLİ FAKTÖRLER: NİCEL ÇALIŞMA

Giriş

Bu çalışmanın nicel aşamasında, önceki kuramlar ve özgül çalışmaların sonuçları ile nitel çalışmada elde edilen bulgular temelinde, afetin çeşitli aşamalarındaki değişkenlerin psikolojik dayanıklılık ile ilişkili olup olmadığının anlaşılması hedeflenmiştir. Psikolojik dayanıklılık bu çalışmada Van'daki depremler sonrasında zorluklarla baş etme becerisi ve zorluklar karşısında psikolojik sağlığın korunması (yani, travma ile ilgili psikopatolojinin olmayışı) olarak kavramsallaştırılmıştır. Nicel çalışmaya dahil edilen değişkenler Freedy ve arkadaşlarının (1992a) Çok Değişkenli Risk Faktörü Modeli'ndeki genel kategoriler altında sınıflandırılmıştır. Bunlar afet öncesi etkenler, afet sırasındaki etkenler, afet sonrasındaki etkenler ve ruh sağlığı sonuçlarıdır. Çalışmanın amacıyla tutarlı olarak, bu çalışmada sonuç değişkeni olarak psikolojik dayanıklılık kullanılmıştır. Afet öncesindeki, sırasındaki ve sonrasındaki etkenlerin psikolojik dayanıklılık ile ilişkili olacağı düşünülmüştür.

Örnekleme

Çalışmaya 2011 yılındaki Van depremlerini yaşayan 360 kişi katılmıştır. Farklı deprem hasarına maruz kalmış bölgelerden kişilere ulaşabilmek amacıyla kota örnekleme (Fink, 2006; Sturgis, 2012) kullanılmıştır. Farklı maruz kalma düzeylerine sahip bireylerin kesin oranları mevcut olmadığından, Van şehir merkezindeki farklı hasar düzeyine sahip mahallelerden eşit sayıda katılımcı alınmıştır. Ayrıca, her hasar kotasında eşit sayıda kadına ve erkeğe ulaşmak hedeflenmiştir. Her kotadaki katılımcılar uygunluk ve gönüllülük temelinde rastlantısal örnekleme (Fink, 2006) yoluyla seçilmiştir.

Van şehir merkezinde 30 mahalle ve 2 belde bulunmaktadır. Çalışmaya 30 mahalle dahil edilmiştir. Van Valiliği ve AFAD'dan alınan az, orta ve çok hane hasarı verileri kullanılarak, tüm mahalleler hane yüzdeleri temelinde sıralanmıştır. Buna göre, en az hane hasarı yüzdesine sahip Şemsibey, Akköprü

ve İskele mahalleleri, orta hasarlı yüzdelere açısında ilk üç mahalle olan Alipaşa, Vali Mithat Bey ve Hafiziye mahalleleri ve en yüksek hane hasarına sahip üç mahalle olan Hacibekir, Yenimahalle ve Esenler mahalleleri seçilmiştir. Ayrıca, yüksek hasara maruz kalmış bireylere ulaşma şansını artırabilmek için şehir merkezindeki iki kalıcı konut alanı (Kalecik TOKİ ve Bostaniçi TOKİ) da dahil edilmiştir.

Katılımcıların %75'i Van doğumluydu. Hanede yaşayan ortalama insan sayısı 5.93'tü. 180 erkek ve 180 kadın çalışmaya katılmıştır. Katılımcıların ortalama yaşı 33.94 ($SS = 12.70$) olarak bulunmuştur. Katılımcıların çoğu evliydi (%63.3), lise mezunuydu (%30.6), çalışmıyordu (%59.7), sağlık sigortasına sahipti (%88.6) ve kendini orta düzeyde gelir sahibi olarak tanımlıyordu (%53.9).

Veri Toplama Araçları

Çalışmada veri toplamak için aşağıda belirtilen araçlar kullanılmıştır:

- Katılımcı bilgi formu (sosyodemografik değişkenler ve dindarlık ile ilgili kapalı uçlu sorulardan oluşmuştur.)
- Deprem maruziyeti ile ilgili ölçümler (afet deneyimi, depreme maruz kalma şiddeti ve afet sonrası olumsuzluklar ile ilgili kapalı uçlu sorulardan oluşmuştur.)
- Eysenck Kişilik Anketi Gözden Geçirilmiş – Kısaltılmış Form (Francis, Brown, & Philipchalk, 1992; Karancı, Dirik, & Yorulmaz, 2007)
- Yaşam Yönelimi Testi (Aydın & Tezer, 1991; Scheier & Carver, 1985)
- Kısa Uyarlanmış Sosyal Sermaye Değerlendirme Aracı (De Silva ve ark., 2006) – *Bu çalışmada Türkçe'ye çevrilmiştir.*
- Yaşam Doyumu Ölçeği (Diener, Emmons, Larsen, & Griffin, 1985; Durak, Durak, & Gençöz, 2010)
- Baş etme yeterliliği ölçümü (Sümer, Karancı, Kazak-Berument, & Güneş, 2005)
- Deprem hasarının önlenabilirliği algısı ve hasar ve kontrol değerlendirmeleri ölçümü (McClure, Allen, & Walkey, 2001)

- Bař Etme Yolları Envanteri (Folkman ve Lazarus, 1980; Kesimci, 2003; Siva, 1991)
- Olayın Etkisi Ölçeđi (Çorapçiođlu, Yargıç, Geyran, & Kocabasođlu, 2006; Weiss & Marmar, 1997)
- Connor-Davidson Dayanıklılık Ölçeđi (Connor & Davidson, 2003) – *Bu çalışmada Türkçe'ye çevrilmiştir.*

İřlem

Çalışmada Van Valiliđi'nden uygulama izni alınmıştır. Çalışma depremlerden yaklaşık on dokuz ay sonra, 25 Haziran-2 Temmuz 2013 tarihleri arasında yapılmıştır. Arařtırmacının da dahil olduđu on görüşmeci anket formunu katılımcılara uygulamıştır. Seçilen her bölgedeki evler uygunluk ve gönüllülük temelinde rastlantısal olarak seçilmiştir. Her evden bir kiři ile görüşülmüřtür. Anket formu uygulayıcı tarafından doldurulmuřtur. Bunun nedeni Van'daki düşük eğitim ve okuryazarlık düzeyi (TUIK, 2012) ve uygulama işlemini tüm katılımcılar için standart hale getirme isteđi olmuřtur. Anket formunda ölçeklerin sunum sırası olası sıra etkisinden kaçınmak için deđiřtirilerek üç farklı form oluşturulmuřtur. Likert-tipi ölçeklere yanıt vermeyi kolaylařtırmak için renkli bir görsel derecelendirme ölçeđi kullanılmıřtır. Anket formunun uygulanması ortalama otuz dakika sürmüřtür.

Veri Analizi

Temel analizler öncesinde yapılan veri temizleme işlemleri, betimleyici istatistikler, korelasyon analizleri ve Kısa Uyarlanmıř Sosyal Sermaye Deđerlendirme Aracı ile Connor-Davidson Dayanıklılık Ölçeđi üzerinde yapılan açıklayıcı faktör analizleri IBM ile temel analizler olan hiyerarřik çoklu regresyon analizleri SPSS v20.0 (SPSS Inc., 2011), iki ölçek üzerindeki dođrulamalı faktör analizleri ise LISREL 8.8 (Jöreskog & Sörbom, 2006) bilgisayar yazılımları kullanılarak yapılmıştır.

Veri Temizleme

Temel analizler öncesinde, tüm veriler veri girişi, eksik değerler, aykırı değerler ve değerlerin dağılımı ve analizin varsayımları arasındaki uyum açısından değerlendirilmiştir. Veride eksik değer ve tek değişkenli aykırı değer saptanmazken, dört katılımcının verisinin $p < .001$ ile Mahalanobis uzaklığı incelendiğinde çok değişkenli aykırı değerler olduğu bulunmuştur. Bu veriler veri setinden çıkarılmıştır ve analizler 356 katılımcının verisi ile yapılmıştır.

Çalışmadaki değişkenler normallik, eşdeğişkenlik, doğrusallık ve çoklu eşdoğrusallık ile teklik açısından test edilmiştir. Bazı değişkenler için yüksek basıklık ve yatırlık değerlerinin olduğu görülse de, örneklem boyutu arttığında (>200) sıfır basıklık ve yatırlıktan uzaklaşmanın etkisi azaldığından (Tabachnick & Fidell, 2001) bunlar dikkate alınmamıştır. Diğer testler çalışmadaki değerlerin dağılımının varsayımlara uygunluk gösterdiğini ortaya koymuştur.

Bulgular

Betimleyici istatistikler ve korelasyon analizleri. Sürekli değişkenler için ortalamalar, standart sapmalar ve aralıklar, kategorik değişkenler için ise sıklıklar ve yüzdeler hesaplanmıştır. Ayrıca, çalışmaya dahil edilen tüm değişkenler arasında ikili korelasyonlar analiz edilmiştir. Bunların sonuçları Tablolar 4.5, 4.6 ve 4.7'de sunulmaktadır.

Temel analizler. Psikolojik dayanıklılık göstergeleri bağımlı değişken ve afet ile ilgili değişkenler bağımsız değişkenler olarak kullanılarak beş çoklu hiyerarşik regresyon analizi yapılmıştır. Bağımsız değişkenler afet öncesi, sırası ve sonrası olarak üç aşamada analize girilmiştir.

Stres ile baş etme becerisini yordayan afet öncesi değişkenler yüksek eğitim düzeyi, afet öncesi ruh sağlığının iyi oluşu, dışa dönüklük, yaşam doyumu, afet öncesi yapısal sosyal sermaye, afet sırasındaki değişkenler nesnel maruz kalma şiddeti ve afet sonrası değişkenler ise baş etme yeterliliği ve sorun odaklı baş etme olarak bulunmuştur.

Toplam TSS belirti şiddetini yordayan afet öncesi değişkenler kadın cinsiyeti, düşük gelir düzeyi, dindarlık, nörotisizm ve düşük iyimserlik düzeyi, afet sırasındaki değişkenler öznel ve nesnel maruz kalma şiddeti ve afet sonrası değişkenler ise afet sonrası dönemdeki olumsuzluklar ve çaresiz baş etme/kendini suçlama olarak bulunmuştur.

Aşırı uyarılma belirtilerinin şiddetini yordayan afet öncesi değişkenler kadın cinsiyeti, düşük gelir düzeyi, dindarlık ve nörotisizm, afet sırasındaki değişkenler öznel ve nesnel maruz kalma şiddeti ve afet sonrası değişkenler ise afet sonrası dönemdeki olumsuzluklar ve çaresiz baş etme/kendini suçlama olarak bulunmuştur.

Yeniden yaşama belirtilerinin şiddetini yordayan afet öncesi değişkenler kadın cinsiyeti, düşük gelir düzeyi, afet öncesi ruh sağlığının kötü oluşu, dindarlık, nörotisizm ve düşük iyimserlik düzeyi, afet sırasındaki değişkenler öznel ve nesnel maruz kalma şiddeti ve afet sonrası değişkenler ise düşük baş etme yeterliliği ve çaresiz baş etme/kendini suçlama olarak bulunmuştur.

Kaçınma belirtilerinin şiddetini yordayan afet öncesi değişkenler düşük eğitim ve iyimserlik düzeyleri, afet sırasındaki değişkenler nesnel maruz kalma şiddeti ve depremin yarattığı hasarın kontrol edilebilirliği hakkındaki değerlendirmeler, afet sonrası değişkenler ise sorun odaklı baş etme olarak bulunmuştur.

Ad hoc analizler. Bazı afet-öncesi değişkenlerin regresyon analizlerinin son adımında temel psikolojik dayanıklılık göstergeleri (stress ile baş etme becerisi ve düşük TSS belirti şiddeti) ile neden ilişkili olmadığına anlaşılması için bazı ad hoc aracı değişken analizleri yapılmıştır. Buna göre, nesnel maruz kalma şiddetinin afet-öncesi yapısal sosyal sermaye ve stres ile baş etme becerisi arasındaki ilişkiye aracılık ettiği; ayrıca, iyimser baş etme, sorun-odaklı baş etme ve baş etme yeterliliğinin de yaşam doyumu ve stres ile baş etme arasındaki ilişkiye aracılık ettiği görülmüştür. Deprem sonrası olumsuz yaşantılar, kadercı baş etme, çaresiz baş etme/kendini suçlama ve baş etme yeterliliğinin de afet

öncesi gelir düzeyi ve TSS belirtilerinin şiddeti arasındaki ilişkide aracı değişkenler olduğu bulunmuştur.

Tartışma

Nicel çalışmada, dayanıklılık hakkındaki önceki çalışmalar ile kuramlar ve nitel çalışmanın bulguları ışığında belirlenen etkenlerin stres ile baş etme becerisi ve depresyon sonrası psikolojik sağlığın korunması ile kavramsallaştırılan psikolojik dayanıklılığa katkı sağlayıp sağlamadığının nesnel şekilde incelenmesi hedeflenmiştir. Nicel çalışmada dayanıklılığı değerlendirmek için geleneksel değerlendirme yöntemlerinin ötesine geçerek iki göstergesi (düşük düzeydeki travma sonrası stres belirtileri ve stres ile baş etme becerisi) aynı anda kullanılmıştır. Göstergeler arasındaki ilişki incelendiğinde, bunların beklenenin aksine pozitif korelasyona sahip oldukları görülmüştür. Bu çalışmanın desenine ya da kullanılan araçlara bağlı olarak ortaya çıkmış olabilir. Ayrıca, bu ilişkiden sorumlu alt ölçek olan kaçınmanın farklı bir belirti kategorisi olması ya da katılımcılar tarafından diğer belirti alanlarından farklı olarak adaptif bir tepki olarak algılanmış olması olasıdır. Son olarak, kullanılan iki dayanıklılık göstergesi birbirlerinden bağımsız hareket etmiş olabilirler ve hafif düzeyde belirti olması dayanıklılık olasılığını ortadan kaldırmıyor olabilir.

Elde edilen bulgular psikolojik dayanıklılığı çeşitli değişkenlerin etkilediğini ve afet bağlamındaki dayanıklılık, ya da risk, değerlendirmelerinin kavramı en iyi şekilde anlayabilmek için çoklu etkenleri göz önünde bulundurması gerektiğini göstermiştir. Psikolojik dayanıklılık ile ilişkili afet öncesi etkenler erkek cinsiyeti, yüksek eğitim ve gelir düzeyi, afet öncesi ruh sağlığının iyi oluşu, yüksek dışadönüklük ile iyimserlik düzeyleri, yaşam doyumu ve afet öncesi yapısal sosyal sermaye olmuştur. Dindarlık ve nörotisizm ise TSS belirtilerinin şiddetini artırdığından, dayanıklılık ile tersine ilişkili olarak ele alınmıştır. Afet sırasındaki etkenlere bakıldığında ise, maruz kalmanın şiddeti ve depresyon hasarının kontrol edilebilirliği hakkındaki bilişsel atıflar psikolojik dayanıklılık ile ilişkili görülmüştür. Son olarak, baş etme yeterliliği ve sorun odaklı baş etme psikolojik dayanıklılık ile ilişkili afet sonrası etkenler arasında yer almışlardır. Depresyon

sonrası yaşanan zorluklar ve çaresiz baş etme/kendini suçlama TSS belirtilerinin şiddetini artırmıştır ve bunlar dayanıklılık ile tersine ilişkili olarak ele alınmıştır.

Önemli bulgularına rağmen, nicel çalışmanın çeşitli kısıtlılıkları bulunmaktadır. Van'da depreme maruz kalanların tümünden veri toplamak mümkün olmadığından, bulgular genellenirken dikkatli olunmalıdır. Ayrıca, veriler öz bildirime dayalı araçlar yoluyla toplanmıştır. Kişiler kendi dayanıklılığı konusunda doğru yargıda bulunamayabileceğinden bu veri toplama yöntemi eleştirilere maruz kalmaktadır (Campbell-Sills ve ark., 2006). Özellikle düşük eğitilmiş popülasyonlarda bu tür araçlar kullanıldığında çeşitli yanıtlama eğilimleri olabilir (D'Alonzo, 2011). Bu kısıtlılığın etkileri Likert-tipi ölçekler için yardımcı görsel araçlar kullanarak ve araçları görüşmelerin uygulaması yoluyla azaltılmaya çalışılmıştır. Bunlara ek olarak, tüm değişkenler analizdeyken psikolojik dayanıklılığın göstergelerinin yalnızca beşte iki varyansı kadarı açıklanabilmiştir. Bu da çalışmaya dahil edilmeyen ancak dayanıklılık ile ilişkili farklı değişkenlerin olduğunu göstermektedir. Dayanıklılığın daha iyi anlaşılması için gelecekteki çalışmalar farklı değişkenler kullanarak kavramı açıklamaya çalışmalıdırlar. Son olarak, regresyon analizlerinde bazı değişkenlerin son adımda dayanıklılık ile artık ilişkili olmadığı görülmüştür. Bu çalışmanın kapsamı dışında olduğundan, olası aracılık ilişkileri incelenmemiştir, ancak bunların gelecekteki çalışmalarda ele alınması önemli görünmektedir.

5. GENEL TARTIŞMA

Bu bölümde, nicel ve nitel çalışma aşamalarından elde edilen bulgular bir araya getirilerek tartışılmaktadır. Ayrıca, çalışmanın kısıtlılıkları, gelecek çalışmalar ve klinik uygulamalar için yönelimler aktarılmaktadır.

Araştırma Bulgularının Genel Tartışması

Çalışmanın iki aşamasından elde edilen bulgular genel olarak çalışmayı yönlendiren kuramsal çerçevelere, yani Schaefer ve Moos'un (1992) modeli ile Freedy ve arkadaşlarının (1992a) Çok Değişkenli Risk Etkeni Modeli için, destek sağlamıştır. Bu çerçevelerdeki öğeler ile çalışma bulguları arasındaki en önemli

fark bulgularında dindarlığın öne çıkmış olmasıdır. Özellikle nitel çalışmada, dindarlık ve dini baş etme dayanıklılık için çok önemli bir etken olarak ortaya çıkmıştır. Bu, dini inançların ve ibadetlerin afetler sonrasında maruz kalanların psikolojik sağlığını koruyucu bir rol oynadığını ve böylece dayanıklılığı artırdığını düşündürmektedir. Bu tür inançlar olumsuz yaşantıların kabulünü artırabilir. Kontrol eden bir dini varlığa inanç kişisel ve dış kontrol kaynakları az olduğunda dış kontrol hissinin yerine gelmesine yardımcı olabilir (Kay, Gaucher, McGregor, & Nash, 2010).

Ancak, çalışmanın farklı aşamalarında dindarlığa yönelik çelişkili görünen sonuçlar elde edilmiştir. Nitel çalışmada dindarlık olumlu bir etken olarak ortaya çıkarken, nicel çalışmada öz bildirime dayalı dindarlığın depremzedelerde TSS belirtilerinin şiddetini artırdığı bulunmuştur. Bu bulgular çelişkili görünse de, aslında birbirini tamamladığı düşünülmüştür. Travmaya-bağlı belirtilerin varlığı dayanıklılığın olasılığını ortadan kaldırmıyor olabilir. Dindarlık travmatik olay sonrasında psikolojik sıkıntıları azaltmak yerine, bunlara yönelik kabullenmeyi artırarak, belirtileri bildirmeyi artırıyor olabilir. Ancak, psikolojik belirtilerin şiddeti yüksek dindarlık düzeyi bildiren bazı bireylerde olumsuz dini baş etme stratejilerini kullanma nedeniyle artmış da olabilir. Pargament ve arkadaşlarına (1998; 2000) göre, olumsuz dini baş etmeyi kullanan bireyler Tanrı'ya öfke duyarlar, olumsuz düşünürler ve stresli yaşam olayları sonrasında anlam oluşturmada zorluk yaşarlar (Pargament ve ark., 1998). Yine de, dindarlık psikolojik rahatsızlığa dayanmak için bir güç kaynağı sağlıyor olabilir. Ayrıca, örneklem ölçek puanların ölçeklerin orta noktaları ile karşılaştırıldığında yüksek düzeyde dindarlık, düşük düzeyde TSS belirtileri ile yüksek düzeyde stres ile baş etme becerisi, baş etme yeterliliği ve iyimserlik bildirmiştir. Her ne kadar çalışmanın kesitsel deseni nedeniyle kesin olarak bilinemeyecek olsa da, dini inanca sahip olma ve dini ibadetlerde bulunma, iyimser bir bakış açısı ve kişinin stres ile baş edebileceğine yönelik güçlü bir inanç olay ile veri toplama arasında geçen zamanda depreme maruz kalanların psikolojik belirtilerinin şiddetini azaltmış olabilir.

Sonuç olarak, çalışmanın farklı aşamalarında dindarlık ile ilgili olarak elde edilen bulguların birbirini tamamladığı düşünülmektedir. Çalışmanın karmaşık-yöntemli deseni psikolojik dayanıklılık ve dindarlık arasında tek yöntem kullanılsaydı belirlenemeyecek olan ilişkiyi ortaya çıkarmış görünmektedir. Bulgular, bu ilişkinin anlaşılması için dinin ve dindarlığın afetzedeler için anlamının iyi anlaşılması gerektiğini göstermektedir.

Ayrıca, çalışmanın bulguları psikolojik dayanıklılığın çok-etkenli bir kavram olduğunu göstermektedir ve kavramın çok-etkenli olduğunu öneren dayanıklılık modelleri (örn., Machida ve ark., 2013) için kuramsal destek sunmaktadır. Afet öncesindeki, sırasındaki ve sonrasındaki birçok değişken dayanıklılığı etkilemektedir. Afet bağlamında çok-etkenli dayanıklılık modellerinin geliştirilmesi alana katkı sağlayacaktır. Bulgular psikolojik dayanıklılığın çok farklı kaynaklardan beslendiğini de göstermektedir. Bu özellikle klinik uygulamalar ve uygulamalı alan için umut vaat etmektedir.

Klinik Uygulamalar ve Uygulamalı Alan için Yönelimler

Çalışma afet deneyiminin travmaya-bağlı belirtiler ve dayanıklılığın da dahil olduğu olası sonuçları için önemli bilgiler sunmaktadır. Bulgular stresli durumlar ile baş etme becerisinin düşük-şiddetli TSS belirtileri ile bir arada görülebileceğini göstermiştir. Dayanıklılığı yalnızca düşük belirti düzeyi ya da yüksek baş etme becerisi ile göstermenin afetzedelerin dayanıklılık kapasiteleri hakkında yalnızca kısıtlı verebileceği ortaya çıkmıştır. Afetzedeler ile çalışan uzmanların belirti gösteren tüm bireyleri dayanıklı olmadığı şeklinde etiketlemekten kaçınması önemlidir. Çalışmada kontrol edilebilirliğe yönelik atıflar önemli bulunduğundan, kontrol algısının güçlenmesi ve dayanıklılığın artması için psikoeğitim programlarının afetzedelerin afet yaşantısını nasıl anlamlandırdığına ve kendi rolleri hakkındaki beklentilerine odaklanması anlamlı olabilir.

Çalışmada katılımcıların dayanıklılığı nasıl algıladığı hakkında bilgi sağlanmıştır, bu bilgiler afet yaşayanlar için psikososyal müdahaleler planlamada destek

olabilir. Ayrıca, dayanıklılık ile ilişkili etkenlerin belirlenmesi travma yaşamış popülasyonlar ile çalışan uzmanlara travma sonrasında dayanıklılığı güçlendirme yolunda yardımcı olabilir. Uzmanlar alandaki çalışmalarında bu bilgileri kullanabilirler.

Çalışma bulguları travmatik olaylar sonrasında TSS belirtileri geliştirme için olası risk etkenlerine yönelik bilgi de sağlamaktadır. Depreme daha şiddetli maruz kalanların, afet sonrasında zorluklar yaşayanların ve kadınların belirti düzeylerinin yüksek olduğu görülmüştür. Afetler sonrasında bu incinebilir gruplara psikoeğitim ve psikolojik müdahaleler sağlamak onların stres ile etkin şekilde baş etmelerini sağlamak için önemlidir. Bu grupların genellikle farklı psikososyal ihtiyaçları bulunmaktadır ve bu ihtiyaçların uygun değerlendirmesi psikolojik ilk yardım müdahalelerinde önemli bir yer tutmaktadır (World Health Organization, War Trauma Foundation, & World Vision International, 2013).

Önceki paragrafta belirtildiği gibi, afet sonrasındaki zorlukların dayanıklılığı azaltılabileceği gösterilmiştir. Bu afet sonrasındaki aşamada bu tür zorlukların azaltılmasını ve merkezi ve yerel düzeydeki afet yöneticilerinin ilgisini gerektirmektedir. Afetler sonrasında, bireyler çoklu olumsuz yaşam koşullarına maruz kalabilirler ve farklı destek türlerine ihtiyaç duyabilirler. Bu nedenle, farklı grupların farklı ihtiyaçlarına yanıt verecek şekilde tasarlanmış bir çok-katmanlı bir destek sisteminin geliştirilmesi psikososyal destek için temeldir (Inter-Agency Standing Committee, 2007). Psikososyal zorlukları olan bireylerin fiziksel, psikolojik ve sosyal ihtiyaçları için değerlendirilmeleri önemlidir (The European Network for Traumatic Stress, 2008).

Dayanıklılık gösteren ya da psikolojik belirti geliştirme riski taşıyan bireylerin belirlenmesi afet sonrası dönemde uygun değerlendirmenin yapılmasını gerektirmektedir. Ancak, psikolojik dayanıklılığı değerlendirme araçları kavramın karmaşıklığı ve araştırmacılar arasında dayanıklılığı anlamak için neyin değerlendirilmesi gerektiği konusunda uzlaşma olmaması nedeniyle kapsam ve içerik bakımından kısıtlı olmaktadır. Gelecek araştırmalarda alanda kullanmak

üzere afet bağlamına özgü değerlendirme yöntemleri geliştirilmelidir ve standardize edilmelidir.

Nicel çalışmada psikolojik dayanıklılık ile ilişkili olduğu gösterilen kişilik özellikleri (örn., iyimserlik) ve baş etme yollarının (sorun-odaklı baş etme) afet sonrasında güçlendirilmesi ve olumsuz baş etme yollarının, yani çaresiz baş etme ve kendini suçlamanın azaltılması önemlidir. Yüksek dışa dönüklük düzeyi afet sonrasında sosyal katılımın güçlenmesi için önemli olabilir. Dışa dönük bireyler afet sonrasında katılımı artıran ve paydaşlar arasında bilgi aktarımını kolaylaştıran yardımcı aktörler olarak rol alabilirler. Psikososyal müdahaleler yoluyla baş etme yeterliliği düzeyinin artırılması önemli bir adım olacaktır çünkü bu etkenin olumlu baş etme yollarının yüksek düzeyleri ve olumsuz baş etme yollarının düşük düzeyleri ile ilişkili olduğu bulunmuştur.

Çalışmanın farklı bir yansıması dindarlık ile ilgilidir. Çalışmada dindarlığın ve dinin anlamının anlaşılmasının önemli olduğu ortaya çıkmıştır. Psikososyal ve toplum-temelli çalışmalara dini liderlerin dahil edilmesi ve dindarlığın iki yönü hakkında yerel yöneticiler, toplum liderleri ve sivil toplum kuruluşları ile seminerler düzenlemek faydalı olabilir. Bu tür bir girişimin ilham verici bir örneği imamların da dahil edildiği 2007 yılında Kızılay tarafından başlatılan “Toplum liderlerini teşkilatlandırma projesi ve afet zararlarını azaltma projesi”dir. Bu tür projeler dindarlığın dayanıklılık için yalnızca olumlu ya da olumsuz bir etken olarak ele alınmasının ötesine geçerek bunun bireyler ve toplum için anlamına odaklanan diğer girişimlerin önünü açabilecektir.

Son olarak, öz bildirime dayalı afet öncesi ruh sağlığı ve stres ile baş etme becerisi arasındaki olumlu ilişki afet öncesi dönemde afet sonrası değişimler için önemli bir kaynak olduğu fikrini (Quarantelli & Dynes, 1977) desteklemektedir. Bu nedenle, afet riski altındaki toplumlarda yaşayan bireylerin ruh sağlığı kaynaklarını artıracak genel bir strateji geliştirmenin ve izlemenin önemi ortaya çıkmaktadır.

Genel Kısıtlılıklar ve Gelecek Çalışmalar için Yönelimler

Bu çalışmanın giriş bölümünde bahsedilen önemi ve olası yansımalarına rağmen, çeşitli genel kısıtlılıkları bulunmaktadır. Araştırma desenine bağlı kısıtlılıklar ikinci bölümde, nitel ve nicel çalışmalara özgü kısıtlılıklar ilgili bölümlerde aktarılmıştır. Bu kısıtlılıklara ek olarak, elde edilen sonuçlardan travma maruziyeti olmayan gruplar veya farklı türde afetlere maruz kalmış olanlar için sonuçlar çıkarmak mümkün değildir. Gelecek çalışmaların bulguları bu gruplarda tekrar etmesi gerekmektedir.

Bu çalışmada birçok değişkenin psikolojik dayanıklılık ile ilişkisi incelenmiştir. Gelecek çalışmalarda diğer olası önemli değişkenleri dahil etmek ve ayrıca, farklı sonuç ölçümleri kullanmak psikolojik dayanıklılığın daha net şekilde anlaşılmasını sağlayabilir. Bunlara ek olarak, psikolojik dayanıklılığın travma sonrası gelişim ve afet sonrası yarar elde etme gibi farklı sonuçlar ile karşılaştırılması da bu netliği kazanmaya yardımcı olabilir.

Çalışmanın temel bir kısıtlılığı kullanılan değerlendirme yöntemleri ile ilgilidir. Özellikle nicel çalışmada, belirtilerin şiddeti olay ve veri toplama arasındaki zamanda değişmiş olabilir. Gelecek çalışmalarda kesitsel desenler yerine, Bonanno'nun (2012) önerdiği gibi, tekrarlı boylamasına ve olası ileriye dönük değerlendirmelerin yapılması dayanıklılığı iyileşme gibi diğer sonuçlardan ayırmaya yardımcı olacaktır.

Son olarak, bu çalışma dayanıklılığın tek bir göstergesini sonuç değişkeni olarak kullanmanın yalnızca kısıtlı bilgi sağlayabileceğini göstermiştir. Gelecek çalışmalarda dayanıklılığın değerlendirilmesi için farklı göstergelerin kullanılması ve yazındaki dayanıklılık tanımları ve kavramsallaştırmaları ile tutarlı olarak, süreç- ve özellik-temelli psikolojik değerlendirmelerin yapılması anlamlı katkı sağlayacaktır. Ayrıca, dayanıklılığın değerlendirilmesi için görece daha nesnel kriterler belirleyerek, davranışsal ya da psikofizyolojik dayanıklılık göstergeleri kullanmak da gelecek araştırmaları için bir seçenek olabilir.

APPENDIX G

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: (Koçak) İkizer, Gözde

Nationality: Turkish

Date and Place of Birth: 9 November 1984, Bolu/Turkey

Marital Status: Married

E-mail: gkocak@metu.edu.tr, ikizergozde@gmail.com

EDUCATION

Degree	Institution	Year of Graduation
PhD	METU Department of Psychology (GPA: 4.00/4.00)	-
MSc	METU Department of Psychology (GPA: 4.00/4.00)	2009
BSc	METU Department of Psychology (GPA: 3.80/4.00)	2006
Minor	METU Department of Sociology (GPA: 3.64/4.00)	2006
High School	Hüseyin Avni Sözen Anatolian High School, İstanbul (GPA: 4.75/5.00)	2002

SCHOLARSHIPS

The Scientific and Technological Research Council of Turkey (TUBITAK) -
National Scholarship Programme for PhD Students (2009-2014)

The Scientific and Technological Research Council of Turkey (TUBITAK) - National Scholarship Programme for MSc Students (2006-2009)

AWARDS

METU Graduate School of Social Sciences Graduate Courses Performance Award (2006-2007 Academic Year)

METU High Honour Roll (Fall and Spring Semesters in Academic Years 2002-2003, 2003-2004, 2004-2005, 2005-2006)

WORK EXPERIENCE

Time	Place	Enrollment
October, 2009-continued	METU, Department of Psychology	Research Assistant
September, 2011-June, 2012	Hacettepe University, Faculty of Medicine, Adult Hospital, Department of Psychiatry	Intern Clinical Psychologist
September, 2010-June, 2011	METU, Department of Psychology, Clinical Psychology Unit (AYNA)	Clinical Psychologist
February-June, 2008	Hacettepe University, Faculty of Medicine, Adult Hospital, Department of Psychiatry	Intern Psychologist
September, 2007-January, 2008	Hacettepe University, Faculty of Medicine, İhsan Doğramacı Children's Hospital, Department of Child and Adolescent Psychiatry	Intern Psychologist
February-June, 2007	Ankara University, School of Medicine, Department of Psychiatry, Consultation and Lieson	Intern Psychologist

PUBLICATIONS

Kocak, G., & Fisiloglu, H. (2010). *A validity and reliability study of the Sexual Self-Schema Scale among undergraduate students* [Cinsel Benlik Şeması Ölçeği'nin üniversite örnekleminde geçerlik ve güvenilirlik çalışması]. *Klinik Psikiyatri Dergisi*, *13*, 159-169.

PRESENTATIONS

Yucetin, L., İkizer, G., Yavuz, H. A., Tekin, S., Tuncer, M., & Demirbas, A. (September, 2014). *Post-traumatic growth of living kidney donors*. Paper presented at the 14th Congress of the Middle East Society for Organ Transplantation, İstanbul, Turkey.

Ikizer, G., Dogulu, C., & Karanci, A. N. (July, 2014). Psychological impacts of earthquakes and psychological resilience. In A. N. Karanci (Chair), *Earthquakes: psychosocial effects and risk perception*. Symposium conducted at the 28th International Congress of Applied Psychology, Paris, France.

Ikizer, G., Karanci, A. N., & Dogulu, C. (July, 2014). *Differential effects of objective and subjective exposure severity on PTSD symptom clusters among earthquake survivors from Turkey*. Paper presented at the 28th International Congress of Applied Psychology, Paris, France.

Dogulu, C., Karanci, A. N., Ikizer, G., & Parin, S. (January, 2014). *Indicators of community resilience to disasters* [Afetlere karşı toplumsal dayanıklılık göstergeleri]. Paper presented at the 16th Round Table Meeting of Disaster Management Center, Middle East Technical University, Ankara, Turkey.

Karanci, A. N., Kose, M. R., Parin, S., Juelich, S., Ikizer, G., & Dogulu, C. (October, 2013). *Participatory workshop on evaluation and implementation of community resilience indicators*. Workshop conducted at the 2013 International Van Earthquake Symposium, Van, Turkey.

- Karanci, A. N., Kose, M. R., Parin, S., Ozceylan, D., Ikizer, G., & Dogulu, C. (October, 2013). *Community resilience following the Van earthquakes: Preliminary findings from the emBRACE Project*. Paper presented at the 2013 International Van Earthquake Symposium, Van, Turkey.
- Karanci, A. N., Ikizer, G., Dogulu, C., & Ar, Y. (July, 2013). *How do Turkish earthquake survivors perceive psychosocial impacts and psychological resilience?* Poster presented at the 13th European Congress of Psychology, Stockholm, Sweden.
- Karanci, A. N., Ikizer, G., & Dogulu, C. (January, 2013). *Community resilience to disasters: the emBRACE project* [Afetlere karşı toplumsal dayanıklılık: emBRACE projesi]. Poster presented at the 15th Round Table Meeting of Disaster Management Center, Middle East Technical University, Ankara, Turkey.
- Kocak, G., & Fisiloglu, H. (July, 2011). *An investigation of sexual self-schemas in marital relationships*. Poster presented at the 12th European Congress of Psychology, İstanbul, Turkey.
- Kilic-Demir, B., Sercan, M., & Kocak, G. (June, 2011). *Childhood traumas in paranoid schizophrenia*. Poster presented at the World Psychiatric Association Thematic Conference, İstanbul, Turkey.
- Kocak, G., & Fisiloglu, H. (December, 2010). *Psychometric properties of the Sexual Self-Schema Scale* [Cinsel Benlik Şeması Ölçeği'nin Psikometrik Özellikleri]. Poster presented at the 8th National Congress of Sexuality and Sexual Treatments, İstanbul, Turkey.
- Kocak, G., & Fisiloglu, H. (December, 2010). *Examination of sexual self-schemas in the context of marital relationships* [Evlilik ilişkileri bağlamında cinsel benlik şemalarının incelenmesi]. Poster presented at the 8th National Congress of Sexuality and Sexual Treatments, İstanbul, Turkey.

Lajunen, T., Kocak, G., & Pur, I. G. (September, 2006). *Do anger and anxiety affect behaviors of individuals in traffic? An analysis of anger and anxiety levels of drivers and pedestrians* [Öfke ve kaygı bireylerin trafikteki davranışlarını etkiler mi? Sürücü ve yayaların trafikteki kaygı ve öfke seviyeleri üzerine bir analiz]. Poster presented at the 14th National Congress of Psychology, Ankara, Turkey.

PROJECTS & OTHER WORKS

Psychosocial Support in Disasters online course as part of the web-based Natural Disaster Risk Management Program by World Bank - GFDRR (Global Facility for Disaster Reduction and Recovery) and METU Disaster Management Center – (May 2014 – continued) – *Course developer/facilitator*

emBRACE (Building Resilience Amongst Communities in Europe) Project [supported by the European Commission under the Environment (including climate change) Theme of the 7th Framework Programme for Research and Technological Development; FP7-ENV-2011-1; grant agreement no. 283201] – (October 2011 – continued) – *Researcher*

European Journal of Psychotraumatology (November 2010 – continued) – *Translator in editorial team*

APPENDIX H

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü	<input type="checkbox"/>
Sosyal Bilimler Enstitüsü	<input checked="" type="checkbox"/>
Uygulamalı Matematik Enstitüsü	<input type="checkbox"/>
Enformatik Enstitüsü	<input type="checkbox"/>
Deniz Bilimleri Enstitüsü	<input type="checkbox"/>

YAZARIN

Soyadı: İkizer
Adı: Gözde
Bölümü: Psikoloji

TEZİN ADI (İngilizce): Factors Related to Psychological Resilience among Survivors of the Earthquakes in Van, Turkey

TEZİN TÜRÜ: Yüksek Lisans Doktora

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

TEZİN KÜTÜPHANEYE TESLİM TARİHİ: