DEVELOPING EFFECTIVE NARRATIVE INTERVENTIONS FOR EARTHQUAKE SURVIVORS

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Abstract

Disasters are events that challenge both the social and individual ability to adapt, carrying the risk of adverse mental health outcomes. High prevalence rates of Post Traumatic Stress Disorder (PTSD), anxiety, and depression have been found after disasters among affected adults and children, and PTSD is the most distinct and common disorder. However, the challenge of providing sufficient numbers of mental health professionals is the most critical issue facing health-care systems throughout the world, and especially in developing countries. The 2008 Sichuan earthquake in China had enormous destructive power and affected millions of people. Given the large number of people involved – and the shortage of resources in any major disaster – brief, pragmatic, and easily trainable interventions are needed for both adult and child survivors.

In the context of the Sichuan earthquake, this thesis describes a research work aimed at: (1) investigating the extent and nature of earthquake-related distress and positive change experienced by the targeted survivor population, and exploring the factors that predict these distresses and changes, (2) examining the effectiveness of narrative exposure therapy (NET) in adult survivors, and (3) examining the effectiveness of written narrative strategies for child survivors in the school setting.

To achieve these aims, a cross-sectional survey (N=120) was conducted to explore the psychological morbidities, risk, and protective factors as well as predictive models of PTSD and positive change at 1.5 years after the Sichuan earthquake. It highlights the mental health problems after the earthquake, and provides the background information for the subsequent intervention studies. Sequentially, effectiveness of the narrative exposure therapy was assessed within Chinese adult survivors and modified appropriately via two RCT studies using waiting list control.

In the NET-1 study, 22 survivors with diagnosed PTSD were recruited and received the NET treatment. The results supported the effectiveness of NET for treating Chinese earthquake survivors. In the NET-2 study, NET was adapted according to the feedback and practical implications from the NET-1 study. Thirty participants with newly diagnosed PTSD were recruited. Twenty of them were treated by the NET-R, and the other 10 participants were treated by the original NET. The revised NET showed a similar intervention effect to the original NET in reducing PTSD symptoms anxiety, depression, general distress, and negative change, and promoting positive change following adversity.

In the child intervention studies, a short, inexpensive and easily applied written narrative intervention called Guided Narrative Techniques (GNT) was developed and evaluated with traumatised children in the school setting through two studies. The first study was conducted with 108 sixth grade children (11-12-years old) from three classes in a single primary school, in the earthquake area. Two classes were randomly assigned to the GNT group, and one class was assigned to the expressive writing group that was given simple verbal instruction. The results indicated that if the writing instructions of the programme were fully followed through by the children, GNT might function better on reducing the posttraumatic symptoms than the expressive writing in a short time. However, a low level of writing adherence was reported, indicating that written narrative strategies may not be suitable for traumatised early adolescents.

In the second child study, the GNT protocol was improved to enhance the writing adherence of children. Eighty-two Chinese fourth grade children (9-10-years-old) from three classes were recruited as participants in the writing programme. One class was randomly assigned to the GNT group; one class was assigned to the GNT condition with encouragement (GNTE group); and one class was assigned to the control group with mixed expressive writing and painting (MEWP) without specific

guidelines. The results indicated that all three written narrative strategies appeared to be efficient concerning post-disaster resilience for Chinese school children. The GNTE showed most rapid, stable and extensive effects, indicating its advantages over the other two conditions.

The research provides evidence for the applicability and effectiveness of narrative interventions in the Chinese earthquake survivor population. It attempted to facilitate the wider dissemination of psychological interventions to promote recovery from traumatic stress after major disasters. The findings help advance current knowledge in the management of PTSD after natural disasters in developing areas, contribute to the validation of PTSD theories, and inform future research.

Published work

The thesis contributions have essentially extended the body of scientific research into posttraumatic stress, psychotherapy, and disaster resilience research areas. In an ongoing process, the work has been disseminated to both academia – through conference inputs, book chapters, and journal articles – and health organizations, via meetings and direct contact.

Parts of this thesis have been published in the following refereed publications:

- **Zang, Y.**, Hunt, N., & Cox, T. (2013). A randomised control pilot study: The effectiveness of Narrative Exposure Therapy with adult survivors of the Sichuan Earthquake, ***BMC Psychiatry***, *13(1)*, *41*. - (CHAPTER 5)

- **Zang, Y.**, Hunt, N., Cox, T., & Joseph, S. (2012). Short form of the Changes in Outlook Questionnaire: Translation and validation of the Chinese version, ***Health and Quality of Life Outcome****, 10, 41*. - (CHAPTER 3)

- **Zang, Y.**, Hunt, N., & Cox, T. *(in press*). Resilience and implications from writings of children traumatised by the earthquake: Evaluation of a Guided Narrative Technique. In O. Bray & P. Bray (Eds.), ***Voicing Trauma & Truth: Narratives of Disruption & Transformation****.* Oxford: Inter-disciplinary Press. - (CHAPTER 7)

- **Zang, Y.**, Hunt, N., & Cox, T. (2011). The effect of a Guided Narrative Technique among children traumatised by the earthquake. In C. Barrette, B. Haylock, & D. Mortimer (Eds.), ***Trauma imprints: Performance, art, literature and theoretical practice*** *(pp. 273-282).* Oxford: Inter-disciplinary Press. - (CHAPTER 7)

The works described in Chapters 5 and 7 have also been presented for discussion at the following conferences and seminar:

- **Zang, Y.**, Hunt, N., & Cox, T. (2011). Guided Narrative Technique: A group psychosocial intervention for children in school setting after the Earthquake. *In:* School of Community Health Sciences, Annual Postgraduate Research Conference. Nottingham, UK

- **Zang, Y.**, Hunt, N., & Cox, T. (2011). The effect of a Guided Narrative Technique among children traumatised by the earthquake. *In:* 1st Global Conference

Trauma: Theory and Practice, Prague, Czech Republic

- **Zang, Y.**, Hunt, N., & Cox, T. (2010). The Effect of Narrative Exposure Therapy on Chinese Earthquake Survivors. *In:* International Conference on Traumatic Stress, Nottingham, UK

- **Zang, Y.**, Hunt, N., & Cox, T. (2010). Reducing the PTSD Symptoms of Earthquake Survivors. *In:* PsyPAG Conference 2010, Sheffield, UK

Outside the thesis work, and in addition to the publications listed above, the author has co-authored the following publication throughout her Ph.D candidature.

- Wang, Y., **Zang, Y.**, & Chen, W. (2011). From "chameleon effect" to "mirror neurons" and to "echopraxia" – Human mimicry is a product of social interaction. ***Advances in Psychological Science****, 19(6),* 916-924.

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Finally, this thesis represents a culmination of work, passion, and commitment to address issues and concerns regarding the earthquake survivors of the Sichuan earthquake in China. It is dedicated to those individuals striving to make a difference and raise awareness in their own way, and especially to those who have faced all sufferings strongly and have survived every hardship with courage, faith, wisdom, and, above all, humility.

In the end, all things and all knowledge belong to God.

Through him all things were made; without him nothing was made that has been made.

--------*John 1:3*

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Chapter 1: Introduction

1.1 Chapter overview

This chapter presents a broad overview of the research work reported in this thesis. It describes the background to the problems, context for research, and the storyline of the thesis. The chapter concludes by summarising the contributions of the thesis and discussing the importance of the present work.

1.2 Background and context

On May 12, 2008, a devastating earthquake measuring 8.0 on the Richter scale struck Sichuan Province, in the Southwest of China. A total of 69,159 people were confirmed dead; 35,229 were seriously injured; 26,221 were reported missing (Sohu, 2008). More than 10 million people became homeless, and the affected region covered 252,000km, making it one of the deadliest natural disasters in history. Like most natural disasters in China, the earthquake happened in the rural districts. The exposed people were of low socioeconomic status and lacked resources. They were among the most vulnerable populations to the direct impact of an unpredictable destructive disaster. Various studies indicate that earthquakes lead to psychiatric morbidity, e.g. posttraumatic stress disorder (PTSD), depression, anxiety, sleep disorder, and substance abuse (Armenian et al., 2002; Briere & Elliott, 2000; Kuo et al., 2003; Livanou, Başoğlu, Salcioğlu, & Kalendar, 2002; Wang & Brockmeier, 2002). The increased prevalence or incidence of these adverse health outcomes associated with a disaster results in a heavy psychosocial burden for the individual, the family, society and all healthcare systems (Noffsinger, Pfefferbaum, Pfefferbaum, Sherrib, & Norris, 2012; Norris, Friedman, & Watson, 2002). The shortage of resources in

developing areas makes it hard for psychiatric services to reach the population in need or have no evidence-based therapeutic benefit.

Most studies about this earthquake are epidemiological research aiming at estimating the prevalence or incidence of PTSD and related psychological morbidity to quantify the public health burden of the disaster (e.g. Jia et al., 2010; Lau et al., 2010; Ren, Deng, & Hsu, 2011; Wang et al., 2009; Yu et al., 2010). Few studies provide evidence on the effectiveness of certain interventions, or treatments applied in this or similar settings. Much of the PTSD intervention research was conducted in the Western world or developed countries, and it is not clear how these Western-developed interventions might be applied elsewhere. Furthermore, the gap between the many people in need of psychological assistance in the affected communities, and the lack of qualified mental health professionals or counsellors, is a major reason for the lack of scientific mental health provisioning after the earthquake. Many survivors were traumatised secondly because of the improper work of untrained and inexperienced psychological or social workers (Chen, Wang, & Liu, 2009).

Compared with adults, children are particularly vulnerable in natural disasters as they are in the early stages of development (Schwarz & Perry, 1994). High prevalence rates of psychiatric problems among disaster-exposed youth are reported and could lead to long-term mental health consequences (Dyregrov & Yule, 2006). A study showed that, in the absence of therapy, the prevalence of depression among child survivors increased from 35% at 18 months to 75% at 36 months (Goenjian et al., 1997). Some studies showed that adolescents with PTSD were more likely than those without PTSD to possess suicidal ideation and make suicidal attempts (Giaconia et al., 1995). However, few studies have developed or evaluated the effectiveness of group-based interventions that could be applied within schools.

Given the large number of people involved, and the shortage of resources in any major disaster, any psychotherapeutic intervention must be simple, low-cost, quick, and easy for local personnel to learn and use, even where there is little or no access to medical or psychological education. Furthermore, the method must be adaptable to Chinese cultural environments. Studies regarding the effectiveness of simple and low-cost interventions are needed.

Furthermore, the author's experience after the earthquake while providing assistance resulted in thoughts beyond an exclusively negative aftermath following traumatic events. In the hospital, it was possible to witness victim inpatients' shock at the big gap between their former tough life and the unimagined treatment as honoured guests in one of the best hospitals in the country. One of the patients the author assisted was a 67-year-old female peasant. She kept silent for three days, but could not stop talking on the fourth evening. She narrated her whole life story, even though the author could not fully understand her dialect. Three hours later, she expressed her confusion about what exactly the earthquake meant to her. She was sad and angry about the earthquake and her injury, but still felt lucky to have the chance of being in a different place and of receiving so much attention from the public. She believed the experience allowed her understand the development of the nation, and today's society.

Over the past decade, a large and growing literature documents that people identify positive ways in which their lives have changed as a result of the traumatic event. The names assigned to these positive changes vary tremendously, but are most frequently referred to as "posttraumatic growth", "stress-related growth", "benefit finding" or "positive change" (Linley & Joseph, 2004). Positive change is a theoretical concept that has been established within a Western cultural framework, which emphasizes the individuality, uniqueness, and internal attributes of people.

Chinese people are more relational and interdependent, and emphasize the social context in comparison to their Western counterparts (Ho, 1999). It is logical to expect that such differences should be relevant to the phenomenon of posttraumatic growth. Although natural disasters are frequent in China, few studies have been published on growth following adversity in Chinese populations, especially on the initial exploration of this phenomenon.

1.3 Aims and objectives

In an attempt to address the above issues, this thesis sought to apply, develop, and evaluate narrative interventions in Chinese earthquake survivors. Narrative is the manifestation of autobiographic memory. Disrupted autobiographic memory is a main feature of the maladaptive processing of traumatic events in PTSD (Brewin & Holmes, 2003). The construction of a consistent autobiographical representation of traumatic events is essential in aiding recovery (Neuner, Catani, & Ruf, 2008). Narrative is common to all cultures; it is likely that narrative intervention will be appropriate for Chinese earthquake survivors.

The thesis presents the research work from two perspectives:

1. The application and revision of individual-based Narrative Exposure Therapy (NET) in adult earthquake survivors.

2. The development and application of school-based written Guided Narrative Techniques (GNT) for child earthquake survivors.

The main targeted variables are PTSD symptoms, relevant psychiatric morbidities, changes in outlook, perceived social support, and coping. It tries to facilitate the wider dissemination of psychological interventions to promote recovery from traumatic stress in the situation of large-scale disaster, and to explore the

psychological impact of natural hazard through survivors' narratives.

1.4 Thesis importance and contributions

The present work serves the threefold purpose of bridging theory, research, and practice. First, past research is Western dominated, and the influence of social context on the psychotherapy outcome is not clear. There is a distinct lack of sound, empirical support for the effects of simple, low-cost treatment after disasters in less developed area for victims of low socioeconomic status. The findings of the present work clarify, and make more concrete, evidence of these effects. Second, this research sheds light on the underlying mechanisms and psychological processes involved in the PTSD and traumatic memory. Finally, the findings offer useful information for governmental and non-governmental organisations in providing psychological service after disasters and implementing long-term assistance.

1.5 Chapter map

Primary descriptions of the coverage of each chapter are presented below. A clear map is presented in Figure 1.1 to illustrate the thesis storyline.

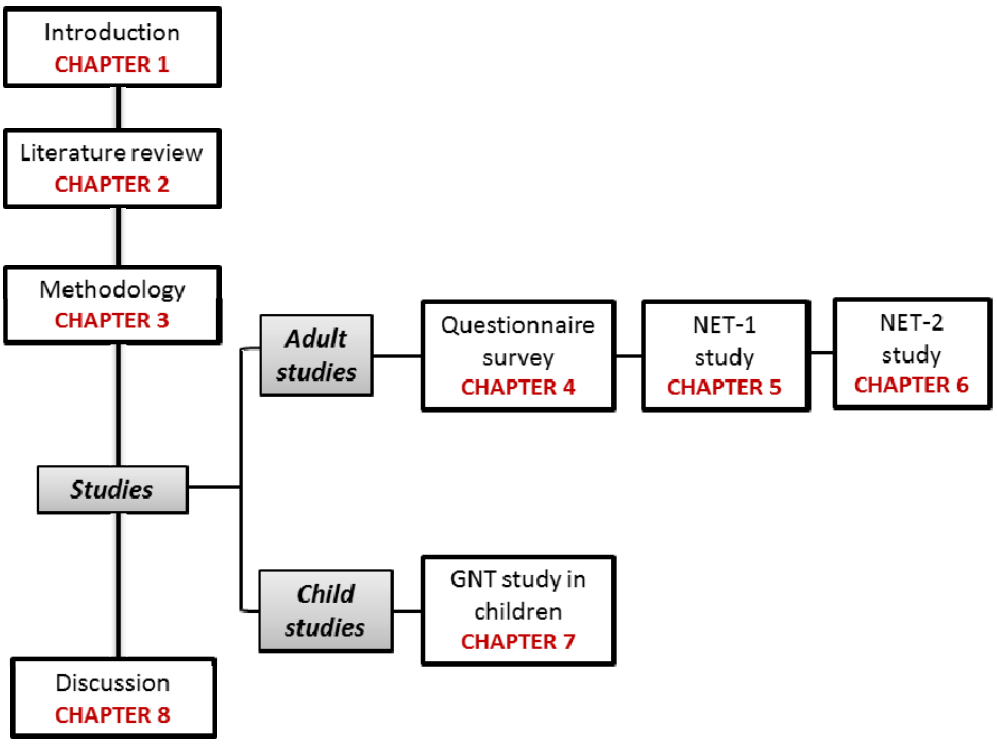


Figure 1.1 Thesis structure

1.5.1 Literature review

CHAPTER 2 will review previous psychological trauma research from two general perspectives. First is the negative effect, which focuses on PTSD and related psychiatric morbidity (e.g. depression and anxiety), its theories, risk, and protective factors. The empirically-supported treatments are introduced, but some practical weaknesses of these therapies limit their application and dissemination in the context of a major disaster. Consequently, two narrative treatments – *narrative exposure therapy* (NET) and *expressive writing* (EW) – are proposed and introduced in terms of their potential of being beneficial to disaster survivors. Second is the positive prospect, which focuses on the positive change following adversity of its theories, related factors, and cross-cultural issues. The review examines evidence of the relationship between the traumatic memory and PTSD pathology and adjustment. At the end, an introduction of the Sichuan earthquake is provided to

inform the context of the research programme. Finally, it ends with a conclusion of present theoretical and practical gaps, and objectives of the empirical studies of the current research programme.

1.5.2 Methodology

CHAPTER 3 will highlight the specific research questions, and discuss the appropriate methodologies for approaching the topic. On the basis of evidence from the literature review, and exploration of the possible theoretical frameworks and research designs, the chapter argues that the most appropriate way to obtain an integral overview of the targeted study population, and evaluate the narrative interventions, is to use a combination of cross-sectional survey and randomised controlled trials involving the collection of self-reported quantitative data from participants. The chapter then concludes by discussing the research design that was adopted for data collection, and addressing the practical and ethical issues of sampling, measurement, and administration.

1.5.3 The extent and impact of the earthquake: A cross-sectional survey

For the purpose of obtaining an overall picture of the adult study population, CHAPTER 4 reports a cross-sectional survey investigating the impact of the earthquake in a sample of 120 survivors in Beichuan, China. This chapter addresses the extent and nature of earthquake-related distress and growth experienced by the Chinese earthquake survivors, and the factors that predict these distresses and growth. It also recognises two models for the PTSD and positive change. Moreover, two narrative examples obtained in the data collection process are presented to provide a direct intuitive view of the traumatic memory and narrative. The findings

of this chapter provide an integral understanding of survivors' mental health status after the earthquake and help the recruitment for the following evaluation studies.

1.5.4 The effectiveness of Narrative Exposure Therapy within Chinese earthquake survivors: A pilot waiting list control study (NET-1 study)

CHAPTER 5 reports the randomized waiting-list control pilot study of using NET with 22 Chinese earthquake survivors. The results support the effectiveness of NET in this setting, and shows NET can not only reduce psychological distress, but also promote positive changes. The mechanism underlining NET on these variables are discussed. The feedback and practical implications from adult survivor participants, which warrant possible revisions for NET to be more adapted to victims of single trauma without a perpetrator, provide the basis of the following chapter.

1.5.5 Revising Narrative Exposure Therapy for earthquake-related posttraumatic stress: A randomised waiting list controlled study (NET-2 study)

In light of the implications from CHAPTER 5, NET was revised to a more intensive and adaptable version for Chinese earthquake survivors in CHAPTER 6. It presents the revisions and compares the revised NET with the original NET in 30 adult survivors by a randomised controlled trial. Both NET and NET-R are found to be effective in treating posttraumatic stress and leading posttraumatic growth in adult participants. Besides, treatment effects are also revealed on coping and perceived social support. It justifies the revisions, discusses the potential mechanism of NET-R, and highlights that the progressive post-quake reconstruction may contribute to

extended effects of NET and NET-R. This chapter contributes to the facilitation of the application of a narrative therapy, which originated from complex PTSD, after a single natural disaster.

1.5.6 The effect of a Guided Narrative Technique among children traumatised by the earthquake (GNT study)

CHAPTER 7 focuses on the studies investigating the outcome of narrative intervention on child survivors. A narrative intervention called Guided Narrative Technique (GNT) is developed and applied in 190 students traumatised by the earthquake. GNT is a written narrative intervention adapted from expressive writing. Two RCT studies examining the effectiveness of GNT are reported. The findings show narrating traumatic memory and expression of one's feelings about the event decreased psychological distress, helped youth cope with conflicts more actively and adaptively, and promoted post-disaster growth. However, some harmful effects are also revealed, indicating that an incomplete developed narrative could trigger more reported symptoms among early adolescents. The chapter also discusses the practical issues when implementing the GNT in school. It concludes that GNT could be used as a simple group intervention for children in promoting active trauma coping, distress releasing, and screening the children who need further help.

1.5.7 General discussion, implications, and future research

CHAPTER 8 summarises the evidence obtained from the investigation and evaluation studies. The implications of the research results for theory, method, practice, and policy are discussed. Some theoretical and methodological issues arising from this research will also be acknowledged and elaborated. The chapter concludes by highlighting the contributions that the thesis has made to treat the traumatised

population after large-scale disasters, and presents suggestions for further research, which can be undertaken in continuation of this work.

1.6 Chapter summary and conclusions

In this chapter, the background of the research was contextualised, and the problem areas were presented. More importantly, this introductory chapter has justified the need for the present work, and described the scope of the research, including the content of each chapter. Having set the scene, the next chapter provides a review of key research and literature that have informed this work and assisted in further development and refinement of the research objectives.

Chapter 2: Literature review

2.1 Introduction

This chapter presents a review of the literature that summarises and synthesises the existing evidence, theories, and empirical work on the psychological influences and interventions after disasters. It also provides a comprehensive introduction of the 2008 Sichuan earthquake. It informs the present work of the current state of evidence on this issue, and about key gaps in the knowledge and practice in need of further scientific exploration.

This chapter firstly discusses the psychological influences of disaster from two aspects; the negative impacts and the positive prospects. It provides an overview of the scope and prevalence of the psychological morbidity and public burdens raised by the disaster, suggesting that a cost-efficient mental health service is needed, especially in developing countries. Subsequently, posttraumatic stress disorder (PTSD), as the most distinct disorder after traumatic events, is reviewed in detail in terms of its diagnosis, theories, risk and protective factors and treatments. It ends with the discussion about the distribution conflict of the psychological resources, and cross-cultural practical gaps. Subsequently, two narrative strategies; *narrative exposure therapy* (NET) and *expressive writing* (EW) are introduced regarding mechanism, therapeutic effectiveness, and potential to serve as simple, low-cost and efficient interventions to be applied in the aftermath of large-scale disasters. After that, the positive prospect – *Positive changes following adversity*, or *posttraumatic growth* (PTG) – is discussed in terms of its phenomena, terminology, theories, and issues. This is followed by a proposition that the impact of intervention on positive change is essential to understand its development and improve

resilience. Finally, the situation of 2008 Sichuan earthquake is described. The destructive force, societal post-reactions, and psychological burden are introduced. The chapter concludes with the suggestion that the findings of the review provide the basis for the necessity of conducting empirical studies to provide evidence of effective interventions, which can contribute to facilitating the wider dissemination of psychiatric services and promoting post-disaster resilience in developing areas.

2.2 Negative impacts of disasters

Disasters are destructive occurrences that disrupt and overwhelm entire communities, confront every society, and affect millions worldwide in a given year (International Federation Of Red Cross And Red Crescent Societies [IFRC], 1998). There is evidence that the incidence of disasters is increasing (IFRC, 2004), with one estimate placing the frequency at an average of one per day somewhere throughout the world (Norris et al., 2002). Whether by earthquake or hurricane, flood or drought, mass transportation incident or nuclear mishap, these various events affect many people simultaneously and engender an array of stressors, including the threat to one's own life, physical integrity, exposure to the dead, dying, bereavement, profound loss, social and community disruption, and ongoing hardship.

2.2.1 Psychological consequences

Psychological problems are the most common outcome of disasters (Norris et al., 2002). The potential mental effects of the affected population are highly variable, ranging from minimal and fleeting to severe psychological distress or impairment that may persist for many years after the event. During the minutes and hours that follow a potentially traumatic event, acute reactions are ubiquitous and unstable,

and typically involve any or all of a number of factors including anxiety, depression, agitation, anger, despair, shock, withdrawal, hyperactivity, conversion, and dissociation. Within a few days, and as early as one day after exposure, these initial acute responses are replaced with other psychological symptoms. Increased prevalence of psychological morbidity, for example, posttraumatic stress disorder (PTSD), major depression disorder (MDD), general anxiety disorder (GAD), panic disorder, sleep disorder, and substance abuse (Deering, Glover, Ready, Eddleman, & Alarcon, 1996; Goenjian, 2000; Maj et al., 1989; Rubonis & Bickman, 1991) have been found to be associated with disasters.

Of the specific psychological problems reported among survivors of a disaster, PTSD has been found to be the most commonly identified condition (Maj et al., 1989), both in Western countries (Acierno et al., 2007; Altindag, Ozen, & Sir, 2005; Brown, Fulton, Wilkeson, & Petty, 2000) and Asian countries (Kumar et al., 2007; Lai, Chang, Connor, Lee, & Davidson, 2004; Shinfuku, 2002; Wang et al., 2000).

Prevalence figures of PTSD vary depending upon various factors, including the nature of the disaster, duration following disaster, assessment tool used, cultural issues regarding the meaning of trauma, support available, and so on. Overall studies of natural disasters report PTSD prevalence ranging from 3.7% (Canino, Bravo, Rubio-Stipec, & Woodbury, 1990) to 60% (Madakasira & O'Brien, 1987) in the first one-to-two years after the disaster, with most studies reporting prevalence estimates in the lower half of this range (Liu et al., 2006; Norris, Murphy, Baker, & Perilla, 2004; Parslow, Jorm, & Christensen, 2006). However, higher prevalence estimates of PTSD have been reported in specific groups, such as clinical samples (Livanou et al., 2002; Soldatos, Paparrigopoulos, Pappa, & Christodoulou, 2006) and populations in areas heavily affected by the disaster (Finnsdottir & Elklit, 2002; Najarian, Goenjian, Pelcovitz, Mandel, & Najarian, 2001).

Depression and anxiety, as distinct and frequently comorbid symptoms, have been found to be comorbid with PTSD in many studies (Goenjian et al., 1995; McMillen, North, & Smith, 2000), observed in 36% and 20% respectively of disaster survivors evaluated by Norris et al (2002). Although less prevalent than PTSD, depression and anxiety have been diagnosed at higher than normal levels in disaster-stricken samples when structured diagnostic measures were used (Galea, Nandi, & Vlahov, 2005).

Compared with adult survivors, children are particularly vulnerable to disaster trauma (Kar, 2009). Post-traumatic stress symptoms have been documented among children after natural disasters in a number of studies. Following natural disasters (including earthquakes, cyclone, hurricanes, flood, tsunami), the prevalence of PTSD varied from around 5% to more than 43% (Asarnow et al., 1999; Kar & Bastia, 2006; Shannon, Lonigan, Finch, & Taylor, 1994). In a five-to-eight year follow-up study of the sinking of the cruise ship Jupiter, about a third of children who developed PTSD recovered within one year of the disaster, but in around another third of these cases, the disorder persisted over the five-eight year follow-up period (Yule et al., 2000). Some 57% of survivors also developed other anxiety and affective disorders and the prevalence and persistence of these were highest among children who developed PTSD (Bolton, O'Ryan, Udwin, Boyle, & Yule, 2000). Comorbidities and sub-clinical psychiatric syndromes among children are also common, including depression, anxiety, panic disorder, adjustment disorder, and phobias (Kar & Bastia, 2006; Kar, 2009).

2.2.2 Burdens and needs in the aftermath of the disaster

Apart from psychological problems, nonspecific distress, concomitant problems relating to general health, chronic problems in living area attributable to secondary

stressors, and depletion of psychosocial resources, reflect the collective experience of disaster survivors. With regard to youth, specific problems including clinginess, dependence, refusing to sleep alone, aggressive behaviour, hyperactivity, incontinence and separation anxiety are also identified (Norris et al., 2002).

There is a strong suggestion that collective community losses, such as the destruction of infrastructure, loss of essential services, and potential displacement and relocation of large numbers of people, contribute to disaster outcomes (Najarian et al., 2001; Phifer, 1990). Under normal circumstances, communities provide a hub of psychosocial resources that contribute to well-being. Deficits in these resources diminish self-reliance and optimism, and may mediate the effects of acute and long-time psychological responses, further influencing outcome. Moreover, rebuilding the community can be difficult when a large proportion of its residents is affected by mental disorders (Norris et al., 2004), which is further compounded when existing mental health resources are scarce at the time of disaster or diminishing as a result of disaster (Murthy, 2005).

According to the World Health Report (2003), the challenge of providing sufficient numbers of mental health professionals is the most critical issue facing health-care systems throughout the world, and especially those of developing countries. Therefore, disasters occurring in developing countries tend to cause greater impairment in public health than those in developed countries (Norris et al., 2002).

In terms of children, studies have noted that parents, teachers, and even mental health professionals significantly underestimate both the intensity and duration of the stress reactions in children (Kar, 2009). Depending upon the developmental stage, level of cognitive and emotional maturity, and limited coping strategies, the psychological reactions in children are expected to be different from those in adults. Besides, methods of intervention for children following disasters understandably

vary from adults. However, notwithstanding high prevalence rates and a significant impact on public health, there are relatively few published studies evaluating the efficacy of interventions in this area for children (National Institute of Clinical Excellence, 2005). One reason for the lack of child-targeted intervention is that disaster management has largely been administrated by top-down relief efforts targeted at adults, who are assumed to act harmoniously to reconcile the needs of their families and the wider community. Whilst a growing number of development approaches focus on reducing the risk of negative outcomes to disasters, they tend to treat children as passive victims with a limited role to play in communicating risks or responding to disasters. This reflects a common practice within psychology; a failure to recognise the level of psychological sophistication displayed even by young children. The ability of children to act to reduce their vulnerabilities to disasters has been largely ignored outside of the development field. Most literature on the role of children in disasters is devoted to the psychosocial impact (Norris et al., 2002).

In summary, disasters are events that challenge both the social and individual ability to adapt, which carries the risk of adverse mental health outcomes including serious posttraumatic psychopathologies. It invites a public health approach to mental health that better serves the needs of the individual and the affected community. Given the number of people involved and shortage of resources in any major disaster, brief, pragmatic and easily trainable interventions for both adults and children are needed. Studies examining the effectiveness of these interventions, especially in the developing districts, are encouraged.

2.3 Post-traumatic Stress Disorder: The most identified condition after the traumatic event

2.3.1 The diagnosis criteria of PTSD

PTSD was first recognised as a diagnostic entity in 1980, when it was included in the DSM-III (Diagnostics and Statistical Manual of Mental Disorders) (1980) by the American Psychiatric Association. It was revised for DSM-III-R(APA, 1987) and DSM-IV (APA, 1994). PTSD lists the characteristic symptoms following exposure to an extreme traumatic stressor – not just disaster, but also rape, war, and other forms of extreme stress. They are as following (from DSM-IV):

Criterion A: The person has been exposed to a traumatic event in which both of the following were present:

(1) The person experienced, witnessed, or was confronted with an event or event that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
(2) The person's response involved intense fear, helplessness, or horror.

Note: In children, this may be expressed instead by disorganized or agitated behaviour.

Criterion B: The traumatic event is persistently re-experienced in one (or more) of the following ways:

(1) Recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions.
Note: In young children, repetitive play may occur in which themes or aspects of the trauma are expressed.

(2) Recurrent distressing dreams of the event.
Note: In children, there may be frightening dreams without recognizable content.

(3) Acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback

episodes, including those that occur on awakening or when intoxicated).
Note: In young children, trauma-specific re-enactment may occur.

(4) Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

(5) Physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

Criterion C: Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:

(1) Efforts to avoid thoughts, feelings, or conversations associated with the trauma
(2) Efforts to avoid activities, places, or people that arouse recollections of the trauma
(3) Inability to recall an important aspect of the trauma
(4) Markedly diminished interest or participation in significant activities
(5) Feeling of detachment or estrangement from others
(6) Restricted range of affect (e.g., unable to have loving feelings)
(7) Sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

Criterion D: Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

(1) Difficulty falling or staying asleep
(2) Irritability or outbursts of anger
(3) Difficulty concentrating
(4) Hyper vigilance
(5) Exaggerated startle response

Criterion E: Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1 month.

Criterion F: The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

It must also specified whether the duration is of less than 3 months, in which case it is classified as "acute" or 3 months or more, in which case it is "chronic". It is classified as "delay onset" if the onset of symptoms occurs at least 6 months after the event.

PTSD also continues to attract controversy, for example with regard to the alleged pathologizing of normal events, the inadequacy of Criterion A, and symptom overlap with other disorders (Brewin, Lanius, Novac, Schnyder, & Galea, 2009). It may be refined and reformulated in the future of DSM-V (Brewin et al., 2009). Nevertheless, PTSD has proved to be a useful diagnostic category for people who are in need of treatment for traumatic stress, and help people understand the response to traumatic incidents. It has also been an effective heuristic, generating a great deal of research globally.

2.3.2 Theories: Understanding PTSD

For the development of effective treatment methods, it is essential to understand the psychological and biological processes that underlie PTSD. Researchers have attempted to develop theoretical models from different perspectives. The emotional processing of fear and the construction of memories of traumatic events has been widely studied. Brewin and Holmes (2003) reported that three main present theories of PTSD from different points of view were identified as having the most explanatory power for the current empirical findings and observed clinical symptoms in patients.

2.3.2.1 Emotional processing theory (Foa & Rathbaum, 1998)

Foa and her colleagues (Foa, Steketee, & Rothbaum, 1989; Foa & Rothbaum, 1998) developed the emotional processing theory and elaborated the relationship between PTSD and knowledge available prior to the trauma, during the trauma, and after the trauma.

First, they proposed that individuals with more rigid pre-trauma views would be more vulnerable to PTSD. These could be rigid positive views about the self as being

extremely competent and the world as extremely safe, which would be contradicted by the event. Rigid negative views about the self as being extremely incompetent and the world as being extremely dangerous, which would be confirmed by the event (see also Dalgleish, 2004).

Second, they place an increased emphasis on negative appraisals of responses and behaviours that exacerbated perceptions of incompetence. Those beliefs present around the time of trauma could interact to reinforce the critical negative schemas – which involve incompetence and danger that underlie chronic PTSD.

Third, Foa & Rothbaum (1998) elaborated a number of mechanisms thought to be involved in exposure treatment. It is suggested that the therapeutic environment can incorporate safety information into the trauma memory, and the trauma can be better discriminated and seen as a specific case rather than as one among many examples of a dangerous world. Repeated reliving prevents avoidance of the trauma memory, promotes the habituation of fear, and offers opportunities to experience the self as showing mastery and courage in the face of challenge. By reflecting on events in detail, the patient generates a more organised memory record that is easier to integrate with the rest of the memory system. In summary, exposure is thought to possess a number of separate effects; some are relatively automatic, such as a reduction in anxiety and change in memory structures, and others are more strategic, such as positive reappraisals of actions and events. The exposure therapy was systematically developed by Foa and colleagues (1998), and is well established as a highly effective treatment for PTSD (Foa, Rothbaum, Riggs, & Murdock, 1991; Foa et al., 1999).

Emotional processing theory has a great deal of explanatory power and is extremely comprehensive. It draws attention to many of the important aspects of PTSD that are likely to be encountered within therapy and offers many valuable suggestions to

clinicians about how to conceptualize these. For example, the observation that the rigidity of beliefs may be problematic, regardless of whether the content of beliefs is positive or negative is potentially of high importance. The increased emphasis on pre-trauma risk factors and appraisal processes has been strongly supported by research examining the relation of a successful outcome of exposure treatment with the initial activation of fear (Foa, Molnar, & Cashman, 1995; Jaycox, Foa, & Morral, 1998). However, the status of other aspects of the theory is less well established, particularly the hypothesized mechanisms of change. Associative network models have also been criticised for being too simple to capture complex clinical phenomena (Power & Champion, 1986; Teasdale & Barnard, 1995). Nevertheless, the theory is linked to a detailed outline of therapeutic procedure, and also offers a sophisticated account of the various mechanisms that may underlie the success of treatment using prolonged exposure.

2.3.2.2 Dual representation theory (Brewin, Dalgleish, & Joseph, 1996)

The characteristic of memory of a traumatic event has been recognised twofold. On the one hand, a person had very vivid recollections of the event, including many sensory details. On the other hand, it is very difficult for the victim to face the memories and learn to put the details into coherent speech and chronological order. Researchers propose that this is because traumatic events are stored differently from memories of everyday events (Van der Kolk & Fisler, 1995). This pathological representation of traumatic memories is what is responsible for the core symptoms of PTSD (Brewin, Dalgleish, & Joseph, 1996; Ehlers, Clark, Hackmann, McManus, & Fennell, 2005; van der Kolk, 1997).

To understand the pathological characteristics of traumatic memories, one way is to

posit that there are two (or more) memory systems and that trauma information is better presented in one system than in the other. The most prominent current theory regarding traumatic memory is Brewin's dual-representation theory (Brewin, Dalgleish, & Joseph, 1996), which proposes that there are two memory systems known as "verbally accessible memory" (VAM) system and "situationally accessible memory" (SAM). The two systems operate in parallel, but one may take precedence over the other at particular times. VAM memories of trauma contain information that the person has attended to before, during, and after the traumatic event, and contains sufficient information to be encoded and stored for later deliberate retrieval. These memories only contain what was consciously attended to. They may also contain the elaborated memories of the narrative, i.e. the elements which did not exist during the traumatic situation, but which the person has added to the information, either consciously or non-consciously.

In contrast with the VAM system, flashbacks and other trauma memories are contained within the SAM system, demonstrating that flashbacks are triggered involuntarily by external or internal reminders. The information is usually of a lower level, with more perceptual information from the scene of the trauma, i.e. information that has received no, or minimal, processing. Because the SAM system does not use a verbal code, these memories are difficult to communicate to others, and they do not necessarily interact with or get updated by other autobiographical knowledge. This is an important point, which explains why trauma memories are fragmented and uncontrolled, and why, in order to develop the narrative, a person must find ways of accessing the VAM.

Empirical and cognitive psychological research provided support of the two memory systems. Brewin and Saunders (2001) suggested that the concurrent visuospatial task reduced intrusive memories, and Holmes et al. (2004) showed that the verbal

task increased the number of intrusions relative to a control condition. These results support the claim of dual representation theory that intrusive trauma images are supported by a different memory system, one that is predominantly visuospatial, rather than verbal in nature.

The implications of the dual-representation approach are that PTSD is a hybrid disorder that has potentially two pathological processes. The first involves dealing with negative and shattered beliefs and assumptions and their accompanying emotions. The second involves managing classically conditioned flashbacks or other intrusive thoughts (Brewin & Holmes, 2003). Full recovery depends on both elements. To resolve the VAM problems, the person needs to reappraise the information, and reintegrate it into their schemata. Resolving SAM-related problems requires exposure therapy.

2.3.2.3 Ehlers and Clark's cognitive model (Ehlers & Clark, 2000)

Ehlers and Clark (2000) drew attention to the paradox in PTSD whereby patients feel anxious about the future, even though the trauma lies in the past. They proposed that pathological responses to trauma arise when individuals process the traumatic information in a way that produces a sense of the current threat, either an external threat to safety, or an internal threat to the self and the future. The sense of threat arises as a consequence of: (1) excessively negative appraisals of the trauma and/or its sequelae, and (2) a disturbance of autobiographical memory characterised by poor elaboration and contextualisation, strong associative memory, and strong perceptual priming. Changes in the negative appraisals and the trauma memory are prevented by a series of problematic behavioural and cognitive strategies.

Previous research has identified a wide range of relevant negative appraisals (Foa & Rothbaum, 1998). The different types of appraisal, variously involving danger,

violation of standards by self or others, or loss, explain the variety of emotions reported by patients with PTSD. Ehlers and Clark (2000) identified a specific frame of mind termed 'mental defeat', emphasising that prior experiences of traumatisation, weakness, or helplessness also increase the risk of appraising oneself as unable to act effectively, as being extremely vulnerable to danger, being the target of others' hostility, and so on. Ehlers and Clark's approach to explaining research findings on traumatic memory was to suggest that the memory of the event is poorly elaborated, not given a complete context in time and place, and inadequately integrated into the general database of autobiographical knowledge. This accounts for the difficulty in intentional recall (absence of clearly specified retrieval routes), reexperiencing in the present (absence of a temporal context), the lack of connection with other relevant information, and the easy triggering by physically similar cues. Ehlers and Clark (2000) developed a detailed account of the importance of maladaptive behavioural strategies and cognitive processing styles in maintaining the disorder. Among the behavioural strategies likely to cause PTSD to persist are active attempts at thought suppression, distraction, avoidance of trauma reminders, use of alcohol or medication to control anxiety, abandonment of normal activities, and adoption of safety behaviours to prevent or minimize trauma-related negative outcomes. Maladaptive cognitive styles include selective attention to threat cues and persistent use of rumination or dissociative responses.

Ehlers and Clark's cognitive model provides what is currently the most detailed account of the maintenance and treatment of PTSD. They have significantly expanded understanding of the wide range of relevant negative appraisals, and have identified both appraisals and a variety of cognitive coping factors that influence the course of the disorder. These aspects of the model have been strongly and consistently supported by empirical research (Clark et al., 2006; Ehlers et al., 1998; White, McManus, & Ehlers, 2008). Importantly, as with emotional processing theory,

these ideas are closely tied to an approach for treating PTSD.

2.3.2.4 Summary

It should be clear from the above description and discussion that different perspectives in psychology can all contribute to the understanding of traumatic memory and PTSD. There are a number of similarities between the models which all emphasise maladaptive processing of traumatic events. They also explain how a fragmented and disorganised memory, lacking in contextual information, results in a subjective sense of the current threat, as the traumatic event is indistinguishable from the present context. The three models also construe that the intrusive re-living phenomena associated with PTSD occurs through activation of the entire memory of the traumatic event following exposure to one or more internal or external cues, while they differ in their conceptualisation of how this occurs. All three theories agree that one of the benefits of reliving is the elaboration and contextualization of the trauma memory, but offer somewhat different explanations for why this process is helpful.

2.3.3 Protective and risk factors

Not every survivor of a disaster will show serious and lasting psychological disturbance. One can expect survivors within the stricken community to vary in their outcomes according to their severity of exposure and personal characteristics. A number of protective and risk factors for PTSD have been identified and shown to be influential across multiple studies.

2.3.3.1 Demographic characteristics

Gender

Women are consistently shown to have a higher prevalence of PTSD and comorbidity after disasters than men (e.g. Arata, Picou, Johnson, & McNally, 2000; Armenian et al., 2000). Researchers have proposed that women's and girls' subjective perceived excessive risk appears to be a moderator of their elevated vulnerability (Norris et al., 2002). Anderson and Manuel (1994) assessed reactions of college students to the Loma Prieta earthquake in California just one day after the event occurred. Women estimated that the earthquake lasted longer than did men. Another study found that girls were higher than boys on a subjective (but not objective) measure of hurricane exposure at six months after Hurricane Mitch in Nicaragua (Goenjian et al., 2001). From a neurobiological and behavioural prospective, the evidence of the difference of men and women regarding memories for emotional events (Cahill et al., 2001; Cahill, Uncapher, Kilpatrick, Alkire, & Turner, 2004) may account for the gender difference in morbidity after experiencing a traumatic event (Cahill, 2003).

Age

A review examining 160 samples of disaster victims (Norris et al., 2002) identified that samples of school-age youth tend to be more severely affected by disaster than samples of adults. Preschool children may not be highly affected. However, among adults, the age effect declined in lots of studies (Epstein, Fullerton, & Ursano, 1998; McCarroll, Fullerton, Ursano, & Hermsen, 1996). Explanations of resilience have focused on the maturity and experience that come with age (Norris et al., 2002).

Marital status

Marriage factors are important in a variety of complex and systemic ways in the aftermath of disaster (Norris et al., 2002). Some data suggests that married status is

actually a risk factor (Brooks & McKinlay, 1992), especially for women (Solomon, Bravo, Rubio-Stipec, & Canino, 1993). Marital stress has been found to increase after disasters (Norris & Uhl, 1993). After the dam collapse in Buffalo Creek 1972, married women had higher overall symptom severity than unmarried women, although men did not differ according to marital status (Gleser, Green, & Winget, 1981). It is interpreted that these findings indicate that social ties and obligations can be a source of stress for married women (Solomon et al., 1993).

2.3.3.2 Socioeconomic status

Studies have found effects of socioeconomic status (SES) indicators, such as education, income, literacy, or occupational prestige, on post-disaster mental health. A review (Norris et al., 2002) has found that lower SES was consistently associated with greater post-disaster distress (Armenian et al., 2000; Gleser et al., 1981). In a similar way to the findings for gender, data regarding SES was impressive for the range of countries in which such effects were evidenced. Social causation theory considers environmental adversity, disadvantage, and stress associated with low socioeconomic status (SES) as contributors to the onset of psychiatric disorders (see Dohrenwend, 2000; Johnson, Cohen, Dohrenwend, Link, & Brook, 1999).

2.3.3.3 Loss indicators

Loss stressors such as bereavement, injury to self, property damage, financial loss and relocation can be considered as “psychological toxins”, and as such are risk factors for psychological morbidity, determined in part by the degree of exposure, which in itself is also a critical determinant of the level of psychological morbidity after disasters (Armenian et al., 2000; Davidson & McFarlane, 2006; Norris et al., 2002). Conclusions regarding the relative or comparative impact of these stressors

are difficult to make as there are many inconsistencies in the literature review regarding which stressors were more pathogenic than others (Norris, et al., 2002).

2.3.3.4 Psychosocial resources

Social support

Social support researchers often differentiate between received social support and perceived social support. Several studies have shown that received support, i.e. the actual help received from others, matters for the mental health of disaster victims (Dalgleish, Joseph, Thrasher, Tranah, & Yule, 1996; Joseph, Williams, & Yule, 1993; Kaniasty & Norris, 1993). Norris and Kaniasty (1996) found that the effects of received support on distress were mediated by perceived support, defined as the general sense of belongingness and belief in the availability of support, rather than actual receipt. The ability of perceived social support to protect disaster victims' health and mental health has been demonstrated repeatedly (Norris, et al., 2002). However, effects of perceived support have been inconsistent over time (Cook & Bickman, 1990), suggesting that there may be limits to its effectiveness that are not yet well understood.

Ways of coping

Coping style is also crucial in understanding the psychological consequences of traumatic events (Spurrell & McFarlane, 1993). Studies showed significant positive relations between coping efforts and symptoms (more coping, more distress) (Jenkins, 1997; Spurrell & McFarlane, 1993). Data most consistently suggests that avoidance coping is problematic, as is the assignment of blame (Norris et al., 2002). However, most individuals use many different types of coping simultaneously, making it difficult to isolate their unique effects. The inherent confounding (distress

leads to increased coping) makes it difficult to capture the reciprocal effect (coping leads to reduced distress), especially in cross-sectional designs.

2.3.3.5 Summary

Most distinct and easily measureable factors have been discussed in detail. Other factors, such as effects of parenthood, effects of parents on children, secondary stressors, and threat to life, were also found to be related to the risk of psychiatric disorder after disaster (Norris, et al., 2002), demonstrating that a number of variables affect onset, maintenance, and severity of PTSD. Nonetheless, there is a lack of longitudinal studies examining the relationship between subjective indicators (perceived social support & coping) and PTSD. If a reciprocal relationship exists, changes in these factors should also be found following reduced symptoms after treatment, but very few studies investigate the treatment outcome on perceived social support and coping.

2.3.4 Effective interventions for PTSD and the limitations

Many meta-analyses of treatments for posttraumatic stress disorder (PTSD) have concluded that trauma-focused psychological treatments, such as individual trauma-focused cognitive behaviour therapy (TFCBT) and eye movement desensitization and reprocessing (EMDR), are efficacious (Bisson et al., 2007; Ehlers, Bisson, et al., 2010; Seidler & Wagner, 2006).

TFCBT is a components-based psychosocial treatment model that incorporates elements of cognitive-behavioural, attachment, humanistic, empowerment, and family therapy models. This model was initially developed to address trauma associated with child sexual abuse. It includes several core treatment components designed to be provided in a flexible manner to address the unique needs of each

patient.

EMDR is an integrative, client-centred psychotherapy that emphasises the brain's information processing system and memories of disturbing experiences (Shapiro, Kaslow, & Maxfield, 2007). It assumes that a trauma memory has become locked in the nervous system almost in its original form, but is manifested in terms of images, thoughts, sounds, smells, emotions, physical sensations and beliefs (Van der Kolk, 1997). A central hypothesis within EMDR, purported by Shapiro (1995) is the proposed model of adaptive information processing and learning. It acknowledges human beings possess a physiologically-based information system which is responsible for digesting or metabolising information so that it can be used in a healthy life-enhancing manner.

These treatments have in common a focus on the patient's memories of their traumatic events and the personal meanings of the trauma. Current treatment guidelines, therefore, recommend several trauma-focused psychological treatments as first-line treatments for PTSD (National Institute of Clinical Excellence, 2005).

While substantial empirical evidence supports these therapies, both CBT and EMDR for PTSD have high nonresponse or dropout rates (Schottenbauer, Glass, Arnkoff, Tendick, & Gray, 2008). The findings were notable in that nonresponse rates exceeded 50% on at least some measures in many studies, and dropout in other studies ranged from 7.4% to 54%, indicating that these therapies are unsuitable for many people. The significant treatment dropout and nonresponse rates in studies of empirically supported treatments for PTSD may be as a result of, on the one hand, the poor toleration of the systematic exposure to trauma memories (Kilpatrick & Best, 1984), and on the other hand, the difficulty of engaging in lengthy psychological treatment (Bisson et al., 2007) as these approaches are usually delivered in 10-12 sessions.

Considering the large number of people involved and the shortage of resources after disasters, any psychotherapeutic intervention must be simple, low-cost, quick and easy for local personnel to learn and use, even where there is little or no access to medical or psychological education. These treatments are still not sufficiently brief for use after large-scale disasters where there are large numbers of people who need assistance quickly, and there are likely to be few therapists available who are highly trained as is required for CBT and EMDR therapy. Furthermore, the method must be adaptable to the local cultural environment. However, the majority of published empirical studies of PTSD treatments have been focused on adult trauma survivors in economically developed countries, mainly in the United States and Europe. It is not clear as to what extent the therapies can be transferred to a different culture and effect for disaster victims of low social economic status. Therefore, it is reasonable to suggest that additional interventions are needed for psychological assistance after major disasters, especially in developing areas.

Moreover, although unique or specific factors referring to the specific techniques and interventions that characterise particular psychotherapies will significantly influence the psychotherapeutic outcomes, “common” or “non-specific factors” which refer to dimensions shared by most psychotherapies may also contribute to the treatment outcome. For example, a review of the literature on non-specific treatment factors revealed that the therapeutic alliance and therapist competence may vary among patients and therapists, and that the therapeutic alliance also varies among treatment modalities (Chatoor & Krupnick, 2001). These non-specific factors may contribute significantly to treatment outcome and may account for more of the variance in outcome than specific treatment approach. Therefore, more careful scrutiny of those ingredients that might contribute to successful treatment outcomes need to be made. Awareness of the complexity of the therapeutic process needs to be given when providing and evaluating interventions.

2.4 Narrative interventions

It has been previously discussed that trauma is the result of enduring maladaptive responses impacting on the individual's autobiography or life story (Brewin et al., 1996; Ehlers & Clark, 2000). Autobiographical memories are organised around narrative structures, so if traumatic events impact on autobiographical memory, they impact on narrative development. Within the past several decades, there has been an increasing accumulation of empirical evidence for the efficacy of narrative treatments for traumatic disorder and stress (Kearney, Perrott, & O'Kearney, 2006; Smyth & Helm, 2003), mainly *Narrative Exposure Therapy* (NET, Neuner, Schauer, Roth, & Elbert, 2002) and *Expressive Writing* (EW, Pennebaker & Beall, 1986). Narrative approaches draw on normal human processes relating to story making and storytelling to help people speak of the trauma with their own normal processes.

2.4.1 Narrative exposure therapy (NET)

NET is a standardized short-term trauma-focused treatment approach developed to meet the needs of traumatised survivors of war and torture (Schauer et al., 2005). It was developed on principles derived from exposure therapy, CBT, and testimony therapy. In contrast to other exposure treatments for PTSD, the patient does not identify a single traumatic event as a target in therapy. Instead, NET involves constructing a narrative covering the patient's entire life (Bichescu, Neuner, Schauer, & Elbert, 2007). As described in PTSD theories, the cognitive processing model (Ehlers & Clark, 2000) asserts that PTSD symptoms are maintained through a distortion of explicit autobiographic memory about traumatic events and its detachment from the contents of implicit memory, which produces a fragmented narrative of the traumatic memories. Emotional processing theory (Foa & Rothbaum,

1998; Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992) states that the habituation of emotional responses through exposure leads to a decrease in post-traumatic symptoms. Accordingly, NET stresses the importance of both approaches; the habituation of emotional responding to reminders of the traumatic event, and the construction of a detailed narrative of the event and its consequences.

2.4.1.1 Therapeutic process

NET is a strictly manualised treatment (Schauer et al., 2005). Once the PTSD diagnosis has been confirmed, and informed consent has been obtained, the therapy can begin. Sessions are usually 60–120 minutes in length and ideally occur in close succession, preferably with one or more sessions per week and a maximum of a fortnight between sessions.

In the first session, after the diagnosis, the patient first undergoes psychoeducation in which the theoretical underpinnings of PTSD and the process of NET and rationale for treatment are explained. Psychoeducation about how avoidance of reminders of traumatic events is a key feature of PTSD, and the impact of this on inhibiting treatment is provided.

In the second session, the patient constructs the 'lifeline'. The patient briefly goes through their life, in chronological order to count their significant happy or sad frightening events. The therapist's role is to ensure the correct chronology of these events. The lifeline is useful in establishing the therapeutic relationship and in providing an indication of the number of sessions that may be necessary to address all traumatic events (although some events may only be disclosed later in therapy).

Following this session, subsequent sessions are dedicated to the narration of the person's life, in chronological order, with particular focus on and attention to the

traumatic events. Periods between events are described in brief to contextualise the traumatic events within the individual's life and produce a coherent narrative. On approaching a traumatic incident, the focus is on contextual information, firstly establishing what life was generally like at that time (where was the person living, what were they doing, what was a typical day) and then narrowing this down as precisely as possible to what happened when the event occurred. The traumatic events are then narrated in great detail, gently resisting the patient's attempt to hurry through or avoid emotional engagement with the memory. The patient then slowly narrates their traumatic experience in chronological order, as they experienced it at the time. They are encouraged to describe all sensory modalities along with their thoughts and feelings. The aim of NET is to integrate the generally fragmented, gap-filled reports of traumatic experience into a coherent narrative, and to bring about the habituation of emotional responses to reminders of the traumatic event. At the same time, as the narration of the traumatic event progresses, the patient's current physical, emotional, and cognitive reactions are observed and verbalised. The therapist continually guides the patient back and forth between what is happening for the patient at the time of the narration (present time) and what occurred at the time of the event. One of the aims of therapy is for the person to be emotionally exposed to the memory of the event for sufficient time that habituation occurs, and their emotional response to the memory is diminished over the course of therapy. However, this is unlikely to occur within a single session. The session ends at a safe point in the narrative, at the end of a traumatic event, once the therapist has ensured that the patient's arousal has diminished and that their emotional state is improved. The events in the period after the traumatic incident are narrated to help the patient place the episode in context.

The narrative as described in the session is recorded by the therapist between

sessions, this provides an opportunity for the therapist to ensure they have fully understood the details and chronology of the events described and, therefore, highlights areas in the story, which do not seem as coherent and possibly need further exploration at the next session. At the beginning of the next session, the narrative from the previous session is read to the patient to ensure accuracy, once again exposing the patient to memories of the event, eliciting further information and promoting integration of the non-declarative 'hot' and declarative 'cold' memories. At the end of the re-reading of the narrative, the period between this event and the next traumatic event is briefly narrated, before moving forward to the next traumatic episode, which is again narrated in intricate detail. This process continues until all stressful events have been narrated and the affective responses to the memories have reduced. At this point, the patient and therapist will have created a testimony of the person's life from birth to the present day, with a detailed narration of the traumatic events. At the end of the therapy, some time is spent discussing hopes and aspirations for the future, following which all parties who have been involved in the therapy (including the patient, therapist, and interpreter) sign the completed testimony. The patient receives a copy of this for their own private records and the authors report that it is common to find patients of organised violence sharing their testimonies with others, including lawyers and human rights organisations (Schauer et al., 2005).

2.4.1.2 Evidence of the effectiveness

A review of NET (Robjant & Fazel, 2010) showed it to be effective for those with PTSD following multiple traumatic events, such as those occurring in war or as a result of organised violence. Studies of NET in adults have consistently demonstrated its efficacy in treating individuals with PTSD and comorbid disorders living in a variety of low- and middle-income settings. For example, one study

(Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004) with Sudanese refugees in a Ugandan refugee camp, showed NET had a better effect than support counselling and one-session psychological education. Another randomized controlled trial study of 277 Rwandan and Somali refugee participants in Uganda (Neuner et al., 2008) demonstrated how both mental health professionals and lay counsellors could deliver NET, and indicated the effectiveness of NET and relatively lower dropout rates compared to flexible trauma counselling. One study provides evidence for the effectiveness of KIDNET in treating children traumatized by tsunami and war (Catani et al., 2009).

NET applies a normal story-telling way. Its simplicity, and relatively easily trainable nature, make it an acceptable and feasible therapy for disaster victims with limited resources and low SES. As oral narrative is common to all cultures, and previous studies have supported the effectiveness of NET in low- and middle-income settings. It is likely that NET will be appropriate for disaster survivors in developing areas. Studies exploring its effects in this setting are in need.

2.4.2 Expressive writing (EW)

Another relatively simple narrative intervention is expressive writing (EW), which is the written disclosure of traumatic experiences. The technique has been around for many years. It was originally used with university students rather than people with mental health problems, but over the years has been used with a wide variety of people possessing a range of problems, including issues relating to traumatic stress. Typically, participants write about a traumatic experience over three-four consecutive days, for 15-20 minutes a day. Participants are invited to write continuously about an upsetting or traumatic experience, and focus on their

deepest thoughts and feelings about the experience. They are told not to be unduly concerned about spelling or grammar (Pennebaker & Beall, 1986).

There is good evidence that EW improves psychological and physical well-being (Frattaroli, 2006; Smyth, 1998). In the last 20 years, the approach has been tested with different populations, including clinical patients or college students (Frattaroli, 2006). These results are not limited to a single culture or language. Studies have demonstrated improvements after EW in French-speaking Belgians (Rime, 1995), Spanish-speaking residents of Mexico City (Dominguez et al., 1995), adults and students in the Netherlands (Schoutrop, Lange, Brosschot, & Everaerd, 1996). The writing task appears to be beneficial for many aspects of life, and its benefits appear to cross culture, language, education, and socioeconomic status (Smyth & Helm, 2003).

Although the researchers point out that no one single theory appears to account for the effectiveness (Pennebaker, 2004) with varied groups, some of the healing elements are consistent with the mechanism of treating PTSD. For example, when people write about an emotionally charged event, they often are forced to label, structure, and organise it in ways they have never had to do. They must also present the information in a linguistic structure, often for the first time, to an ambiguous audience (the experimenter) and to themselves. This process facilitates the participants' reconstruction of traumatic narrative or autobiography. In addition, directly writing traumatic events is an exposure process, often linked to processes of emotion habituation and extinction.

Another underlying mechanism of expressive writing is perceiving avoidance or denial to be an unhealthy form of coping with traumatic events (Pennebaker, 2000). The avoidance of talking about important psychological phenomena can be seen as a form of inhibition. Drawing on the animal and psychophysiological literatures, it

was posited that active inhibition is a form of physiological work, which could cause or worsen psychosomatic processes, thereby increasing the risk of illness and other stress-related disorders. Talking or writing about these experiences should theoretically reduce the stress of inhibition. Findings to support the inhibition model of psychosomatics are growing (Pennebaker, 2000). As with many areas of psychology, the opposite may also be true. People with problems relating to their traumatic experiences may cope effectively by using avoidant techniques. This is particularly true when the traumatic memories are intense and difficult to deal with (Ehlers & Clark, 2000).

The simple written format, low cost, and immediate cognitive and emotional changes, which are particularly important in situations where there are many people who are affected by a traumatic incident, demonstrate the potential of EW to serve as a group intervention for school children after disasters. A few published EW trials with younger people suggest that clinical and at-risk samples can receive some benefits from EW and disclosure interventions (Giannotta, Settanni, Kliewer, & Ciairano, 2009)

Inspecting the content of individuals' writings and their relation to health outcomes may reveal the processes that could lead to better health outcomes. Some studies (including Pennebaker & Francis, 1996) have explored the content of the writings and found that the use of words that reflect causality and insight regarding the trauma predict positive health outcomes. When participants are encouraged to adopt a narrative and cohesive approach, there are fewer intrusive thoughts and a positive health outcome (Smyth, True, & Souto, 2001). Positive experiences, negative emotions, personal growth, and having a future-orientated perspective in writing, are associated with health improvement (Foa et al., 1995; Hariri, Bookheimer, & Mzziotta, 2000; Stanton, 2002). Most EW studies provide simple

verbal or written instructions for their participants, emphasising the focus on the emotional content of their writing, but not providing further guidance for each day of the task. However, unlike adults who are generally more able to regulate their emotions, children are more likely to restrict and suppress their emotions in order to deal with them, as children have difficulty distinguishing emotions, especially if they occur simultaneously or if conflicting emotions are elicited (Robert, Steinberg, Aronson, & Pynoos, 1997). Consequently, it has been found that when children relate a trauma narrative, they often omit emotional content. This implies that helping children cope with a traumatic event and achieve benefits from writing may require more than simple instructions. Hence, studies developing further comprehensive instructions, and examining its efficiency in the school setting after disasters, are needed.

2.5 The positive prospect after disasters: Positive changes following adversity

As discussed above, severely stressful and traumatic experiences can lead to both acute and chronic negative psychological change (e.g. Brewin et al., 1996; Foa, Keane, & Friedman, 2000; Herman, 1992; Janoff-Bullman, 1992). However positive changes following adversity have also been recognised in philosophy, literature, and religion (Mahwah, 2000; Tedeschi & Calhoun, 1995). Against this backdrop, there is increasing empirical evidence showing that positive psychological changes can result from the experience of events such as disasters (McMillen, Smith, & Fisher, 1997), chronic illness (Koenig, Pargament, & Nielsen, 1998), heart attacks (Affleck, Tennen, Croog, & Levine, 1987), bone marrow transplants (Fromm, Andrykowski, & Hunt, 1996), HIV/AIDS (Massey, Cameron, Ouellette, & Fine, 2010), cancer (Thornton & Perez, 2006), rape and sexual assault (Grubaugh & Resick, 2007), military combat

(Schnurr, Rosenberg, & Friedman, 1993), bereavement (Davis, Nolen-Hoeksema, & Larson, 1998), injury (Curtis McMillen & Cook, 2003), recovery from substance addiction (McMillen, Howard, Nower, & Chung, 2001), and in the parents of children with disabilities (Best, Streisand, Catania, & Kazak, 2001). The topic of positive changes through adversity has become the focus of much empirical (Linley & Joseph, 2004; Tedeschi & Calhoun, 2004) and theoretical work (Tedeschi & Calhoun, 2004). Through a process of struggling with adversity, changes may arise which lead the individual to reach a higher level of functioning than that which existed prior to the event. Examples of positive psychological change are an increased appreciation of life, setting of new life priorities, a sense of increased personal strength, identification of new possibilities, improved closeness of intimate relationships, or positive spiritual change (Tedeschi, Park, & Calhoun, 1998).

2.5.1 Terminology and measurements

In the recent psychological literature, the positive changes that are observed following severely stressful events have been variously labelled perceived benefits (McMillen & Fisher, 1998), positive changes (Joseph et al., 1993), posttraumatic growth (Tedeschi & Calhoun, 1996), stress-related growth (Park, Cohen, & Murch, 1996) and thriving (Abraido-Lanza, Guier, & Colon, 1998). The term *posttraumatic growth* has now become the most widely used term to describe the field. Within the literature, the various terms are often used interchangeably. The term *positive change* and *posttraumatic growth* are used in this thesis.

Accordingly, several psychometric instruments have been developed to assess positive changes in the aftermath of adversity. These include: Changes in Outlook Questionnaire (CiOQ, Joseph et al., 1993); Posttraumatic Growth Inventory (PTGI, Tedeschi & Calhoun, 1996); Perceived Benefit Scales (PBS, McMillen & Fisher, 1998);

Stress-Related Growth Scale (SRGS, Park et al., 1996); and the Thriving Scale (TS, Abraido-Lanza et al., 1998).

2.5.2 Correlates

A systematic review of 39 studies by Linley and Joseph (2004) suggested that positive change is commonly reported in around 30-70% of survivors of various traumatic events and that growth is associated with higher socio-economic status, higher education, younger age, personality traits such as optimism and extraversion, positive emotions, social support, and problem focused, acceptance, and positive reinterpretation coping. Helgeson et al. (2006) conducted a meta-analytic review of 87 studies, concluding that benefit finding was related to lower depression and higher well-being, but also greater severity of intrusive and avoidant posttraumatic experiences. This latter finding has caused some confusion, leading some to question the adaptive utility of growth, while others propose that posttraumatic stress symptoms should be viewed as signs of the cognitive processes that give rise to growth. Evidence from the Stanford Internet survey following 9/11 (Butler et al., 2005) indicated that there might be a curvilinear relationship between levels of posttraumatic stress and positive change, suggesting that there may be a range of traumatic experience most conducive to growth.

2.5.3 Theoretical development

A number of valuable psychological theories of positive changes have been proposed. Janoff-Bulman's *shattered assumptions theory* (Janoff-Bullman, 1992) was developed prior to the establishment of this field. It suggested that all individuals hold three core assumptions: (a) we are invulnerable, (b) the world is meaningful and comprehensible, and (c) we view ourselves in a positive light. Inherent in these

assumptions is additional assumptions that others are trustworthy, moral, and compassionate, and that misfortunes occur infrequently. Janoff-Bulman noted that these core assumptions are disrupted by a traumatic event, as such an experience is incompatible with these beliefs.

This shattered assumption theory has provided the fundamental theoretical architecture for the two main theories of positive change, notably the *transformational model* (Tedeschi & Calhoun, 2004) and the *organismic valuing theory* (Joseph & Linley, 2005). The *transformational model* provides a comprehensive theoretical description of posttraumatic growth. Individual characteristics, support and disclosure, and, more centrally, cognitive processing involving those structures threatened or nullified by the traumatic events, play important roles in this approach. Somewhat, by contrast, *organismic valuing theory* attempts to provide an account of positive changes rooted in humanistic psychology wherein post-traumatic stress is viewed as indicative of normal, natural cognitive processes that have the potential to generate positive change of such experiences. Theoretically, the largest challenge facing the field over the coming years is whether it succeeds in providing a useful alternative non-medical paradigm for the study of traumatic stress.

Another one of interest is whether positive changes lead to better outcomes on other more-traditional indices. Linley, Joseph, and Goodfellow (2008) found that people who report positive change are less likely to experience problems of posttraumatic stress at six months. Affleck, Tennen, Croog and Levine (1987) reported that heart attack patients who found benefits immediately after their first attack had reduced re-occurrence and morbidity statistics eight years later. Milam (2004) also reported greater immune system functioning among HIV patients with higher levels of positive change.

2.5.4 Issues and controversies

Researchers have emphasised that positive change following adversity is a worthwhile concept to be investigated by trauma researchers. Furthermore, it is regarded as a new perspective worthwhile to be integrated into clinical practice. The concept of positive change adds a new perspective, not a new treatment, into psychotherapy. For example, clinicians might recognize the patient's distressing struggle to understand the impact of trauma and the distress of disbelief, not solely as a posttraumatic response, but as a potential precursor to growth. However, the empirical literature has been limited by an over-reliance on cross-sectional studies; few longitudinal studies are available to outline a clearer picture of which factors lead to positive change. Moreover, not much is known with respect to the predictive value of posttraumatic growth on treatment outcome. The presence of posttraumatic growth may reflect resilience, that is, some individuals may be more prone to experience positive changes in response to distress (Schaefer & Moos, 1992). In addition, much of the relevant research has been carried out in Western cultures (Splevins, Cohen, Bowley, & Joseph, 2010). Although, at an abstract level, the concept of posttraumatic growth appears cross-culturally valid, the operationalisation of the concept may serve to impose assumptions of a Western individualistic society (Splevins et al., 2010) which emphasizes the individuation, uniqueness, and internal attributes of people.

Therefore, studies examining positive changes in a different culture and inspecting its predictors are needed. In clinical practice, changes of positive changes following treatment need to be measured and identified along with other psychological variables to further understand the phenomena and the therapeutic effects on it.

2.6 Sichuan earthquake and its psychological impact

2.6.1 Earthquakes trauma and intervention studies

Earthquakes have been the cause of many of the most devastating natural catastrophes in the 20th century. Unlike some other natural disasters, there is no warning, the impact is often widespread, and the effects multifarious. Furthermore, in the aftermath, the overhanging threat may continue for months, along with the possibility of aftershocks, and social and economic disturbances may be experienced for several years to come (World Health Organization, 1999). The prevalence of PTSD reported from developing countries among victims of earthquake trauma has fluctuated widely. For example, after the 1988 Armenian Earthquake, the DSM-III-R rate of PTSD was found to be 87% and 73% postearthquake 1.5 and 4.5 years, respectively (Goenjian, 2000; Goenjian et al., 1994). Armenian et al. (2000) found a 50% PTSD rate in another sample of Armenian earthquake survivors, two years after the event. In China, the rate of earthquake-related PTSD within five months and nine months was 23% and 24%, respectively (Cao et al. 2003; Wang et al. 2000). Among the Indian earthquake survivors, the prevalence of PTSD was reported as 23% (Sharan et al. 1996). A contrasting set of results, with a low prevalence of PTSD, was found in a study conducted 10 months after the earthquake in Taiwan (Lai et al. 2004). The differences in the findings of studies might be because of the different methodologies, the usage of different diagnostically criteria (ICD-10, DSM-III-R or DSM-IV), differences in sample characteristics (e.g. education, sex, social support), and time since trauma that may also affect morbidity rates as symptoms may remit in time. Finally, these earthquakes were widely variable in the extent of devastation and casualties they caused.

Very few studies try to provide empirical evidence of the effectiveness of

interventions that are targeted at earthquake survivors. Of these, Basoglu and his colleagues (2003) developed a single session of modified behavioural treatment for disaster survivors, and examined its effectiveness in earthquake-related posttraumatic stress disorder. Another study evaluates psychoeducation intervention in a sample of 1999 earthquake survivors in Turkey (Oflaz, Hatipoğlu, & Aydin, 2008). In addition, researchers also provide evaluation of the programme of training mental health workers in EMDR in the aftermath of 2005 Pakistan earthquake (Farrell et al., 2011). There is a need for more empirical studies that can contribute to the development, evaluation, and dissemination of brief and cost-effective treatments for PTSD in post-earthquake circumstances.

2.6.2 The destructive power of the Sichuan earthquake

Figure 2.1 Geographical location of the epicenter of 2008 Sichuan earthquake, China.

On May 12th, 2008, a devastating earthquake occurred in the Sichuan province of China. According to the Chinese Ministry of Civil Affairs, the earthquake destroyed almost 6.5 million homes and affected approximately 46 million people. It caused extensive damage and heavy losses; it took 69,227 lives, injured 374,643, left 7,923 missing, and made about 4.8 million homeless (official figures as of September 25, 2008, http://www.512gov.cn/GB/123057/8074265.html). Described as one of the greatest disasters for children in the past decade, the Sichuan earthquake caused the deaths of more than 10,000 children as a result of the collapse of their schools and devastating landslides that followed; approximately 4,700 children were orphaned, and millions lost their homes or were unable to attend school (Watts, 2008). Figure 2.1 shows the geographical location of the epicentre of Sichuan earthquake.

2.6.3 Societal responses

The response to the earthquake was dominated by the Chinese government. According to the government, despite the extent of the devastation, disease outbreaks were avoided. Populations in danger from subsequent flooding or landslides were safely relocated, medical services were generally restored rapidly, and a return to the baseline mortality rate was achieved relatively quickly. The direct provision of aid by the Chinese military was a key element in the emergency response phase. Officials reported that within 14 minutes of the earthquake, the central government had dispatched the People's Liberation Army (PLA) to the affected areas, and within days 113,000 soldiers and armed police had been mobilised (Hoyer, 2009). The Chinese government also organised rapid building of temporary shelters and accommodation. Moreover, the partnership strategy used in the aftermath of the earthquake, which aimed to provide for long-term recovery, was the 'twinning' of several badly affected counties and cities with other Chinese

provinces and municipalities. These partnerships aimed to assist affected areas with resources, personnel, and moral support for recovery. Teams of doctors, public health professionals, and sanitation and disease control experts were immediately dispatched to the affected partner county; a reported 1-3 % of the annual gross domestic product of sponsor provinces was pledged towards long term recovery efforts in the affected county for at least three years. Although full recovery remains a distant reality for many, the Chinese state-led response to the Sichuan earthquake has generally been characterised as efficient and comprehensive (Hoyer, 2009).

2.6.4 Psychological impacts and assistances

Studies on earthquake victims suggest that PTSD and major depression are common psychological reactions (Armenian et al., 2002; Briere & Elliott, 2000; Wang et al., 2000). Wang et al. (2009) found that, three months after the Sichuan earthquake, the probable prevalence of PTSD was 37.8% in heavily affected communities and 13.0% in moderately affected communities. Similarly, Kun et al. (2009) reported the prevalence of suspected PTSD was 45.5% in the heavily damaged Beichuan County and 9.4% in moderately damaged Langzhong County two-and-a-half months after the earthquake.

With regard to children and adolescents, Fan, Zhang, Yang, Mo, & Liu (2011) examined the symptoms among 2,250 adolescents six months after the earthquake in Dujiangyan district. Results showed that 15.8%, 40.5%, and 24.5% of participants reported clinical symptoms of PTSD, anxiety, and depression respectively, and PTSD, anxiety, and depression were highly comorbid. Another study reported that prevalence rates of the psychological problems 12 months after the earthquake were 22.7% for anxiety, 16.1% for depression, and 13.4% for PTSD respectively for primary school students in Beichuan County (Liu et al., 2011).

In order to respond to the extensive psychological problems, it is estimated that within two weeks after the earthquake, more than 3,000 volunteers entered the disaster area with the aim of providing psychological assistance (Chen, Wang, & Liu, 2009). However, there was no systematic organisation and management, and the lack of professional training and qualification resulted in volunteers failing to relieve victims' symptoms, but disturbing the survivors (Chen et al., 2009). Some local schools had to refuse help because of this. Despite this evidence of high rates of PTSD in badly affected areas, no study has provided empirical evidence of investigating the feasibility and effectiveness of psychological intervention after this earthquake. Most of the studies about this earthquake are epidemiological research aimed at estimating the prevalence or incidence of PTSD and related psychological morbidity; few of them have tried to establish a predictive model of PTSD. As discussed before, simple, low-cost, quick and easily trainable interventions are urgently needed to be applied and evaluated for both adult and child survivors. Consequently, the method must be adaptable to Chinese cultural environments. Given the above evidence of effectiveness, and the mechanism for narrative interventions, and as narrative is a common cross-cultural tradition, it is rational to expect that NET and EW could be efficient interventions for this earthquake. Studies exploring the feasibility, effectiveness and adaptable revisions are particularly encouraged.

2.7 Conclusions

The review has yielded several important findings that strengthen current understanding of the nature and effects of disaster, traumatic stress, and positive changes following adversity, and points out gaps existing in current research and practice. It also introduces the 2008 Sichuan earthquake – the backdrop of this thesis – and the need to conduct empirical studies examining effective interventions

in this setting. Based on the review, the following conclusion can be drawn:

1. Disasters are events that challenge both the social and individual ability to adapt, which carries the risk of adverse mental health outcomes, including serious posttraumatic psychopathologies. High prevalence rates of PTSD, anxiety, and depression have been found after disasters among both affected adults and children, and PTSD is the most distinct and common disorder. However, the challenge of providing sufficient numbers of mental health professionals is the most critical issue facing health-care systems through the world, and especially those of developing countries. In addition, although children are particularly vulnerable in disasters, very few published studies evaluate the efficacy of interventions in this area for them.
2. Three main PTSD theories all emphasise maladaptive processing of traumatic events. They all explain how a fragmented and disorganised memory, lacking in contextual information, results in a subjective sense of the current threat, as the traumatic event is indistinguishable from the present context, and point out that traumatic memory is the core of PTSD.
3. A number of variables affect onset, maintenance, and severity of PTSD, but few studies examine the relationship between subjective indicators (perceived social support & coping) and PTSD longitudinally. Additionally, very few studies investigate the treatment outcome on perceived social support and coping.
4. Trauma-focused psychological treatments, such as CBT and EMDR, are efficacious in treating PTSD and recommended by treatment guidelines. However, they do not appear to be simple and efficient enough to be extensively delivered in the situation of a major disaster.
5. There has been an increasing accumulation of empirical evidence for the efficacy of narrative treatments for traumatic disorder and stress. Among narrative interventions, the simplicity and relatively easily trainable nature of NET make it

an acceptable and feasible treatment for disaster victims with limited resources and low SES. However, NET has not been applied after a single natural disaster or in the Chinese setting. Studies exploring its effects in this context are in need. Another low-cost narrative intervention EW uses a simple written format and can bring immediate cognitive and emotional changes. These characteristics are particularly beneficial when groups of people need assistance. It is likely that this written narrative strategy can serve as a group intervention for school children after disasters. However, it needs to be further developed to be more effective and feasible for school children.

6. Positive change following adversity is a worthwhile concept to be investigated by trauma researchers. The concept of positive change adds a new perspective into psychotherapy. However, the empirical literature has been limited by an over-reliance on cross-sectional studies; few longitudinal studies have painted a clear picture of positive change. Much of the relevant research has been carried out in Western cultures, and very few treatment studies measure positive changes along with other variables.
7. The Sichuan earthquake had enormous destructive power and affected millions of people. The Chinese government made efficient and comprehensive responses, but the lack of evidence-based intervention and systematic management made it hard for psychological assistance to achieve the desired effect. Simple, low-cost, quick, and easily trainable interventions are urgently needed. Studies applying and evaluating the intervention for either the adult or child survivors after this earthquake should be promoted.

2.8 Study aims

Against this background, evidence of significant needs calling for research examining the relationship between PTSD with related factors, and the effectiveness of

narrative interventions after this earthquake, has emerged. Therefore, the purpose of the PhD project is to investigate the effectiveness of narrative intervention among Chinese earthquake survivors. It aims to:

1. Obtain a general view of the targeted adult population; investigate the extent and nature of earthquake-related distress and positive changes experienced by the targeted survivor population, and the factors that predict these distresses and positive changes.

2. Examine the effectiveness of NET in adult survivors; apply and assess NET among adult Chinese earthquake survivors; make modifications in light of the outcome; test and compare the adapted NET and the original NET in the earthquake survivor population.

3. Examine the efficiency of written narrative strategies in child survivors in the school setting; develop comprehensive writing instructions, and evaluate its feasibility and effects within the child earthquake survivor sample.

The following chapter outlines the research methodology applied to achieve these goals. Appropriate methods providing data to investigate the identified research questions are proposed and the methodological approach chosen is explained and justified.

Chapter 3: Methodology

3.1 Overview

Based on the identified research aims in CHAPTER 2, this chapter focuses on the methodological and epistemological issues regarding the strategy and research designs used to achieve the research goals. It firstly describes the individual studies and evaluates the chosen methods. Essentially, the present data was collected using a cross-sectional survey and randomised controlled trials (RCTs). The survey aimed to uncover post-earthquake stress and growth in adult survivors, and to examine their relationships with different factors. The RCT designs were employed to examine the effectiveness and feasibility of narrative interventions. This chapter presents the conditions of the chosen research population and locations, and the psychometric property of the measures completed by participants. It ends with a discussion of the key ethical issues and how they were resolved.

3.2 Study design

According to the research objectives, one cross-sectional survey and four RCT designed studies were identified. All studies used questionnaires to collect data and assess the psychological well-being of participants. The study aims and settings are presented in Table 3.1. The advantages and disadvantages of the questionnaires, especially the self-reported scales, will be considered initially. The cross-sectional and RCT designs will be discussed and evaluated subsequently.

Table 3.1 Study setting

Study	Aims	Design	Tools
1	a. estimating and comparing the prevalence rate of psychological morbidity of adult earthquake survivors b. recognising the correlated factors of distresses and positive change, identifying the predictors of PTSD and the positive change c. screening and recruiting participants for the adult intervention studies.	Cross-sectional	Questionnaire
2	a. evaluating the original NET in adult survivors with PTSD	RCT (waiting-list control)	Questionnaire and diagnostic scale
3	a. revising the NET to be more adaptive for Chinese earthquake survivors b. assessing the revised NET	RCT (waiting-list control)	Questionnaire and diagnostic scale
4	a. developing comprehensive writing instructions for child survivors in the school b. applying and evaluating the intervention	RCT (parallel design)	Questionnaire
5	a. testing the effectiveness of the modified strategy	RCT (parallel design)	Questionnaire

3.2.1 Self-reported questionnaire strategy

Questionnaires are used in psychological research to obtain information about a wide range of issues. The principle advantages of using a questionnaire are its apparent simplicity, versatility, and low cost as a method of gathering data. For many research topics, questionnaires provide data of good quality both in terms of testing hypotheses and making real-world policy suggestions (Breakwell, Hammond, Fife-Schaw, & Smith, 2006). As they are efficient in time management, questionnaires are useful for gathering standardised data after a major disaster. In the present research, both adult and child questionnaires include two parts: Demographic data and self-reported scales.

Screening scales and psychometrically derived instruments based on self-reports have become increasingly popular in social psychiatric research, research with general practice patients, and in epidemiological field studies (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974; Dohrenwend, 1990). Overall assessments of the

level of psychological distress, such as symptoms of anxiety and depression, in most studies appeared to reach an acceptable degree of psychometric precision (Dohrenwend, 1990; Henderson, Byrne, & Duncan-jones, 1981). Kazdin (2002) highlighted three pros of using self-reported scales. First, the definitions of many states, feelings, and psychological problems are based on what people say or feel. Second, people are in a unique position to report upon their feelings, thoughts, and experiences. This may not be available with other assessment techniques. Third, the measures can be easily administered. Such measures have been found to be particularly efficient for screening purposes. As the first study aimed at obtaining an overall picture of the targeted population, and screening participants for the following intervention study, it was essential to use a questionnaire in a large representative sample to achieve this goal. In addition, the time for data collection was limited because of the relocation of survivors and reconstruction of the disaster area after the earthquake. Consequently, self-report scales rather than other techniques (e.g. interview) were suitable instruments to collect data. It is also a preferred assessment tool to administer in a school, as it is less disruptive to the normal teaching schedule. The validated scales allowed direct comparisons to be made between the Chinese earthquake survivor population and other trauma populations.

Nevertheless, the use of self-report measures has some limitations. First, the wording, format, and order of appearance of the items could affect the responses from the participants. Second, there is a potential bias where participants might not truly respond, or their responses might be influenced by their personal motives or self-interest (Kazdin, 2002). In the current studies, the most widely used and validated Chinese versions of the scales were applied.

Overall, the self-reported questionnaire is useful and adequate for the proposed studies, but it is important to recognise its limitations. It has value as a tool for generating large quantities of data relatively quickly, to provide an initial screen of the psychological problems of the targeted population, and disclose the relationship between psychological variables.

3.2.2 Cross-sectional design

A cross-sectional study compares samples drawn from separate distinguishable sub-groups within a population at the same moment in time. Although some disadvantages of cross-sectional design relating to the group equivalence, independent sample, and inability to detect maturational changes are raised, it is still the most suitable strategy to achieve the initial research objectives of efficiently gaining information about the adult survivors and recruiting participants for the intervention studies (Coolican, 2009).

3.2.3 Randomised controlled trial design

In the intervention studies, randomised controlled trials (RCT) were applied to evaluate the effectiveness of a narrative intervention within adult and child survivors. RCTs are the most rigorous way of determining whether a cause-effect relationship exists between treatment and outcome, and for assessing the cost effectiveness of a treatment (Sibbald & Roland, 1998). They have several notable features. In RCTs, participants are allocated randomly to intervention groups. Both patients and researchers should remain unaware of which treatment was given until the study is completed – although such double blind studies are not always feasible or appropriate. All intervention groups are treated identically except for the experimental treatment (Sibbald & Roland, 1998).

Other study designs, including non-randomised controlled trials, can detect associations between an intervention and an outcome, but they cannot rule out the possibility that the association was caused by a third factor linked to both intervention and outcome. Random allocation ensures no systematic differences exist between intervention groups in factors, known and unknown, that may affect the outcome. Double blinding ensures that the preconceived views of participants and clinicians cannot systematically bias the assessment of outcomes.

Although randomised controlled trials are powerful tools, their use is limited by ethical and practical concerns. A number of weaknesses of the RCT are recognised in the context of psychological therapy for trauma (Hunt, 2012). For instance, it is almost impossible to fully blind a trial of a psychological therapy, as the patient is likely to know whether or not they are receiving therapy. Recruitment bias is always going to be difficult with traumatised people. Many do not want to go through a 'talking therapy' because they do not want to confront their memories. Furthermore, therapies for traumatic stress are often used in dangerous environments, such as war zones or places where there has been a natural disaster, and it is difficult to conduct a well-controlled study.

In order to accommodate these issues, the present research employed an alternative to the untreated control condition in the randomised controlled trials involving adults. A waiting-list control group was included, which has been frequently applied in studies of psychological intervention (Katz, 2010). A waiting-list control group serves the purpose of providing an untreated comparison for the active treatment group, while at the same time giving the wait-listed participants an opportunity to obtain the intervention at a later date. A limitation of waiting-list control groups is that expectations of improvement differ between the treatment and the control group. A waiting-list control is absence of any control for therapist contact and attention for the control group, but with the expectation of benefits often associated with placebo conditions. The control group, knowing that they are not yet receiving an active treatment, may have no reason to expect positive change, or experience improvements. However, because NET is a short-term therapy, the waiting period is only two weeks (the time needed for the experimental group to complete the treatment). The short waiting time for the treatment intervention would help to reduce the expectation difference between the two groups, and weaken the bias caused by the allocation. In addition, the collaboration with health authorities and local organisations in the present studies were crucial to conducting well-controlled RCTs.

In the child intervention study, parallel designs were used, which meant each group of participants was exposed to one of the study interventions at the same time. The non-treatment control group, or waiting-list control group, were not available in the current circumstance as the interaction between children (e.g. playing or talking) would inevitably disclose the allocation information and lead to bias, and the school insisted that the effective intervention needed to be used. This highlights that a strictly controlled randomised trial is always infeasible in practice, especially in the context of disasters. Therefore, the parallel design was applied and used to compare the groups with different writing conditions.

In summary, although RCT design has limitations, it is still an excellent method for determining the effectiveness of a treatment or therapy. The coordination with other organisations and gatekeepers were essential in accommodating the present research.

3.3 Study population

All participants were recruited in Beichuan County, China. Beichuan was near the epicentre Wenchuan County, and was one of the areas nearly completely destroyed by the earthquake of 12th May, 2008. Almost all the buildings – houses, working places, schools, and hospitals – were destroyed. In Beichuan, 11,522 people died, and 9,693 people were injured because of the earthquake (Sohu, 2008). Specifically, the earthquake took 1,587 students' and 214 teachers' lives from the elementary and middle schools there (official figures as of September 25, 2008, http://www.512gov.cn/GB/123057/8074265.html). Figure 3.1 shows the geographical location of the Beichuan County of the Sichuan earthquake, China.

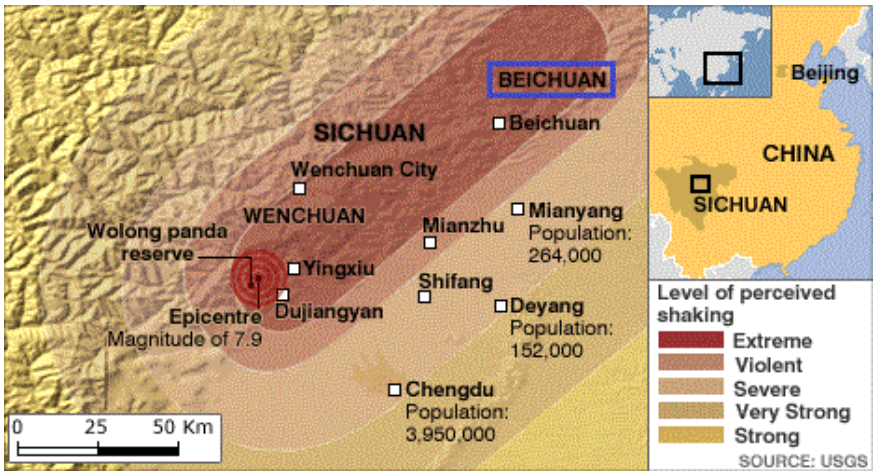


Figure 3.1 Geographical location of Beichuan County of the 2008 Sichuan earthquake, China

All participants experienced the earthquake in Beichuan County in 2008. Most of the population in the severely damaged area had been evacuated and relocated in temporary shelters or basic houses in the aftermath of the earthquake. These survivors were affected by serious floods in June 2008 and mud-rock flow on September 2008. The child participants were recruited from a single primary school in Beichuan County.

There were several reasons to choose this study location and population:

1. Beichuan County is a heavily damaged community. Compared to a moderately damaged community, it has been reported to have a higher prevalence rate of PTSD (Want et al, 2009; Kun et al, 2009). It is a homogeneous Chinese community that had been exposed to a clearly identifiable stressor, the earthquake.
2. Beichuan County is located in a mountainous area. The adult survivors were of low socioeconomic status (SES). A substantial part of the population was local peasants and peddlers. They were more vulnerable and represented the majority of victims of natural disasters in China or developing areas. They were the members of the population that needed well-developed psychological interventions.

3. Beichuan County received considerable societal attention and material assistance in the aftermath of the earthquake. They were well relocated and supported by the central government. This guaranteed that the materials they needed (e.g. food, accommodation, etc.) were satisfied to a certain extent.

The detailed sampling method of each study will be introduced in the following relevant chapters.

3.4 Measures

It has been described previously (3.2 Study design) that self-reported questionnaires were employed in the present research. The questionnaires comprised of two sections; background information and psychological measures (Appendix 3, *p*241).

3.4.1 Background information

In the adult questionnaire, the following information was included:

- **Demographic characteristics**: name, address, contact method, age, gender, and marital status.
- **Socioeconomic status:** education, occupation, and income.
- **Loss indicators**: severity of injury to oneself, bereavement, house damage, and the amount of financial loss.

In the child questionnaire, name, gender, age, class number, severity of injury to oneself, family, and friends were included.

The participation was non-anonymous as it needed participants to be assessed repeatedly.

3.4.2 Psychological measures

Previous developed instruments with good psychometric properties were used in this study. Most of these scales were available in Chinese, and had been applied and

validated in Chinese populations in previously published research. Scales with no existing Chinese version were translated and validated by this study. Some considerations regarding the cross-cultural studies were identified. Direct translation of an instrument from one language to another does not guarantee content equivalence of the translated scale (Brislin, 1970; Sechrest, Fay, & Zaidi, 1972), and the cultural difference may cause diverse explanations and understanding of the items. Hence, the present study used Brislin's back-translation model (Brislin, 1970) and conducted pre-tests in the targeted population to make sure they could understand the meaning of items correctly.

This methodology begins with items that are "translatable," or free of colloquialisms and idiomatic phrases. Competent translators familiar with the content are then selected, with one bilingual individual being instructed to translate from the source to the target language, and another blindly translating from the target to the source language. In this study, four psychological PhD students who were fluent in both English and Chinese participated in the translation process. Individual raters examined the original Chinese language versions and the back-translated English version for inconsistencies that might lead to differences in meaning. If there were inconsistencies, changes to the original item were made. Until the meanings of items were consistent, the translated scales were tested on individual Chinese participants. Based on these findings, the translated and/or original versions were then revised.

The Cronbach's alphas of translated scales used in the present studies were calculated and presented. Correlations between translated scales and other psychopathology measures used were computed to ensure the validity. The details and psychometric properties of all scales are presented below.

3.4.2.1 Adult measures

Severity of PTSD symptoms was assessed using the *Impact of Event Scale-Revised* (IES-R; Weiss, 2007). This instrument is a self-report measure comprising 22 items

and three subscales (intrusion, hyperarousal, and avoidance), and scored on a 5-point Likert scale from not at all (0) to extremely (4). Cronbach's alphas for the three subscales of the simplified Chinese IES-R have been reported as between .83-.89 (Wu & Chan, 2003), providing good evidence that the simplified Chinese IES-R is a reliable and valid measure for assessing posttraumatic stress symptoms in a Chinese-speaking sample (Huang, Zhang, Xiang, & Zhou, 2006; Wu & Chan, 2004). A cut-off of 34/35 indicated "probable PTSD" in a Chinese sample, with high sensitivity of .86, specificity of .86 and high efficiency (.85) (Huang et al., 2006).

The *Post-traumatic Stress Diagnostic Scale* (PDS; Foa, 1996) was applied to confirm the diagnosis of PTSD for adult participants who were recruited to attend the intervention studies. It provides a brief, but reliable, self-report measure of PTSD for use in both clinical and research settings. The PDS has high face validity because items directly reflect the experience of PTSD with high internal consistency (coefficient alpha of .92). Test–retest reliability was also highly satisfactory for a diagnosis of PTSD over a two to three week period (kappa=.74). Analysis also revealed an 82% agreement between diagnosis using the PDS and the Structured Clinical Interview for DSM (Foa, Cashman, Jaycox, & Perry, 1997). The Chinese version of this scale was developed using the two-stage process of translation and back translation.

Depression and anxiety were assessed using the *Hospital Anxiety and Depression Scale* (HADS; Zigmond & Snaith, 1983), a self-rating instrument for anxiety and depression. It has been translated into Chinese and been widely used in China. The internal consistency, as assessed by Cronbach's alpha, of the version is .76 for the depression subscale and .79 for the anxiety subscale in a sample of Chinese hospital in-patients (Zheng, Wang, & Li, 2003). Scores above 8 in both subscales indicated "probable anxiety " or "probable depression "in a Chinese sample with sensitivity of .74 and .78 respectively (Zheng et al., 2003).

The *General Health Questionnaire-28* (GHQ-28; Goldberg & Hillier, 1979) was used to assess the general mental health of participants. This measure incorporates four

subscales: somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. The simplified Chinese version of the GHQ-28 has been adopted widely and validated in a Chinese population (Chan, 1995). A Cronbach's alpha of .92 has been reported with a sample of Chinese earthquake victims (Cao, McFarlane, & Klimidis, 2003). A WHO study (Goldberg et al., 1997) had an average threshold of 5/6. A cut-off of 12/13 almost always indicates a positive psychiatric condition in the PTSD context (Easton & Turner, 1991; Turner & Lee, 1998).

The *Short Form of the Changes in Outlook Questionnaire* (CiOQ-S; Joseph, Williams, & Yule, 1993) was used to assess both positive and negative posttraumatic changes. The 10-item CiQQ consists of five items assessing positive changes, and five items assessing negative changes. Each item is answered on a 6-point scale ranging from strongly disagree (1) to strongly agree (6). The measure has been used in studies with a wide variety of participants following trauma and adversity (Joseph, Linley, Shevlin, Babara, & Butler, 2006). The CiOQ was back-translated and assessed. The reliability and validity of the Chinese version of the CiOQ has been analysed. A Cronbach's alpha of .87 has been reported for the positive change scale, and .82 for the negative change scale, and the validation procedure has been published (Zang, Hunt, Cox, & Joseph, 2012).

The *Multidimensional Scale of Perceived Social Support* (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) was used to measure social support. The scale is designed to assess perceptions of the adequacy of social support from three different sources: family, friends, and significant others. It consists of 12 items; each item is scored using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Adequate reliability and validity have been reported for a simplified Chinese version (Chou, 2000), with a Cronbach's alpha of .89.

The *Simplified Coping Style Questionnaire*, SCSQ (Xie, 1998) is a simplified Chinese instrument measuring two dimensions of coping style; active and passive coping. Active coping includes planning, thinking about solutions, and positive cognitive restructuring. Passive coping includes repression, behavioural disengagement,

substance abuse, and self-blame. There is a high correlation among the 12 items for the active coping styles (Cronbach's alpha=.89) and the eight items for the passive coping styles. A Cronbach's alpha of .78 was reported by Xie (1998).

Coping strategies of the second adult intervention study were assessed with the widely used 28-item *Brief COPE* (Carver, 1997), which includes subscales that assess 14 different types of coping. Respondents were instructed to rate each item (1 = I have not been doing this at all to 4 = I have been doing this a lot) in relation to how they had "been coping with the stress during the past week". The Brief Cope was validated in a sample of 168 community survivors of Hurricane Andrew. Cronbach's alpha scores for the subscales ranged from .50 to .90. Factor analysis confirmed that the factor structure of the Brief Cope was similar to the full inventory (Carver, 1997). It has been administered in other languages as well as English (Muller & Spitz, 2003; Perczek, Carver, Price, & Pozo-Kaderman, 2000), and has been used to measure changes in coping strategies in intervention programmes (Burns & Nolen-Hoeksema, 1991; Willert, Thulstrup, Hertz, & Bonde, 2009). The present study used a Chinese translation of the Brief COPE, which was translated and back-translated by three psychologists (PhD level) who were proficient in both Chinese and English. In the present study, the whole scale had a Cronbach's α of .66, and the 14 dimensions had Cronbach's α around .70-.80, ranged .42–.91.

3.4.2.2 Child measures

PTSD symptoms were assessed using the *Children's Revised Impact of Event Scale* (CRIES; Smith, Perrin, Dyregrov, & Yule, 2003), a 13-item scale measuring symptoms of intrusion, avoidance and arousal, with a Cronbach's α coefficient of .80. The CRIES has been translated into Chinese Mandarin and validated in children after the 2008 Sichuan earthquake (Zhang, Zhang, Wu, Zhu, & Dyregrov, 2011). Cronbach's alpha for CRIES-13 was .84, and for the three subscales relating to intrusion, avoidance and arousal, Cronbach's alpha was .82, .67, and .72 respectively seven months after the earthquake. Confirmatory factor analysis (CFA) of CRIES supported the presumed three inter-correlated factors model.

Anxiety, depression, and panic disorder were assessed using the *Revised Child Anxiety and Depression Scales* (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000), a 47-item self-report questionnaire. It is available in English, Spanish, Chinese, Dutch, and Danish. Three of the six subscales in RCADS were of interest in this study, including generalized anxiety disorder (GAD), panic disorder (PD), and major depressive disorder (MDD). Cronbach's alphas for the three dimensions of the RCADS were previously reported as follows: .84 for GAD, .88 for PD, and .87 for MDD in children and adolescents referred for mental health assessment at a university clinic (Chorpita, Moffitt, & Gray, 2005). In the present study, the Cronbach's α was .70 for GAD, .83 for PD, and .76 for MDD.

The *Changes in Outlook Questionnaire* (CiOQ; Joseph et al., 1993) is a 26-item self-report measure designed to assess positive and negative changes in the aftermath of adversity. It consists of an 11-item scale assessing positive changes, and a 15-item scale assessing negative changes. Each item is answered on a 6-point scale ranging from strongly disagree (1) to strongly agree (6). It has been used in studies with a wide variety of participants following trauma and adversity (Butler et al., 2005). Good internal consistency for the positive and negative change scales (.83 and .90 respectively) were reported, and those scales were not correlated (r = -.12) (Joseph et al., 1993). The CiOQ was translated into Chinese and back-translated to English to confirm their accuracy. Disputed translations were discussed by two native Chinese speakers, one native Chinese psychologist and the first author, who are also fluent in English, until a consensus was reached. The translated CiOQ was read to five children from the participating school. They were able to explore and discuss the items without assistance, demonstrating correct understanding of the 23 items. One item from the positive scale and two items from the negative scale, which the children found hard to understand, were deleted. The reliability of the CiOQ represented by Cronbach's α in the current child sample was .69 for positive changes, and .80 for negative changes.

The *Kidcope* (Spirito, Stark, & Williams, 1988) is a 15-item checklist used to access children's coping styles. The instrument includes 15 items designed to assess 10

coping strategies; distraction, social withdrawal, cognitive restructuring, self-blaming, blaming others, problem solving, emotional regulation, wishful thinking, social support, and resignation. The child indicates their use of a coping strategy by answering yes or no, and the efficacy of a coping strategy by responding 'not at all', 'a little', or 'a lot' for each of the 15 items. Moderate (.41) to fairly high (.83) test-retest correlations have been reported for the Kidcope for (Spirito et al., 1988). The Kidcope was translated to Chinese and back translated to English. The Chinese version of the Kidcope was read to five students of the participating school. They were able to give examples of different coping strategies without assistance, demonstrating correct understanding. The internal consistency of the Kidcope in the current sample is .69 for the usage scale and .81 of the efficacy scale.

The perceived social support of children was also assessed by the *Multidimensional Scale of Perceived Social Support* (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). Studies using PSPSS in youths have been reported to have a high internal consistency in both the family and friends subscales (.88 and .90, respectively), and barely adequate reliability (.61) for the significant other subscale. The Total MSPSS demonstrated high internal consistency with a Cronbach's alpha of .86 (Edwards, 2004). Adequate reliability and validity have been reported for a simplified Chinese version (Chou, 2000), with a Cronbach's alpha of .89.

3.5 Ethical considerations

Before starting the research, the project was submitted to the ethics committee of the Institute of Work, Health and Organisations, University of Nottingham, for approval, and the whole project was reviewed and approved by the ethics committee (see Appendix 1, *p*231 for the approval document). The project information, including the intervention details and procedures, was provided to the organisations involved in the research in China. The possible ethical issues raised by the project were discussed. The author also received oral approval by the responsible people in these organisations.

Specific ethical issues were proposed in the present study. First, the participation in the current studies could arouse participants' unpleasant memories and induce psychological distress. In order to minimise the disturbance for participants, their emotions were monitored carefully during the study process by the researcher. If the participants could not control their emotions, the researcher would stop the study and appease them. The researcher always respected the patients' boundaries, and never tried to work against a participant's will. The researcher would accept the decision of the participant if she/he did not want to continue, but this did not mean that the researcher had to stop when the participant expressed avoidance. All the information about the study was notified to the participants, including the consequences of interrupting treatment and the potential benefits of continuing. A consent form (see Appendix 2, p232) was presented or read to the participants to sign before they participated in the study.

Second, participants of this study included children. School children and their school guardians were involved in the research consent process in accordance with the child or young person's competence to weigh the risks and benefits of participating in the study. Information was provided about the study to school principals and relevant teachers. The school allocated time for the researcher to properly explain the study to the children and to enable the children to process the study information. Written informed consent was obtained from the children's school guardians and oral informed consent was obtained from the children. They were allowed to use creative ways of providing information, and alternative means to express their thoughts.

Third, the study asked participants to provide demographic information, including their names and contact details. All this information was specifically requested for follow-up purposes. Children's written earthquake experiences were obtained by the researcher. It was the participant's choice whether this document should be destroyed or preserved, and to what extent it should be distributed. All these records were only used for the purpose of research. Moreover, in order to safeguard the confidentiality of the participants, all original sources of data

concerning the study were kept in a secure filing cabinet and access to all data files was restricted to the researcher. These materials will be retained for at least seven years from the date of the final publication of the present thesis in accordance with the University of Nottingham Code of Research Conduct and Research Ethics (2009).

Finally, several ethical issues were raised by the RCT design. For example, exposing patients to an intervention believed to be inferior to current treatment is often thought unethical (Sibbald & Roland, 1998). As stated above, this study applied a waiting-list control method and provided the treatment to every participant. The short waiting-period could also reduce the expectation difference. In addition, no-treatment control was not used in the child studies, and all participants received evidence-supported interventions.

3.6 Chapter summary and conclusion

This chapter has presented the rationale and discussion of the chosen research methods. Given the nature and range of research objectives, an appropriate research design was adopted, utilising cross-sectional survey and randomised controlled trials. The situation and account for the targeted research location and population was also described. A detailed account of the methods, such as sampling and administration of questionnaires of each study, will be described in following relevant chapters. A large portion of the chapter was also given to a description of the instruments and the ethical issues considered in conducting the present research. The next chapter proceeds to describe the results of the first study of the present research (the cross-sectional survey in adult earthquake survivors).

Chapter 4: The cross-sectional survey

4.1 Introduction

This chapter reports the first study of this research programme which focused primarily on the extent and impact of mental health problems after the earthquake. In this study, a cross-sectional-survey was conducted for three reasons. First, it provides essential background data for this thesis in relation to the psychological status of adult earthquake survivors. Second, it justifies the representation of the study population. Third, it screens and enables the recruitment of the participants for the following intervention study. In line with these aims, this chapter investigates the prevalence of PTSD, depression, anxiety, general psychological distress, as well as posttraumatic changes (include both negative and positive changes), coping style, and social support. Comparisons between different demographic groups were conducted. Variables that predict PTSD and positive changes were examined. Two narrative examples of adult survivors obtained during the questionnaire administration process are presented following the results. The content and structure of the narratives were analysed to discuss the nature of traumatic memories.

A number of questions were addressed using the questionnaire. They are:

1. Do adult earthquake survivors of Beichuan County experience severe earthquake-related psychological distress and changes following adversity?
2. What are the risk factors for psychological distress?
3. What variables predict the severity of Chinese survivors' PTSD?
4. What variables predict the level of Chinese survivors' positive changes?

4.2 Method

4.2.1 Participants

Data was collected from the mental health assessment programme for adults affected by the earthquake in Sichuan, China, within the framework of an on-going recovery programme. The survey was carried out in December 2009 (19 months after the earthquake) among adults seeking assistance and their companies in Beichuan County. Adults were ineligible if they were not present in Beichuan at the time of the earthquake (this information was obtained from key informants or the adults themselves). An informed consent form (see Appendix 2, *p*232) was read to them because of a low literacy rate among the sample. It contained a full explanation of the study objectives, and explicit information about why their participation was being requested.

4.2.2 Measures

The psychometric details of the scales can be found in CHAPTER 3 (*p* 60), and all valid Chinese-version scales were used. The purpose of the present section is to remind the reader of the contents. The questionnaire consisted of several sections:

- **Demographic characteristics**: Age, gender, and marital status
- **Socioeconomic status**: Education, occupation, and income.
- **Loss indicators**: Severity of injury to oneself, bereavement, house damage, and the amount of financial loss

Psychological well-being

- Symptoms of PTSD were measured with *Impact of Events Scale-Revised (IES-R)*. A cut-off of 34/35 indicated a "probable PTSD" in the Chinese sample, with a high sensitivity of .86, specificity of .86 and high efficiency (.85) (Huang et al., 2006).

- The *General Health Questionnaire (GHQ-28)* was used to measure the severity of general psychiatric morbidity (i.e., distress and social dysfunction etc.) of the participants. A WHO study (Goldberg et al., 1997) had an average threshold of 5/6, a cut-off of 12/13 almost always indicating a positive psychiatric condition in the PTSD context (Easton & Turner, 1991; Turner & Lee, 1998).
- *Hospital Anxiety and Depression Scale (HADS)* was used to assess anxiety and depression symptoms. Score above 8 in both subscales were identified as "probable anxiety " or probable "depression "in the Chinese sample (Zheng et al., 2003)
- The Simplified Chinese version *Short Form of the Changes in Outlook Questionnaire (CiOQ-S)* was used to assess participants' positive and negative changes after the earthquake.

Psychosocial resources.

- Coping was assessed by the *Simplified Coping Style Questionnaire (SCSQ)*.
- Social support was assessed by *Multidimensional Scale of Perceived Social Support (MSPSS)*.

4.2.3 Procedure

The questionnaire was administered orally by the author, who is a native Mandarin speaker and qualified counsellor, in face-to-face interviews. Participants were informed that all scale items were focused on the earthquake as the trauma event to make sure that the latent psychological variables were associated with exposure to the earthquake. The duration of the interviews ranged from 30 to 60 minutes.

4.2.4 Data analysis

Descriptive statistics were computed for sample characteristics, trauma exposure indicators and psychological well-beings. Continuous data were described as means and standard deviations. T-tests and ANOVAs were used to compare mean values of symptoms by sociodemographic characteristics.

Stepwise multiple linear regression analyses were performed to identify the predictors of PTSD scores and positive changes. Differences were considered significant if the *p* value was smaller than .05.

4.3 Results

4.3.1 Descriptive analysis

One hundred and twenty participants attended the interview and completed the questionnaires. The characteristics of the participants are presented in Table 4.1. The age range of the sample (n=120) was 19 to 82 (mean = 56.90 ± 13.67). All participants had experienced the earthquake in Beichuan. Many were of low socioeconomic status: 63.3% had no fixed job or were local peasantry; 63.3% had no fixed income, and 36.7% had income less than £300 per month. The participants also experienced substantial loss in the earthquake: 41.7% had houses totally ruined, and 35.8% experienced bereavement.

Table 4.1 Characteristics of participants

		No.	%
Gender	*Male*	40	33.3
	Female	80	66.7
Marital status	*Single*	6	5.0
	Married	98	81.7
	Divorced or widowed	16	13.3
Education	*Primary or below*	69	57.5
	Middle school	29	24.2
	High school or above	22	17.4
Occupation	*No fixed job or peasantry*	76	63.3
	Fixed job	44	36.7
Income	*No fixed income*	76	63.3
	Less than £100/month	17	14.2
	£100-£300/month	27	22.5
Being injured	*No injury*	106	88.3
	Slightly injured	8	6.7
	Seriously injured	6	5.0
Bereavement	*Yes*	43	35.8
	No	77	64.2
House damage	*No or slightly damaged*	27	22.5
	Majorly damaged	43	35.8
	Totally ruined	50	41.7
Property loss	*Below £500*	39	32.5
	£500-£2000	18	15.0
	More than £2000	63	52.5
Age	*Mean(SD)*	56.90(13.67)	
	Range	19-82	

The means and SDs of psychological variable measure scores are presented in Table 4.2. The mean scores on IES-R, HADS and GHQ-28 were moderately high. With the cut-off point of total PTSD symptoms (score>35), the prevalence of probable PTSD was 30% (n=36). The prevalence of probable anxiety and depression were 45.8% (N=55) and 27.5% (n=33), respectively, with the cut-off point of 8/9. Similarly, scores on the GHQ-28 were moderately high; with the cut-off point recommended in WHO study (scores >6), 46.7% of respondents fell into the “abnormal” category; even with a more conservative threshold (scores >12), 33 (27%) participants were “abnormal” on this measure. Scores on positive change were relatively high in this

sample (24.94/30), compared with other samples assessed using the CiOQ-S (20.50/30) (Joseph, Linley, Shevlin, et al, 2006).

Table 4.2 Means and SDs of measures

		Range	Mean	*SD*
IES-R	*Avoidance*	0-32	8.83	7.53
	Intrusion	0-32	9.92	7.05
	Hyperarousal	0-24	7.57	5.86
	In total	0-88	26.32	19.26
HADS	*Anxiety*	0-21	7.88	5.33
	Depression	0-21	5.86	4.27
GHQ-28	*Somatic symptoms*	0-7	2.51	2.55
	Insomnia	0-7	1.86	2.41
	Social dysfunction	0-7	2.14	2.50
	Severe depression	0-7	1.09	1.79
	In total	0-28	7.60	7.79
CiOQ	*Positive changes*	0-30	24.94	5.20
	Negative changes	0-30	11.78	6.63
Coping	*Active*	0-40	23.23	6.78
	Passive	0-40	11.38	3.37
MSPSS	*Family*	0-28	22.56	4.28
	Friend	0-28	18.03	5.37
	Others	0-28	21.09	4.46
	In total	0-84	61.68	12.05

4.3.2 Risk factors

To examine the differences on scale scores among sub-groups, t-tests and one-way analyses of variance (ANOVA) were performed. The results were shown as following. It is noted that only significant results are included in tables, and a summary table is presented later to provide an integral review of risk factors.

4.3.2.1 Demographic characteristics: gender, marital status and age

Table 4.3 T-tests results by Gender

		Group	mean	*SD*	*df*	t	*p*
IES-R	PTSD	*Male*	21.75	18.88	118	-1.86	[a]
		Female	28.60	19.15			
HADS	Anxiety	*Male*	5.40	4.75	118	-3.81	***
		Female	9.13	5.19			
	Depression	*Male*	4.70	4.21	118	-2.13	*
		Female	6.44	4.21			
MSPSS	Family	*Male*	23.93	3.37	118	1.99	**
		Female	21.88	4.53			
	Others	*Male*	22.23	4.45	118	1.99	*
		Female	20.53	4.38			

Male n= 40; female n=80

[a] *p=0.07*

**p<0.05; **p<0.01; ***p<0.001.*

Significant differences by gender are presented in Table 4.3. Compared with male participants, female participants reported significant higher scores on anxiety, depression, and a significant lower score on support from family and others. A marginally significant higher PTSD scores (*p=0.07*) in women than men was also found.

Table 4.4 ANOVA results by marital status

			Mean	*SD*	*df*	F	t	Post hoc
IES-R	PTSD	*Single*	11.83	9.22	2,117	2.81	[a]	1/3[b]
		Married	26.08	19.37				
		Divorced or widowed	33.19	18.76				
MSPSS	Friend	*Single*	23.67	2.88	2,117	3.64	*	1/2*
		Married	17.71	5.63				1/3[c]
		Divorced or widowed	17.81	2.83				
	Others	*Single*	24.00	2.10	2,15.31	5.45	*	
		Married	21.00	4.73				
		Divorced or widowed	20.56	2.78				

1=single group (n=6); 2=Married(n=98); 3=Divorced or widowed (n=16)

[a] *p=0.065;* [b] *p=0.053;* [c] *p=0.056*

**p<0.05*

From Table 4.4, the ANOVAs indicated that the mean scores of friend support and others support differed significantly among the three groups. Post hoc comparisons

using the Turkey HSD test showed the group of single participants reported significantly more friend support than the married group, and a trend (*p=0.056*) toward more friend support than the divorced or widowed group. A nearly significant difference (*p=0.065*) among groups on PTSD score was found, showing the group of divorced or widowed reported marginally significant (*p=0.053*) higher PTSD symptoms than single participants.

There were no significant differences on measure scores among different age groups.

4.3.2.2 Socioeconomic status: education, occupation and income

Table 4.5 ANOVA results by education

			Mean	*SD*	*df*	F	*p*	Post hoc
IES-R	PTSD	*<=Primary*	31.42	20.67	2, 117	6.45	**	1/2*
		Middle school	20.93	15.81				1/3**
		>=High school	17.41	13.27				
HADS	Anxiety	*<=Primary*	8.94	5.07	2, 117	4.08	*	1/3*
		Middle school	7.21	5.29				
		>=High school	5.45	5.48				
	Depression	*<=Primary*	6.96	4.43	2, 117	6.20	**	1/2*
		Middle school	4.79	3.29				1/3**
		>=High school	3.82	3.91				
GHQ-28	Distress	*<=Primary*	9.64	8.84	2, 117	6.08	**	1/2*
		Middle school	5.14	5.40				1/3*
		>=High school	4.45	4.44				
CiOQ	Negative	*<=Primary*	12.87	7.13	2, 117	3.50	*	1/3*
		Middle school	11.52	5.94				
		>=High school	8.68	4.83				
SCSQ	Active	*<=Primary*	21.96	7.08	2, 117	4.01	*	1/3*
		Middle school	23.83	5.59				
		>=High school	26.45	6.32				
	Passive	*<=Primary*	11.94	3.00	2, 117	4.88	**	1/3**
		Middle school	11.52	3.12				
		>=High school	9.45	4.13				
MSPSS	Friend	*<=Primary*	16.43	4.87	2, 117	8.73	***	1/2*
		Middle school	19.45	5.64				1/3***
		>=High school	21.14	4.80				

1=Primary school or below(n=69) 2=Middle school(n=29); 3=High school or above(n=22)
**p<0.05; **p<0.01; ***p<0.001.*

In terms of education (Table 4.5), there were significant group differences on PTSD, anxiety, depression, general distress, negative change, active coping, passive coping and friend support. Post hoc comparisons indicated that the group with primary school or below education scored higher on PTSD symptoms, depression, and distress, and lower on friend support than the other two groups. Compared with the group with high school or above education, the group with primary school or below education reported higher score on anxiety, negative change, and passive coping, and a lower score on active coping.

Table 4.6 T-test results by occupation

		Fixed Job	**mean**	***SD***	**df**	**t**	***p***
IES-R	PTSD	*No*	30.99	20.44	118	4.06	***
		Yes	18.25	13.87			
HADS	Anxiety	*No*	9.03	5.33	118	3.21	**
		Yes	5.91	4.77			
	Depression	*No*	7.04	4.36	118	4.61	***
		Yes	3.82	3.24			
GHQ-28	distress	*No*	9.41	8.73	118	4.11	***
		Yes	4.48	4.40			
CiOQ	Negative	*No*	13.01	7.29	118	3.10	**
	changes	*Yes*	9.64	4.64			
Coping	Active	*No*	22.30	7.19	118	-2.00	*
		Yes	24.84	5.73			
	Passive	*No*	12.05	3.08	118	2.95	**
		Yes	10.23	3.56			
MSPSS	Friend	*No*	16.86	5.26	118	-3.26	***
		Yes	20.05	5.01			
	Others	*No*	20.20	4.56	118	-2.98	**
		Yes	22.64	3.86			

No fixed job n=76; fixed job n=44
**p<0.05; **p<0.01; ***p<0.001.*

With regard to occupation (Table 4.6), the group with no fixed job reported significantly higher scores on PTSD symptoms, anxiety, depression, general distress, negative change, and passive coping, and lower on active coping, friend support, and support from significant others.

Table 4.7 ANOVA results by income

			Mean	*SD*	*df*	F	*p*	Post hoc
IES-R	PTSD	*None*	29.84	20.84	2, 117	4.15	*	1/3*
		<=£300	23.76	11.24				
		£100-300	18.00	15.93				
HADS	Anxiety	*None*	8.79	5.26	2, 117	5.38	**	1/3**
		<=£300	8.35	5.11				
		£100-300	5.04	4.81				
	Depression	*None*	6.93	4.28	2, 117	7.68	***	1/3**
		<=£300	4.65	3.46				
		£100-300	3.59	3.67				
GHQ-28	distress	*None*	8.55	7.36	2, 117	2.89	[a]	1/3[b]
		<=£300	8.29	11.18				
		£100-300	4.48	5.59				
CiOQ	Negative	*None*	13.57	6.75	2, 117	8.54	***	1/2**
		<=£300	8.47	5.36				1/3**
		£100-300	8.81	5.13				
SCSQ	Passive	*None*	11.96	3.09	2, 117	4.14	*	1/3*
		<=£300	11.24	3.63				
		£100-300	9.85	3.58				
MSPSS	Friend	*None*	16.64	5.15	2, 117	8.07	***	1/3**
		<=£300	19.53	5.32				
		£100-300	20.96	4.73				

1=None/month(n=76;2=<= £300/month(n=17); 3=£100-£300/month(n=27)

[a] p=0.06; [b] p=0.051

**p<0.05; **p<0.01; ***p<0.00.*

There were significant between-group differences by income (Table 4.7) on PTSD, anxiety, depression, negative change, passive coping, friend support, and a nearly significant difference on general distress. Post hoc tests indicated that the group of none-fixed income scored significantly higher on PTSD symptoms, anxiety, depression, friend support, and passive coping and a trend towards higher on distress than the group of £100-300 income. The none-fixed income group also reported significantly higher negative change than the other two groups.

4.3.2.3 Loss indicators: bereavement, house damage and loss amount##

Table 4.8 T-test results by bereavement

			mean	*SD*	*df*	t	*p*
IES-R	PTSD	*Yes*	34.51	21.97	118	3.35	***
		No	21.74	15.96			
GHQ-28	Distress	*Yes*	10.98	9.43	118	3.306	**
		No	5.71	5.98			
CiOQ	Negative change	*Yes*	13.53	7.08	118	2.208	*
		No	10.79	6.20			

Experienced bereavement :Yes n=43 ; No n=77
**p<0.05; **p<0.01; ***p<0.001*

It can be seen from the table 4.8 that bereaved participants reported higher PTSD symptoms, distress and negative change than those without bereavement.

Table 4.9 ANOVA results by house damage

		Damage	Mean	*SD*	*df*	F	*p*	Post hoc
IES-R	PTSD	*No/Slight*	17.59	16.87	2, 117	5.226	**	1/3**
		Majorly	25.37	19.21				
		Totally	31.84	18.95				
GHQ-28	Distress	*No/Slight*	4.19	5.14	2, 117	4.424	*	1/3*
		Majorly	7.47	7.65				
		Totally	9.56	8.54				
CiOQ	Negative	*No/Slight*	9.81	5.79	2, 117	6.055	**	1/3*
		Majorly	10.23	6.61				
		Totally	14.16	6.44				
MSPSS	Friend	*No/Slight*	19.52	4.81	2, 117	4.324	*	1/3*
		Majorly	19.00	5.25				
		Totally	16.38	5.42				

1=No or slightly damaged(n=27); 2=Majorly damaged(n=23); 3= Totally ruined(n=50)
**p<0.05; **p<0.01; ***p<0.001*

In terms of house damage (Table 4.9), ANOVAs showed significant between-group differences on PTSD symptoms, general distress, negative change, and friend support. Post-hoc tests revealed that participants whose house was totally ruined reported higher score on PTSD symptoms, distress, and negative change, and a

lower score on friend support than the group whose house was not or slightly damaged.

Table 4.10 ANOVA results by the amount of financial loss

		Loss	Mean	*SD*	*df*	*F*	*p*	Post hoc
IES-R	PTSD	*<=500*	19.03	17.03	2, 117	7.66	***	1/3**
		500-2000	20.44	12.66				
		>=2000	32.51	20.19				
GHQ-28	Distress	*<=500*	4.87	6.27	2, 117	5.71	**	1/3**
		500-2000	5.89	5.58				
		>=2000	9.78	8.57				
CiOQ	Negative	*<=500*	10.03	6.11	2, 117	3.76	*	1/3*
		500-2000	10.17	5.62				
		>=2000	13.32	6.91				
MSPSS	Friend	*<=500*	19.79	4.75	2, 117	4.18	*	1/3*
		500-2000	18.61	5.11				
		>=2000	16.76	5.54				

1=below £500(n=39); 2=£500-2000(n=18); 3=more than £2000(n=63)
**p<0.05; **p<0.01; ***p<0.001*

With regard to loss, ANOVAs showed significant between-group differences on PTSD symptoms, distress, negative change, and friend support. Compared with the group of less than £500 loss, post-hoc tests revealed that group whose loss was more than £2,000 had a higher score on PTSD symptoms, distress, and negative change, and a lower score on friend support.

4.3.2.3 Summary

A table including all significant risk factors is presented (Table 4.11). In summary, it was found that education, occupation, income, bereavement, house damage, and loss all had effects on PTSD symptoms. Survivors with a lower educational level, no fixed job, lower income, bereavement, who experienced severer house damage, and incurred more financial loss suffered more severe PTSD symptoms.

Anxiety and depression were influenced by the variables of gender, and all socioeconomic status variables (education, occupation, and income). Women and

those with a lower educational level, without a fixed job and lower income score higher on anxiety and depression.

Table 4.11 Summary of the significant risk factors on psychological variables*

	Demographics		Socioecnomic status			Loss indicators		
	Female	Married	Lower education	No fixed job	Lower income	Bereaved	Severer house	More financial
Higher PTSD score			X	X	X	X	X	X
Higher anxiety score	X		X	X	X			
Higher depression score	X		X	X	X			
Higher distress score			X	X		X	X	X
More positive change								
More negative change			X	X	X	X	X	X
Less active coping			X	X				
More passive coping			X	X	X			
Less perceived family support	X							
Less perceived friend support		X	X	X	X		X	X
Less perceived other support	X			X				

**only significant effects are included*

Educational level, occupation and all loss indicators (bereavement, house damage, and financial loss amount) had influences on general distress. Survivors with a lower educational level, lower income, bereavement, with severe house damage, and more loss would experience more distress and negative change.

Negative change was influenced by all socioeconomic status and loss indicators. Survivors with a lower educational level, without a fixed job, lower income, bereaved, with severer house damage, and more loss would experience more distress and negative change.

Coping was affected by socioeconomic status. Survivors with higher education and fixed job tended to use more active coping and less passive coping, and survivors with lower education, without a fixed job, and less income would apply more passive coping.

With regard to social support, it is influenced by the demographic variables (gender and marital status), socioeconomic status (education, occupation and income), and material loss (house damage and loss amount). Women reported less family support. Married, those with a lower educational level, without a fixed job, lower income, with severe house damage, and more financial loss reported less friend support; women, and those without a fixed job, reported less support from significant others.

To note, some marginally significant effects of risk factors were found. Of these, women were likely to report a higher PTSD score than men; single participants were likely to perceive more friend support; and those with lower income were likely to score higher on general distress.

Positive change was not affected by any of the participant characteristics variables. The severity of injury had no effect on any scale.

4.3.3 Independent predictors of severity of PTSD

To index the most accurate predictors for post-traumatic stress in earthquake survivors, background variables were entered into the general liner model first as the fixed factors and the IES-R score as the dependent variable. However, results showed that no background variables were significant indicators. Next, a stepwise multiple regression was carried out with total IES-R score as the dependent variable, and all subscales of HADS, GHQ-28, CiOQ-S, SCSQ, and MSPSS as independent variables.

All independent variables were simultaneously entered into the equation: (1) anxiety (HADS), (2) depression (HADS), (3) somatic symptoms (GHQ-28), (4) insomnia (GHQ-28), (5) social dysfunction (GHQ-28); (6) severe depression (GHQ-28), (7) positive change (CiOQ-S), (8) negative change (CiOQ-S) (9) active coping, (10) passive coping, (11) total social support (MSPSS).

Table 4.12 presents the correlation coefficients of the variables entered into the equation. All factors, except positive change, correlated with the total IES-R score. Table 4.13 presents the summary table of the stepwise multiple regression.

Table 4.12 Correlation coefficients of factors entered into stepwise multiple regression

	1	2	3	4	5	6	7	8	9	10	11
PTSD	.45**	.47**	.34**	.64**	.52**	.52**	.06	.50**	-.26**	.20*	-.30**
1-anxiety		.64**	.37**	.45**	.42**	.49**	-.17	.40**	-.40**	.22*	-.36**
2-depression			.25**	.38**	.46**	.48**	-.19*	.53**	-.49**	.27**	-.47**
3-somatic				.64**	.62**	.49**	.07	.20*	-.17	.09	-.15
4-insomnia					.62**	.66**	.02	.39**	-.18*	.12	-.22*
5-social dysfunction						62**	-.01	.49**	-.36**	.15	-.34**
6-severe depression							-.09	.49**.	-.41**	.20*	-.37**
7-positive changes								-.15	.22*	-.07	.28**
8-negative changes									-.44**	.22*	.44**
9-active coping										-.15	.52**
10-passive coping											-.14
11-social support											

**p<0.05; **p<0.01.*

Insomnia and negative change were the only significant predictors of IES-R scores, accounting for 50.5% variance of the severity of PTSD.

Table 4.13 Multiple regression analysis summary of variables predicting PTSD

Variables	B	SE	β
Insomnia	5.06	0.64	0.57***
Negative change	0.70	0.21	0.24**
Constant	9.03	2.55	

Note. R^2 =0.514; adjusted R^2 =0.505; F=61.25,p<0.001

***p<0.01; ***p<0.001*

4.3.4 Independent predictors for positive change

As shown in Table 4.12, active coping and social support were positively correlated with positive change score; depression was negatively associated with positive change scores.

This null finding that the no correlation between CiOQ-SCS and intrusion was of interest as previous research has indicated a existed correlation between posttraumatic growth and intrusion (Helgeson et al., 2006; Joseph & Linley, 2005). The explanation for this is that the IES-R used here is not a sensitive enough measure of intrusion as it also includes items relating to sleep disturbance. To further explore this possibility, the IES-R intrusion scale was split into a rumination–intrusion score and a separate sleep disturbance score (see Andrews, Shevlin, Troop, & Joseph, 2004). Consistent with the explanation, scores on the CiOP-S were now associated with rumination–intrusion ($r=0.18$, $p<0.05$), but not with sleep disturbance ($r=0.02$), with CiON-S scores partialled out to avoid any confounding effects.

Multiple regressions using the stepwise method were conducted to assess the ability of four correlated variables (depression, active coping, social support, and rumination-intrusion) to predict the level of positive change. The result is presented in Table 4.14

Table 4.14 Multiple regression analysis summary of variables predicting positive change

Variables	B	SE	β
Social support	0.14	0.04	0.32***
Rumination-intrusion	0.20	0.10	0.19*
Constant	17.54	2.40	

Note. $R^2=0.11$; adjusted $R^2=0.10$; $F=7.24, p<0.01$

*$P<0.05$; ***$p<0.001$

In the final model, social support and rumination-intrusion were statistically significant predictors for positive change, but they could explain only 10% of the variance in positive change.

4.4 Narrative examples of adult survivors

During the process of questionnaire assessment, many participants started to narrate their earthquake experience involuntarily when responding to related scale items. They tried to describe and tell their earthquake-surviving stories completely. Although feelings of sadness, fear, and anger were expressed in their narratives, the participants did not show any withdrawal intentions, nor were they offended that the survey recalled their traumatic memory. Instead, they showed enthusiasm and demands on story-telling. Given this situation, some of these narratives were recorded. Although the systematic analysis was beyond the scope of this research programme, two examples were translated and presented to provide a direct comparison of the narrative of participants with different PTSD scores.

Here is the narrative of the earthquake experience of a female participant, who was 45-years-old. She scored 48 in IES-R.

> Q: Could you talk about the situation when the earthquake happened?
>
> A: Oh, now if something quakes I'll know, sensitive, very much. The road is being repaired in our place, I know, if something presses the earth, at that time, let me tell you, I was running, my waist was painful.
>
> Q: What were you doing, and where were you when the earthquake happened?
>
> A: I was in the room. They asked me to have a rest, take a sleep. I did not, I had a rest, and they asked me to sleep, I said, aiya, I wanted to sit for a while, sit. When I just sat, I was making, making sock sewing. At the beginning, I thought, it must be my sister's husband, drove a big lorry, and came up to carry things. I just heard this "long long long" (mimetic word), after a while, I tried to see, I just walked out like this, I went out to see, that window, that hill, just fell like this. That window, swayed to this side, I resisted it, and I thought there must be too much pressure from the lorry. I went like this, to make it; I went to found it was not right. Our daughter was in the opposite,

watching TV, surfing the internet. We were all scared at that time. I even did not call my daughter, and my daughter did not realise to call me neither, just knew that someone was in the opposite, knew she was in the opposite, she should be scared. There was no electricity at that time. That quake… I saw they all ran down, she was in the opposite, just ran downstairs, that stair fell down, just fell in the door. If I was (reacting) 1 or 2 seconds slower, I would be crushed down in the end. Just, ran out to this house, this eave, that house

…..

It is, our sister's husband, we do not have a house to live, our sister's husband's house, they rented the factory buildings, rented the factory buildings. There was a passageway, she was there, and we were here. There was a stair on the side of her, just ran down. There just had a flat ground, as wide as two steps, and could not run any more. I… just ran out the gate, just downstairs. I was sitting in the second floor, first floor, second floor, ran to the gate, there was a street in the left. Only one just as wide as a car, houses over there were also lived by dependents, and that way also lived dependents (of the factory workers). Houses were at two sides, we were just here. We just walked to there, and could not walk any more.

…..

The faces were black, totally black. Later we all saw, oh, there were a family, and made a column head, that big head. Just hang there. It would smash you (your body) to pieces, oh, he just missed, and it was also not his turn to die. Two of my nephews, that morning, that noon, she has two children, one was 5, and the other was 6, she was with her two children. I asked "why don't you play today", I said "are you going to sleep"? She said she did not want to sleep, she wanted to play mahjong. She said she just brought the children, send them to the school. When she just lead (the children) to the basement, it started to shake. That day, just in time, we should not die; we then hold together, that big lump (of people). Later (we) went out, the whole mountain totally finished over, you could not walk. They were all running, I said don't run, I said, so many wire poles, there was electricity, electrocution, burned you, and could not feel. I saw that house, had a balcony, that house, quaked three times and did not fell down…could do nothing if it fell down. There was a big lump (of people), could not run. At that time, cannot cry out. To be honest, we tell the truth, we did not realize to cry, no tear, could not cry out.

Q: Just fear?

A: Yes, at the time, we ran to that flat ground, lying people, dead people, injured people, without shoes. I was just wearing a shirt, oh, ran out with only a shirt. I did not wear other clothes, just ran out, at that time, the rain started, oh, put up a shed, that night, my, my husband left (left to where?). I was afraid that the place (he stayed) also quaked; my daughter was in Dujiangyan, worried. The phone was out, even in the second day, the phone

> was out, finally, I went to this town, and accessed the phone. When the phone connected, she said she was fine, I cried out immediately. I just cried out, I cried as soon as (I know) he was fine, I couldn't cry if he had problem, really, I could not cry. I felt better after I cried out, better. To be honest, I felt very hard, worried. I just wear the clothes taken out from the ruins by others. On the third day, I was sent to the stadium, and got more clothes in the stadium, stayed there for several days

This individual is a forty five years old woman. She narrated her experiences during the earthquake, and described the scenes that she saw. Audiences may find that the narrative is not easy to follow. In terms of the content, the description lacks contextual information and connective words. Her story does not show a level of sophistication, and the emotion expressed is direct and simple. It may reflect that when people feel threatened, they experience a significant narrowing of consciousness and remain merely focused on the central perceptual details. The information from the narrative is of a lower level, with more perceptual information (mainly visual information in this sample) from the scene of the trauma. She used lots of demonstrative pronouns (e.g. that, there) to indicate the materials of the scene of the earthquake, as though she was still situated there. With regard to the structure, the sentences were fragmented and incomplete, indicating that elements of experience are not integrated into a unitary whole, but are stored in memory as isolated fragments. For example, she did not mention her husband before, but suddenly said "my husband left" in the latter part. The absence of coherence would confuse audiences. In general, this narrative reflects the dissociation and the fragmentary nature of traumatic memory.

The following is the second narrative example of another female participant, who is also 45-years-old. She only scored 4 on IES-R.

> Q: Could you please talk about your experience in the earthquake.
>
> A: We were in the ditch, making that, washing that silkworms, silkworm pans, we were feeding silkworms. We were washing the pans, brought the pans, washing them in the ditch, in the river, almost finished, then the earthquake happened, the earth started to shake, as soon as the earthquake started, my husband shouted to me, "be quick, come up, go up to the shore". On the opposite side, on the shore, that earth wall house, that wall, that stone

wall, so high [making hand gestures], “HONG” [her voice suddenly got loud] just fell! Just hit the ditch where I was, that ditch where I was washing, that just…if I was slower, it would hit me. On the opposite of the river, opposite the river is a big fishpond, there were lots of fish. That woman was talking with me, she said, their fishpond… “HONG!” (mimetic word) [speaking louder suddenly], we saw the opposite side all collapsed from our side! The fishpond also collapsed. She fell down as soon as a flash. My husband led me. I picked up him/her up and walked

Q: Who was picked up by you, that woman?

A: Pick up my husband, I said, let’s go! Then she rose (from the river), she shouted: “Help, help!”, and then my husband went there to drag her, drag her… then, one step, just fell down, made him hurt here, no way, and couldn’t pull her up, and, there was a big slate, as big as two people, crush to her leg. She could not get up, just crushed to her rear leg, I went in the water, lift the slate, then pull her up, but could not, we could not see anything around, then we ran away. We pulled her up, and then we ran away, we did not know whether she came out. Then… we really could do nothing to her, we just left, lost her, tried to pull her up, but lost her, and then we ran to the shore, then she came up, she did not dies, we neither. Was it on 12th the earthquake happened? [asking the researcher] We, 17th, we were in that hill, stayed until 17th, we put up that… found some plastic paper, the paper from roof, tear it down, brought it to that hill side, found some bamboo poles, build up a shed, just lived there until 17th, and then went down.

……

Then, we went to the street on 17th, the Liberation Army team saved us, wounded people, we went there to see others, found doctors. I ask my husband to see doctors, just sewed him, sewed 9 needles, sewed 9 needles, then we left, later on, his hand recovered after changing several dressings.

A: What did you think when the earthquake came?

Q: A [sign], at that time of earthquake, could not think of, was the world real? Just did not know have or haven’t, it was (happened in) just our Beichuan (place name), did not know whether (it was just) our Beichuan, thought the whole world was same.

Q: Did you feel fear at that time?

A: Aiya! Awfully scared, tried hardly… did not know whether we could live or not, did not know whether we could live or not, until, from 12th, 13th, 14th, 15th, 16th, 17th [thinking and counting], it was always like, “Honglong, honglong”(mimetic word), kept shaking, it was always like this. There was a big river on the place we lived, you know, on the other side of the river… we were on that side, on the other side was a mountain. That mountain was

more fragmented. It were all collapsed, made the house… it could say that, all the earth were destroyed. At that time, on our river side, we originally, originally, there was an old man, about 60 to 70 years old, he was picking corns, then [suddenly louder] “HONG”, the earth cracked that largely, raised the earth up! Made him, jump to here, then jump to there, finally he jumped out, did not made him fall to the crack.

Q: En, the earth cracked that big?

A: Yes, cracked, and then, the water in that big river, just vanished; it was as deep as a person, immediately vanished! We stayed there for one or two hours, all finished, (someone) shout at us, come here quickly, come here quickly, went to the high place.

Q: Did you remember what time it was?

A: Almost at 4 o’clock, we went to the other side of the river, just walk through the river, just walk through river dike, the bridge was broken, and water was vanished. Then we climbed to the high place, just climb, Aiyo, climb to the high place, when we went there, students, the whole school, even all schools of our communities, all were there, students were bought to the high place. We stayed there for one night, on the second day, the Liberation Army rescued the students and left. We just build up a shed, as my husband’s hand was broken, could not leave. That hill, it needed five hours to climb to Renjiaping (place name). The mud was so deep, no way. Mud, red mud! That Liberation Army also had no idea, then that people, just ran and follow the army. The army said, “do not come, we even hardly to take care of those students, and we can’t take care of you”. After the second day, we walked down slowly. We were all wet all over the body, no other ways, we finally crawl out, it is not easy!

Q: What did you think at that time?

A: I was thinking, maybe couldn’t, and couldn’t go out alive. At that time, definitely could not go out alive. The earth kept shaking, always shaking, like, no way, it kept collapsing on the high places of the mountains. Those stones, big stones, small stones, there was a family just at the foot of the hill. They have two people. They are our Guye’s children. They were outside, digging the earth with the basket on the back. When the earthquake happened, (the man) hold the woman, (the man) hold the woman’s hand, but the stone, from the height, crashed the woman to dead. He carried his wife’s body on his back alone, walked, until walked to a big black stone, that big! So big a black stone, carried to there, went to there, and found, after his back was (falling stones)… he could not hold (the body) any more, then he ran, and ran, finally crawled out, he lived, the woman was killed. He was holding his wife’s hand; but still, (his wife) was killed. Now he is lived alone.

Compared with the first example, this participant's narrative is easier to follow. She not only described her experiences, but also told stories of others. Her narrative provides more context information, and words indicating the time and connection. The sentences were more complete and coherently organised, reflecting a decent organisation of the memory. When asked about the feeling or thoughts, she revealed evaluations of the current situation, e.g. whether there were opportunities to live, indicating that her consciousness was not narrowed merely on the perceptual details, but on a cognition, or meta-cognition level.

4.5 Discussion

4.5.1 Prevalence rate of psychological morbidity

The current study investigates the prevalence of probable PTSD, anxiety, depression and general distress level among adult survivors in the severely affected earthquake area 19 months after the Sichuan earthquake in China. The rates were 30% for probable PTSD, 45.8% for probable anxiety, 27.5% probable depression, and 27.5% for general distress. The prevalence of probable PTSD was comparable to those reported in epidemiological studies conducted within a short time after the earthquake: 45.5% prevalence of suspected PTSD in Beichuan County two-and-a-half months after the earthquake (Kun et al., 2009) and 37.6% of probable PTSD three months after its occurrence (Wang et al., 2009). The high prevalence rate of PTSD after about 1.5 years could be explained in several ways. It was possible that there was originally much higher prevalence, but this is unknown. However, the comparable rate with previous studies indicated that survivors with PTSD rarely recovered spontaneously in this sample. In addition, the questionnaire was administered orally by in-person interview, which may cause response bias, e.g. reported symptoms to elicit sympathy, or something more concrete, to receive more distress reports (Moum, 1998).

It was found that the psychiatric morbidity was strongly associated with a high level of posttraumatic stress, and high rates of prevalence, such as anxiety, depression and general distress, were reported. The results were consistent with previous studies (e.g. Brady, Killeen, Brewerton, & Lucerini, 2002; Chou, Su, & Tsai, 2007; Goenjian et al., 1995). Several possible explanations for this comorbidity could be made (McMillen, North, Mosley, & Smith, 2002). First, there was a considerable symptom overlap between PTSD and several psychiatric disorders, most notably depression and other anxiety disorders. The high rates of comorbidity in PTSD might be simply an epiphenomenon of the diagnostic criteria used for all of these disorders (Brady et al., 2002; Keane & Kaloupek, 1997). Another hypothesis was that individuals with PTSD tended to report higher levels of symptoms when compared with individuals with other psychiatric disorders (Hyer, Fallon, Harrison, & Boudewyns, 1987). Finally, the high levels of comorbidity might be partially explained by the fact that the presence of certain psychiatric disorders (e.g., major depression) was a risk factor for the development of PTSD, and that they may have been presented before the trauma (Andrykowski & Cordova, 1998; Brady et al., 2002). The findings of this 1.5-year screening of the Sichuan earthquake highlight the long-term psychological impact of a major natural disaster on the survivors.

4.5.2 Risk factors of psychological morbidity

The present study showed that almost all the socioeconomic status (SES) variables and loss indicators, including low education level, no fixed job, low income, bereavement, severe house damage, and loss were the risk factors for PTSD, or other comorbidity. Female gender, divorced and widowed marital status were marginally significant risk factors. These findings were consistent with previous studies.

With regard to gender, the positive relationship between females and psychiatric morbidity after disaster was reported in several studies (e.g. Başoğlu, Kiliç, Salcioğlu, & Livanou, 2004; Cao, McFarlane, & Klimidis, 2003; Chen et al., 2007; Priebe et al.,

2009). In the present research, being of the female gender was also a risk factor for general anxiety and depression. It is well documented that women are more prone to depression (e.g. Howell, Castle, & Yonkers, 2006) and almost all anxiety disorders (Egloff & Schmukle, 2004) than men.

Researchers have proposed that women's and girls' subjective perceived excessive risk appears to be a moderator of their elevated vulnerability (Norris et al., 2002). Neurobiological and behavioural evidences showed that men and women differ regarding memories for emotional events (Cahill et al., 2001, 2004). Cahill (2003) speculated that gender differences in brain activity during the processing of emotional episodes may be causally related to the greater prevalence of PTSD and clinical depression among women. A few studies had supported this by showing women tended to recall more emotional events and access them faster than men, in particular negative feelings (e.g. Bauer, Stennes, & Haight, 2003; Davis, 1999; Herlitz, Nilsson, & Bäckman, 1997; Seidlitz & Diener, 1998). If these findings of non-traumatic events in men and women hold for memory of a traumatic event, women would be more inclined to think and talk about the event than men. As women have easier access to the emotional memory, they may suffer more from intrusions and nightmares related to the trauma, and may be more inclined to use the traumatic memory as a reference point for understanding themselves and the world, leading to maladaptive attributions (Berntsen & Rubin, 2006). Access to negative autobiographical memories is increased in depression, though the memories are less specific (Williams et al., 2007).

In addition, women perceived less support from family and significant others than men. This result was inconsistent with a large-scale community study, in which women reported greater perceived support than men (Turner, 1994). This finding was explained by the women's greater involvement in social relationships. However, as the population of the present study was traumatised, it was reasonable to consider that the earthquake would have an impact on women's social activity. This was also linked to the overwhelming rate of married participants in this sample; 98 participants were married, only six were single, and 16 participants were divorced

or widowed. There may have been an interaction between gender and marital status. The less perceived support from family and significant others (mainly local village leaders and relatives) link to married women's roles as family caretaker and kin keeper at life cycle. Especially in this sample, after the earthquake, most men were out at work during the day time because their cultivated lands had been destroyed. Women stayed at home to take care of other family members (mainly elders and children). The heavy responsibility and obligations could be a source of stress for married women, and weaken their social ties (Norris & Uhl, 1993), or the heavy family load made them expect more support from family and others than they actually received.

It was found that marital status was a likely risk factor for PTSD (*p=0.065*), and divorced and widowed participants reported more PTSD symptoms. However, as described above, this result could not be generalised as the subgroups were highly uneven. Similarly, the significant difference between single and divorced or widowed groups on social support could be biased because of the sample characteristic.

The results revealed that socioeconomic status of lower education, no fixed job, and lower income of the victims were risk factors of PTSD, anxiety, depression, and general distress. It was consistent with previous studies and reviews (e.g. Armenian et al., 2000; Brewin, Andrews, & Valentine, 2000; Norris et al., 2002), indicating the socioeconomic status could impact vulnerability, and relate to overall life demands, knowledge about coping, and access to social and material resources (Dohrenwend, 2000; Hobfoll, 2004). Lower educational level may be associated with lower resilience, including poorer coping skills, lower self-esteem, and lower insight, etc., which made it hard for victims to recover from trauma. This explanation was supported by the results that people with lower education, without a fixed job, and on lower income reported more negative change, less active coping, more passive coping, and less social support from friends and others. This could be referred to as "social causation," a tributary of a general social causation theory that considers environmental adversity, disadvantage, and stress associated with low

socioeconomic status (SES) as contributors to the onset of psychiatric disorders (see Dohrenwend, 2000; Johnson, Cohen, Dohrenwend, Link, & Brook, 1999).

The loss indicators of bereavement, house damage, and total financial amount were found to be the risk factors of PTSD and general distress. The results were comparable with previous studies conducted after earthquake (Armenian et al., 2000; Armenian et al., 2002; Sharan, Chaudhary, Kavathekar, & Saxena, 1996). It was noted that the participants were recruited from the most severely affected area of the Sichuan earthquake, and the earthquake partially destroyed their dwellings and property. It was reasonably assumed that the extent of property destruction could reflect the severity of exposure to some degree. The destruction of the house and possessions could act as life-threatening stressors, as well as financial losses and relocation stressors. Chinese culture is notable for its emphasis on the whole family as opposed to the individual. This cultural characteristic was also illustrated by the finding that subjects with prominent house damage or living problems were at greater risk for psychiatric morbidity or PTSD.

The results also showed that the house damage, financial loss amount, and bereavement were positively correlated with negative change. This reflected that the life-threatening stressors could influence participants' schematic structures that have guided understanding, making, and meaningfulness (Janoff-Bullman, 1992). In addition, more material loss was reversely associated with perception of support from friends. This might because people with a large amount of financial loss may expect more support from friends than people with less loss, but there was a gap between the expectation and the real support they received.

It was found that injury was not a risk factor for any psychiatric morbidity in the present study. This might be because most participants were not injured in the earthquake (n=106). Severely injured people of this community were not included in the survey because they were still in hospitals or at home for treatment.

4.5.3 Predictors for PTSD

This study examined a model for the prediction of severity of PTSD symptoms. Among all psychological variables correlating with PTSD score, insomnia and negative change were the most powerful predictors, which explained 50.5% of variance of PTSD symptom. Impaired sleep is a common complaint among people who suffer from posttraumatic stress disorder (PTSD) and has even been referred to as the "hallmark" of PTSD (Ross, Ball, Sullivan, & Caroff, 1989). It is now well recognized that the traditional perspective – that insomnia is secondary to a so-called primary disorder – is not accurate (Wright et al., 2011). Instead, insomnia is regarded as a comorbid disorder that is often an important maintainer of the other comorbid disorders (Harvey, 2001; NIH, 2005). Based on evidence from well-designed, large-scale, longitudinal studies, Harvey (2001) concluded that insomnia is a risk factor for the development of psychological disorders, thus making it a "primary" diagnosis. For example, It has been found that early sleep disturbances at baseline can predict PTSD at follow-up one year later (Koren, Arnon, Lavie, & Klein, 2002; Wright et al., 2011). It was presumed by the researcher that the lack of sleep in those with insomnia prevents normal, sleep-dependent emotional memory processing, and puts individuals at risk for the development of mood and anxiety disorders (Wright et al., 2011). This theoretical perspective had generally taken two forms, which are not mutually exclusive. In the first form, Stickgold (2002) argued that sleep performs a function similar to cognitive restructuring therapy. That is, sleep represented a unique brain state that facilitates memory integration or association. During sleep, emotional memories in confined neuronal networks become associated with other memories in larger neuronal networks, thus providing the cognitive perspective necessary for successful emotional adaptation. In the second form of the theory, Walker (2009) argued that sleep performs a function similar to systematic desensitization therapy. That is, sleep normally served to strip the emotional component from memories. A failure or an absence of this process could then trigger psychological symptoms such as the reexperiencing symptoms of PTSD. Evidence that supported these theories comes

from a study demonstrating that sleep is necessary for the generalization of extinction after aversive conditioning. Pace-Schott et al. (2009) used a mild electric stimulus as the unconditioned stimulus and skin conductance as the response, with participants randomised to a sleep or wake condition. Generalization of fear extinction from an extinguished conditioned stimulus to a non-extinguished conditioned stimulus depended on the presence of intervening sleep. Therefore, it demonstrates that the sleep quality is essential to the proceeding of traumatic memory regarding to the both structure (integration) and content (emotional components).

The second powerful predictor for PTSD symptom was negative change. This result was consistent with previous work using the CiOQ, which found that negative change was the single best baseline predictor of six-month distress and well-being outcomes in a general sample of 1,657 respondents to an internet survey following the September 11, 2001 attacks in the United States (Butler et al., 2005). This could link to the view that profound challenges to basic assumptions about the self, others, and the world can be one of the most deleterious effects of traumatic experience (Janoff-Bullman, 1992), which have been reported in the context of terrorism (Difede, Apfeldorf, Cloitre, Spielman, & Perry, 1997). Cognitive theories of PTSD suggest that exposure to information during a trauma that is contradictory to one's fundamental beliefs may be associated with the development of PTSD symptoms (McCann, Sakheim, & Abrahamson, 1988). Ehlers and Clark (2000) suggested that a variety of idiosyncratic negative appraisals of the sequelae of the traumatic event can produce a sense of current threat and contribute to persistent PTSD. Individuals may interpret their symptoms as indications that they have permanently changed for the worse. The study explored acute mental health effects of terrorism of 9/11 (Difede et al., 1997) found that patients seemed most distressed from the disconfirmation of their fundamental beliefs, regarding themselves (invulnerability, immortality), the world (predictability, controllability, and safety), and others (trust, safety, isolation), that had shaped their lives, other than the unbidden vivid sensory images of their trauma (e.g., intrusive symptoms).

Most notably those interviewed reported that the world did not seem safe and that others no longer seemed trustworthy.

In summary, this model supported the pathology of PTSD proposed by the three main PTSD theories; the predictor of insomnia reflected the maladaptive processing of traumatic memory in PTSD patient, and the predictor of negative change provides evidence of the impacts of pre-trauma views and concepts on the onset and sustain of PTSD. However, the model also suggested that the current cluster of symptoms that comprise a PTSD diagnosis did not seem to capture all subjective experience from the population of this study.

4.5.4 Positive change and its predictors

With regard to positive change, the score was relatively high in this sample (24.94/30), compared with other samples assessed using CiOQ (20.50/30) (Joseph et al., 2006). In the interview, lots of participants actively reported a positive appraisal of the government's rapid response to the earthquake. The social and political context, in this case the positive view of the government, could contribute their high positive change level. A large-scale cross-sectional study after the Sichuan earthquake had showed that satisfaction with local and central government was significantly related to psychological harmony (Bai, Ren, Zheng, & Li, 2009). The perceived concern from the central government may contribute to their positive changes about the world, self, and others. Support from society may be especially prominent in Chinese culture, which promotes interdependence among people.

Higher scores on the positive change were found to correlate with higher rumination-intrusion, lower depression, higher social support, and active coping. These results also support the notion that positive changes are not simply the opposite of psychological distress but may be acting with such distress both independently, increasing positive growth, and in tandem, helping the person with meaning making after a traumatic event. This hypothesis is further supported by the significant correlation shown between positive change and rumination-intrusion

(IES-R). This finding is consistent with a previous study using CiOQ showing that positive changes were associated with the rumination-intrusion items but not the sleep-disturbance items of the IES (Joseph et al., 2005). The finding that positive change were not correlated with avoidance and hyperarousal is consistent with the previous study using CiOQ (Joseph et al., 2005) , and also with a review by Zoellner and Maercker (2006) which reported no systematic relationship between posttraumatic growth and PTSD symptoms in most cross-sectional studies (Zoellner & Maercker, 2006).

The negative correlation between positive change and depression found in this study was consistent with previous research (Aldwin, Levenson, & Spiro, 1994; Frazier, Conlon, & Glaser, 2001; Helgeson et al., 2006), and provides further evidence for the adaptive role of positive change. The finding that no correlation existed between positive change, and anxiety is consistent with the review (Linley & Joseph, 2004). The null finding between positive change and GHQ-28 also supports the conclusion that no consistent relationship between positive change and general distress can be found in cross-sectional studies (Zoellner & Maercker, 2006).

Among the correlated variables, social support and rumination-intrusion were the significant predictors, but could only explain a 10% variance of positive change. Meta-analytic findings with adults show evidence of relations between posttraumatic growth and social support (Meyerson, Grant, Smith, Kilmer, & Carter, 2011). Perceived social support from friends, families, and significant others may provide comfort as well as frameworks for making sense of the traumatic experience. As a result of these processes, over time, growth may appear. Theoretical models of growth following adversity (Joseph & Linley, 2005; Tedeschi & Calhoun, 2004), propose that some degree of intrusion is necessary for growth to take place, as intrusions are indicative of cognitive processing, which is a normal and necessary part of the adaptation process (Creamer, Burgess, & Pattison, 1992; Helgeson et al., 2006). Studies found that intrusive rumination were positively associated with posttraumatic growth and confirm the view that event-related rumination that is not exclusively negative and involves actively thinking about the

event and its consequences has adaptive qualities that may contribute to posttraumatic growth (Creamer et al., 1992; Stockton, Hunt, & Joseph, 2011).

However, the results showed that no demographic variables had an influence on positive change, which is different from previous studies (e.g. Kun et al., 2009; Linley & Joseph, 2004). This indicates that positive change of this population may have an independent structure, or there are other latent variables accounting for it, but they were not included in this study protocol. As mentioned before, participants reported that perceived national prosperity and care for society were the main changed views after the earthquake. This may provide an explanation for the high score of positive change in this sample and its independent structure, also indicating the societal responses of the traumatic event could affect the processing of growth.

4.5.5 Narrative examples

The involuntary narrative of participants was unexpected but not surprising. A traumatic event, by definition, confronts people with extremely unusual stress; people infuse meaning into their traumatic experience by storytelling (Hunt & McHale, 2008). Although conclusions could not be made through these two examples, they provide audiences with an intuitive presentation of traumatic memory; their content and structure to some degree reflect the difference of characteristics of traumatic memory and a well-integrated memory. The systematic analysis of the narrative was beyond the scope of this project, but will be conducted by the author for further exploration.

4.5.6 Limitations

This study has several limitations. First, the sampling method used does not permit knowledge of how representative the sample was of the earthquake victim population. The sample size is too small to estimate the prevalence of psychological morbidity of the population. In addition, the sample contained more women than

men, and this uneven sampling is not ideal for a cross-sectional study. However, this reflected the sampling typically found in research of this area (Linley & Joseph, 2004) and of the survivor population. Second, the measures were presented verbally. People may like to be more positive when they are spoken to than when they are writing out their responses. However, given the level of literacy among the sample, there was little alternative.

4.6 Chapter summary and conclusions

Notwithstanding these limitations, this study is one of just a few studies that have investigated psychological distresses and risk factors among survivors following an extraordinarily destructive natural disaster in a non-Western country. Given the lack of studies concerning the mental health of disaster victims in China, the information provided by this study is useful for directing, strengthening, and evaluating disaster-related mental health needs and interventions in this context. It highlights the mental health problems after this earthquake, and provides the background for the intervention studies of the following chapters. It identified a model of PTSD and provides the support of the mechanism of narrative intervention, which focused on the disorganised, fragmented, and sensory memory of PTSD patients. The following CHAPTER 5 presents the studies investigating the effectiveness of the NET within the participants recruited from the present study.

Chapter 5: A randomised controlled pilot study: The effectiveness of narrative exposure therapy with adult survivors of the Sichuan earthquake (NET-1 Study)

5.1 Introduction

CHAPTER 4 provided an integral view of the mental health status of Chinese earthquake survivors 1.5 years after the Sichuan earthquake. Given the high prevalence rate of psychological morbidity, and shortage of resources after this disaster, brief, pragmatic, and easily trainable interventions are needed. The aim of this chapter is to evaluate the effectiveness of Narrative Exposure Therapy (NET) as a short-term treatment for PTSD within Chinese earthquake survivors. The mechanism, empirical evidences, and previous study samples of NET, have been outlined in previous chapters. Unique strengths of NET lie in the relative short treatment time, its efficiency in developing areas, and participants of low SES (e.g. refugees). A description of the method used in this study was presented in Section 5.2, including information about the study participants, data collection, measures, procedures, treatment process, data analyses, and statistical analysis method. The results of the study are shown in Section 5.3. Findings are then interpreted and discussed in light of the study aims, literature review, and practical feasibility. The chapter concludes with a summary of the results and considers the effectiveness and future adaptation of NET.

In this phase, a waiting-list RCT was conducted. This chapter investigated the effects

of NET on PTSD, depression, anxiety, general mental distress, as well as posttraumatic changes (include both negative and positive changes), coping style, and social support.

It is hypothesised that NET will:

1. Significantly decrease symptoms of PTSD, depression and anxiety, and general mental health symptoms;
2. Significantly improve perceived social support and coping;
3. Lead to positive change and reduce negative change.

5.2 Methods

5.2.1 Participants

The study used waiting list controlled balanced randomisation (1:1) and took place between December 2009 and March 2010 (19-23 months after the earthquake) in Beichuan County, an area severely affected by the earthquake. Participants were selected on the basis of scores in a screening programme within the framework of an ongoing mental and physical recovery programme. The screening was carried out among adults seeking assistance. Survivors who scored 20+ on the Impact of Event Scale-Revised (IES-R), which was part of the programme, were presented with the PTSD Diagnostic Scale (PDS) to confirm a diagnosis of PTSD. Eligible participants were all adults aged 18 or over who met the DSM-IV criteria of PTSD as measured by the PDS. Exclusion criteria included participation in another psychological treatment programme and an inability to finish the treatment because of relocation – several people changed their accommodation unpredictably and so were excluded.

Twenty-two survivors were recruited to participate in this study. All participants gave

informed consent after receiving a full explanation of the study design and objectives, and explicit information regarding what the study entailed. The information was presented orally by a small research team of three researchers led by the first author.

5.2.2 Measures

The detail and psychometric properties of the measures were provided in CHAPTER 3 (*p*66).

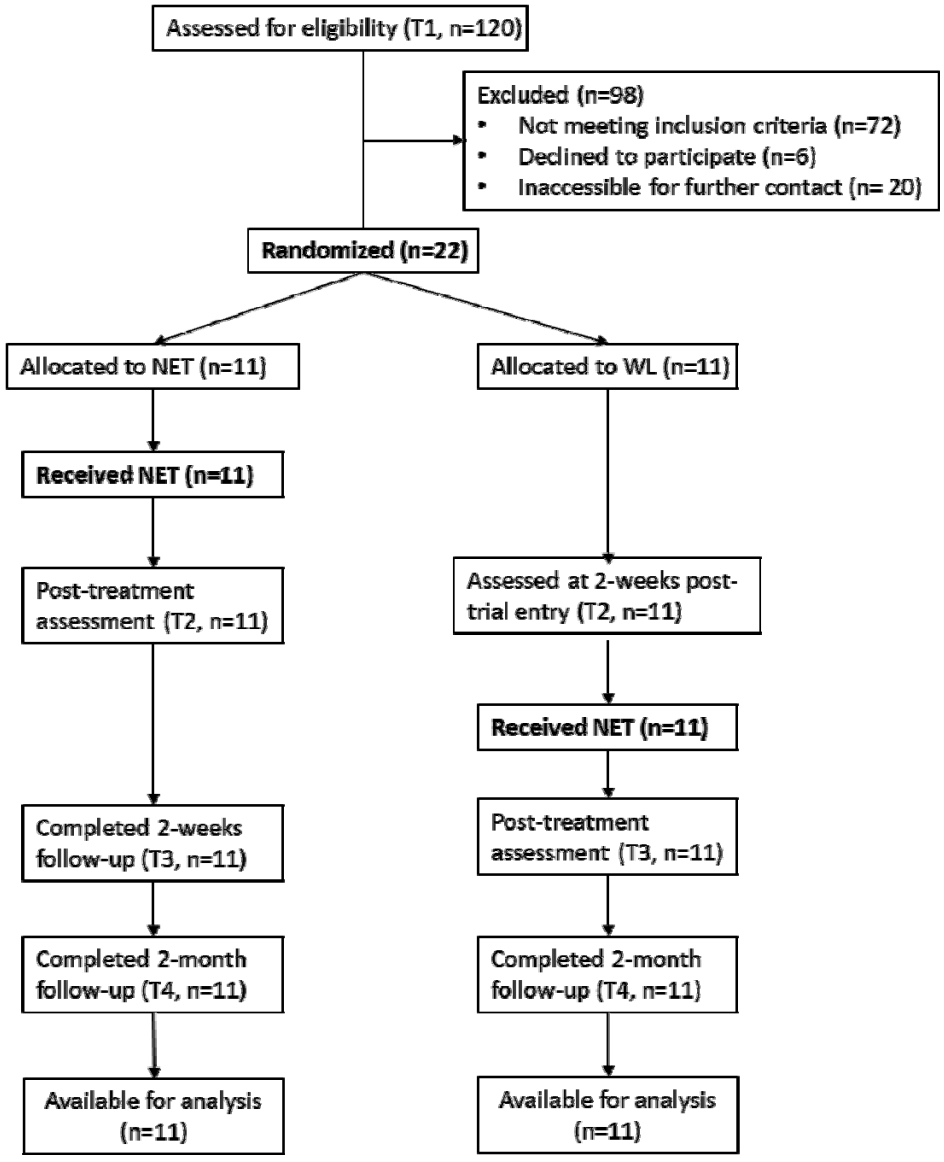
- Symptoms of PTSD were measured with *Impact of Events Scales (IES-R)*.
- The *General Health Questionnaire (GHQ-28)* was used to measure the severity of general psychiatric morbidity (i.e., distress and social dysfunction) of the participants.
- *Hospital Anxiety and Depression Scale (HADS)* was used to assess the anxiety and depression symptoms.
- The Simplified Chinese version *Short Form of the Changes in Outlook Questionnaire (CiOQ-S)* was used to assess participants' positive and negative changes after the earthquake.
- Social support was assessed by *Multidimensional Scale of Perceived Social Support (MSPSS)*.
- Coping was assessed by the Simplified Coping Style Questionnaire (SCSQ).

5.2.3 Procedure

Twenty-two participants were randomly allocated to either NET (n=11) or a waiting list condition (WL; n=11) by a computer-generated list of random numbers. Those in the NET condition received therapy immediately; those in the WL condition received the same treatment after a waiting period. The assessment of the screening process (T1) was used as the baseline. Those in the NET condition received four therapy sessions of 60-90 minutes each, which lasted two weeks with three or four days between each session, and were assessed post treatment (T2), after another two

weeks (T3) and then after two months (T4) by using same scales. The WL controls were assessed two weeks after the trial entry (waiting period) (T2), then given NET and assessed post treatment (T3) and finally assessed after two months (T4). Participants were informed that all scale items were focused on the earthquake as the trauma event to make sure that the latent psychological variables were associated with exposure to the earthquake. Figure 5.1 presents the research and treatment schedules for both conditions. There were no drop-outs, with all participants completing the entire course of treatment and follow-up.

Figure 5.1 CONSORT diagram showing the flow of participants through each group



5.2.4 Treatment

The treatment started shortly after the pre-test. Four sessions of NET (90 minutes per session) were given to the participants as outlined in the manual. During these sessions, the patient, assisted by the therapist, constructed a detailed chronological report of his/her own biography with a special focus on the traumatic experiences. The narrative was recorded by the counsellor and corrected with each subsequent reading. The participants were encouraged to relive emotions while reporting the events. In the last session, the participant received a written report of his biography.

5.2.5 Statistical analysis

Group differences in demographic data and pre-treatment measures were analysed by using chi-square tests and two-tailed t-tests. Pre- to post-treatment changes in questionnaire scores were analysed using univariate analyses of covariance (ANCOVAs) while controlling for pre-treatment scores. ANCOVAs are recommended as a robust and reliable statistical strategy for analysing the results of RCTs (Vickers, 2005; Vickers, 2005). Within-group changes of each group from pre- to post-treatment were tested using paired t-tests. Effect sizes were then converted to unbiased Hedges' g values to correct for variations because of small sample sizes (Hedges, 1982). The equation is defined as following:

$$g = \frac{\bar{x}_1 - \bar{x}_2}{s^*}, \qquad s^* = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}.$$

Hedge's g was calculated as effect size for within- and between-group changes. The long-term treatment effect was analysed using repeated measures ANOVAs with the pre-test, post-test, and follow-up scores and two groups. Pairwise differences were measured using paired t-tests with a Bonferroni correction. All analyses were

performed in SPSS version 16.0.

5.3 Results

5.3.1 Treatment adherence

All participants constructed and completed a detailed chronological account of his/her own biography. The number of traumatic events they experienced was reported in Table 5.1. Participants' reported previous traumatic experiences included difficult life conditions, a family member's terminal disease, or accidental injury. They did not report events such as violence, torture, or persecution, events described in previous NET studies of refugees. Participants spent no more than one session on narrating previous traumatic events, with two to three sessions focused on the single incident of the earthquake. All participants completed the treatment. No major deviation from the study protocol was apparent.

5.3.2 Baseline data

The age range of the sample was 37 to 75 (55.7 ±11.7). The socio demographic characteristics of the participants are described in Table 5.1. All were of low socio-economic status. There were no significant differences between the two groups regarding age, gender, education, marital status, income, injuries, and house damage.

Table 5.1 Sociodemographic characteristics of participants within the two treatment groups

		NET(n=11)	WL (n=11)	Analysis	
		n	n	χ^2	*p*
Gender	*Male*	3	2	0.00	0.99
	Female	8	9		
Marital status	*Married*	10	9	0.00	0.99
	Divorced or widowed	1	2		
Education	*Primary or below*	8	9	1.01	0.59
	Junior middle school	2	2		
	High School	1	0		
Income	*No fixed income*	9	9	4.00	0.14
	Below £100	2	0		
	£100-£300	0	2		
Injured in the earthquake	*Yes*	5	3	0.79	0.66
	No	6	8		
House damage	*Totally damaged*	7	8	1.07	0.59
	Partically damaged	3	3		
	Slightly damaged	1	0		
Previous traumatic	*No*	5	5	0.44	0.80
	2 or 3 times	4	5		
	Over 3 times	2	1		
		M(SD)	M(SD)	*t*	*p*
Age		56.64(12.22)	54.82(11.59)	0.36	0.73

5.3.3 Treatment effect

Table 5.2 showed the mean scale scores of two groups at each time point (T1, T2, T3, and T4). At baseline (T1), there is no significant difference between two groups.

Table 5.2 Measures over time for treatment and waitinglist control group

	T1		T2		T3		T4	
Measures	***Mean***	***SD***	***Mean***	***SD***	***Mean***	***SD***	***Mean***	***SD***
Avoidance								
NET	17.64	9.19	9.09	5.43	8.45	5.22	9.73	6.20
WL+NET	15.73	4.08	16.09	3.65	9.36	2.98	8.46	3.30
Intrusion								
NET	16.91	6.88	8.73	4.56	8.36	3.91	7.73	5.10
WL+NET	17.36	3.17	16.00	4.29	9.00	3.55	8.55	2.77
Hyperarousal								
NET	13.64	4.48	8.00	3.82	7.72	4.13	6.64	4.39
WL+NET	14.55	3.59	15.09	2.98	9.91	2.88	8.55	2.54
General stress								
NET	9.45	5.05	3.00	3.38	2.82	3.63	2.73	3.35
WL+NET	13.27	6.94	13.64	5.75	5.55	3.45	5.09	2.70
Anxiety								
NET	8.45	3.86	5.27	2.83	5.00	2.53	5.45	3.03
WL+NET	9.55	4.91	8.64	3.56	5.00	3.16	4.82	2.48
Depression								
NET	8.18	4.21	4.18	2.36	5.00	2.68	4.91	3.02
WL+NET	7.09	3.21	7.09	2.95	4.00	2.24	3.73	2.10
Positive change								
NET	24.82	3.66	26.91	2.43	27.45	2.11	28.00	1.79
WL+NET	26.82	2.27	26.73	2.33	28.27	2.24	28.09	2.12
Negative change								
NET	16.55	7.92	11.82	5.78	11.09	6.07	10.64	4.25
WL+NET	15.00	7.25	15.82	6.84	11.36	5.82	9.90	3.18
Social support								
NET	60.64	13.06	62.00	11.57	60.64	10.86	61.27	11.72
WL+NET	61.00	6.96	58.91	5.77	60.18	9.38	57.55	5.50
Active coping								
NET	23.45	7.93	25.09	6.77	23.45	6.07	23.82	8.57
WL+NET	24.18	5.96	23.09	5.39	24.73	4.08	24.18	5.10
Passive coping								
NET	11.18	4.29	10.27	3.23	10.45	3.45	10.09	2.84
WL+NET	11.45	2.58	11.73	2.97	10.82	2.96	10.45	1.57

5.3.4 Initial treatment outcome

Table 5.3 Results of outcome measures of T1 and T2

Means difference, 95% CI, paired t-test, within group effect sizes, ANCOVA analysis, and between group effect sizes

Measures	Groups	Mean difference	95% CI	Within-groups *df*	Within-groups *t*	effect size	Between- *df*	Between- *F*	effect size
Avoidance	*NET*	8.55	(3.85 to 13.24)	10	4.05**	1.09	1,19	28.99***	1.46
	WL	-0.36	(1.54 to 0.81)	10	-0.69	0.09			
Intrusion	*NET*	8.18	(4.40 to 11.97)	10	4.82**	1.35	1,19	22.20***	1.58
	WL	1.36	(-0.02 to 2.75)	10	2.19	0.35			
Hyperarousal	*NET*	5.64	(4.04 to 7.23)	10	7.68***	1.30	1,19	57.30***	1.99
	WL	-0.55	(-2.02 to 0.94)	10	-0.82	0.16			
GHQ-28	*NET*	6.45	(4.72 to 8.19)	10	8.29***	1.44	1,19	33.33***	2.17
	WL	-0.36	(-3.85 to 3.11)	10	-0.23	0.06			
Anxiety	*NET*	3.18	(2.06 to 4.30)	10	6.35***	0.90	1,19	21.38***	1.01
	WL	0.91	(-0.58 to 2.40)	10	1.36	0.20			
Depression	*NET*	4.00	(1.83 to 6.17)	10	4.11**	1.13	1,19	14.57**	1.05
	WL	0.00	(-1.62 to 1.62)	10	0.00	0.00			
Positive change	*NET*	-2.09	(-3.19 to -0.99)	10	4.23**	0.65	1,19	3.86[a]	0.07
	WL	0.09	(-1.39 to 1.58)	10	0.14	0.04			
Negative change	*NET*	4.73	(2.50 to 6.96)	10	4.72**	0.66	1,19	32.14***	0.61
	WL	-0.82	(-1.97 to 0.34)	10	-1.58	0.12			
Social support	*NET*	-1.36	(-4.20 to 1.48)	10	1.07	0.11	1,19	4.25b	0.33
	WL	2.09	(-0.86 to 5.04)	10	1.60	0.31			
Active coping	*NET*	-1.64	(-3.85 to 0.58)	10	-1.65	0.21	1,19	5.21*	0.31
	WL	2.59	(-0.65 to2.83)	10	1.40	0.18			
Passive coping	*NET*	0.91	(-0.38 to 2.20)	10	1.57	0.23	1,19	4.44*	0.45
	WL	-0.27	(-0.95 to 0.41)	10	-0.90	0.10			

**p<0.05; **p<0.01; ***p<0.001.*

[a] *p=0.06;* [b] *p=0.05*

The initial treatment outcome analyses are described in Table 5.3. Paired t-tests revealed there were no significant within-group changes in the scores for WL group across its waiting period, but there were significant within-group changes in the scores of the NET group with treatment on avoidance, intrusion, hyperarousal, GHQ-28, anxiety and depression, and positive and negative changes.

Univariate ANCOVAs on post-treatment scores controlling for pre-treatment scores revealed significant effects for IES-R, GHQ-28, HADS, CiOQ and SCSQ. Following the

treatment at the waiting period (T2), there were significant differences between the scores of the NET and WL groups on avoidance, intrusion, hyperarousal, GHQ-28, anxiety and depression, negative changes, active coping, passive coping, and trends towards higher on social support *(p*=0.06*),* and positive changes *(p*=0.05*).*

Within- and between-group effect sizes for the outcome measures are included in Table 5.3. From pre to post treatment, large (≥.80) within-group effect sizes were found for the treatment group on the avoidance, intrusion, hyperarousal, GHQ-28, anxiety and depression, moderate (.50-.79) within-group effects were found on the positive and negative changes. Large between- group effect sizes were found on the avoidance, intrusion, hyperarousal, GHQ-28, anxiety and depression, moderate between-group effect sizes were found on the negative changes, and small (.20-.49) between-group effect sizes were found on active and passive coping.

5.3.5 Two-month follow-up

As the WL group received the treatment after T2, the scores of T2 for WL group were taken as their pre-test baseline. The pre-test, post-test and two month follow-up scores were analysed using repeated measures ANOVAs with two groups. Table 5.4 presents the repeated measures ANOVAs with three levels of time: pre-treatment (T1 for NET and T2 for WL), post-treatment (T2 for NET and T3 for WL) and at two month follow up (T4 for both groups) and treatment group (NET vs. WL) as between-subjects variable.

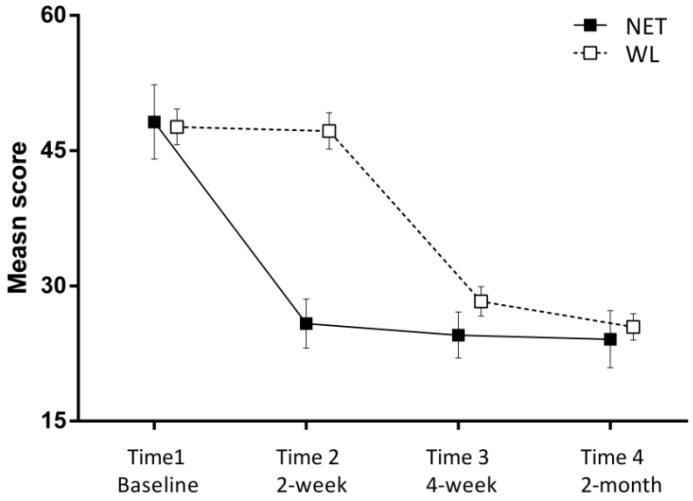
Table 5.4 Repeated ANOVA of time (pre-treatment, post-treatment, follow-up) × group (NET, WL) with post-hoc Bonferroni tests

	Time		Time ×		*pre/post*	*pre/fu*	*post/fu*
Measures	***df***	***F***	***df***	***F***	***p***	***p***	***p***
IES-R Avoidance	2,19	23.83***	2,19	1.22	***	***	-
IES-R Intrusion	2,19	25.28***	2,19	0.35	***	***	-
IES-R Hyperarousal	2,19	58.24***	2,19	0.09	***	***	-
GHQ-28	2,19	41.79***	2,19	0.59	***	***	-
HADS Anxiety	2,19	44.96***	2,19	0.67	***	***	-
HADS Depression	2,19	23.35***	2,19	0.69	***	***	-
CiOQ Positive	2,19	9.53**	2,19	1.04	***	*	-
CiOQ Negative	2,19	22.85***	2,19	0.04	***	***	-
MSPSS	2,19	0.85	2,19	0.15	-	-	-
SCSQ Active	2, 19	2.13	2, 19	0.11	-	-	-
SCSQ Passive	2, 19	3.00	2, 19	0.03	-	-	-

**p<0.05; **p<0.01; ***p<0.001.*

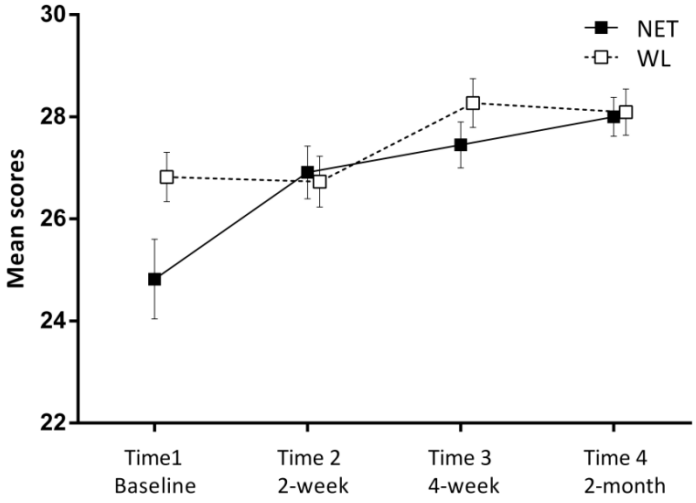
There were significant time effects post-treatment for the measures of IES-R, GHQ-28, HADS and CiQQ. There were no significant time × group interaction effects for any of the measures. Comparison of pre-, post-, and follow-up showed a significant reduction of scores after treatment in IES-R, GHQ, HADS, CIOQ, with these changes remaining stable at the two-month follow-up. These indicated that, for both groups, overall PTSD symptoms across the three PTSD symptom clusters (intrusion, avoidance, and hyper arousal) (Figure 5.2), general mental health, depression and anxiety, and negative changes all decreased with NET. The positive changes of CiOQ increased significantly (Figure 5.3). Perceived social support and coping did not change as a result of the treatment.

Figure 5.2 Mean scores for IES-R of two groups



The WL group did not undergo NET during the first two weeks of the study. At Time 2, participants in the NET had significantly lower self-reported symptoms of PTSD than did participants in the WL group. At Time 3, after the WL group completed the NET treatment, a difference no longer existed between the groups. The effects maintained in Time 4 (two-month follow-up). Error bars indicate standard errors.

Figure 5.3 Mean scores for positive changes of two groups



At Time 2, after the NET group underwent the treatment, their positive change score was significantly higher than the score at Time1, and there was no change for WL group. At Time 3, after the WL group completed the treatment, their positive score increased significantly. The effects of two groups maintained in Time 4 (two-month follow-up). Error bars indicate standard errors.

5.4 Discussion

In this study, an examination was made of the effectiveness and safety of NET, a short-term treatment approach for therapy of traumatised adults. The results supported the effectiveness of NET in treating adult survivors of the Sichuan earthquake. Significant effects were found across a number of psychological variables post treatment. Levels of reported symptoms of PTSD, depression and anxiety, and general mental health were significantly reduced, and these reductions were stable for the two-month follow up. Negative posttraumatic changes were reduced, and positive changes increased. NET had little effect on either coping styles or social support.

Significant improvements in posttraumatic symptom categories after NET may reflect the mechanism of emotional habituation elicited by the exposure (Foa & Rothbaum, 1998) and the efficiency of the narrative approach in the remediation of distortion of the explicit autobiographic memory about traumatic events, such as intrusive memory fragment, avoidance of thoughts, and trauma reminders (Ehlers & Clark, 2000). Depression, anxiety and general mental distress scores were also significantly reduced with NET. The impact of NET on reducing depression has been observed by Bichescu et al (2007). This may be because persistent posttraumatic symptoms contribute to additional psychological and physical disturbances (Bichescu et al., 2005; Joffe, Brodaty, Luscombe, & Ehrlich, 2003). It indicates that NET could reduce comorbid symptoms beyond the core set of PTSD.

The size of the treatment effect on posttraumatic symptoms at posttest (1.09-1.35) was higher than the effect sizes (0.6) reported in previous NET with traumatized refugee populations (Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004). The score on positive changes was relatively high in this sample (25-26⁄30), compared

with other samples assessed using the CiOQ (20.50/30) (Joseph et al., 2006). Anecdotally, the participants generally reported a high positive appraisal of the government's rapid response to the earthquake. The social and political context, in this case the positive view of the government, could have an influence on the outcome of psychotherapies, though this is speculative, and needs further systematic research.

The difference to previous NET studies may be ascribed to the Chinese state-led support and assistance after the earthquake as opposed to the insecurity and severe economic problems with refugees. In addition, an improvement in positive change (posttraumatic growth) and reduction in negative changes after treatment was found, with the outcome being stable at the two-month follow-up. This suggests that treatment not only decreases symptoms, but may also improve growth. It is consistent with one study with 65 PTSD patients treated with exposure therapy which showed that people experienced posttraumatic growth through finding new possibilities and personal strengths (Hagenaars & Minnen, 2010). The current findings may be linked to NET treatment focusing on helping people develop narratives about what has happened to them. Previous research has indicated the importance of narrative development for meaning-making after traumatic events (Hunt & McHale, 2008).

Contrary to the hypothesis is that there is only weak indication of improvement in perceived social support and coping. Other studies have found that chronic disorders such as PTSD can corrode social support (Kaniasty & Norris, 1993; Lepore, Evans, & Schneider, 1991). However, NET did not specifically address how people can change their social behaviour; it may be too short to have a significant effect on social support. Regarding coping, findings in this area are mixed. Individual differences in coping style have been found to influence the transition from distress

to disorder (Dalgleish et al., 1996). Other studies indicate that coping has limited predictive power for PTSD (Spurrell & McFarlane, 1993). The relationship between events, coping, and disorder is likely to be complicated (Edwards & Cooper, 1988). Previous NET studies have not assessed coping style, and little is known about the effect on coping of the intervention. However, this result may suggest that a short-term intervention would be unlikely to change the coping. Alternatively, it may be that the measure chosen was not sensitive enough to pick up subtle changes. In addition, it may relate to coping style being a personality characteristic, and it is unlikely that a procedure such as NET will change its levels, or two months is too short to find the improvement.

The study was the first time NET has been applied to a Chinese setting and in earthquake-related PTSD. Although the efficacy of NET has already been shown across cultures in Europe, Africa, and Asia (Bichescu et al., 2007; Neuner et al., 2008, 2004), the psychosocial environment in this study was different from previous work which has largely focused on people affected by war and torture. While the choice of IES-R in this study was based on evidence of its effectiveness in other studies, a direct comparison of PTSD severity with previous NET studies using other measures (e.g. CAPS) is not possible. However, compared with populations of previous NET studies who experienced multiple or chronic traumatic events, particularly those originating from organised violence or torture of a severe and chronic nature, it is possible that earthquake survivors have a less severe or complex level of trauma. NET was originally designed to examine traumatic situations where there was a perpetrator as it is derived in part from testimony therapy, which enables a witness document to be created. Nevertheless, the current study showed that for possibly simpler traumatic events without a perpetrator, NET can be effective. What this study indicates is the possibility of extending the approach outside of situations where testimony may be required, and that people want to create narratives under

different types of situations.

The lack of dropouts in the NET is in line with other NET studies (Bichescu et al., 2005; Neuner et al., 2004). Most participants informally reported that they felt relieved and more comfortable after NET. This may be because of the nature of the intervention. NET uses narrative, which is the approach we all use in interactions so, unlike approaches such as CBT, it has good face validity and is not intimidating to the participant.

The main limitation of the study is the sample size and the lack of a longer-term follow-up. The sample size is small as the study aimed to test the effectiveness of NET in a new population (Chinese, and no perpetrator of the traumatic event), and practical considerations meant that a longer-term follow up was impractical, as many of the participants were being moved into new accommodation in the period after the study, and would not always be traceable. Clearly, the sample may not be representative of Chinese earthquake survivors in general – at least in part because most participants were women. This reflected the sampling typically found in research of this area (Linley & Joseph, 2004) and in survivor population as and most men were out for work during the day. However, the overall effectiveness of the intervention demonstrated its utility in such circumstances.

It was found that some participants were not interested in signing off their final written biography. It may be because of their poor education level or – perhaps more likely – that there were no perpetrators, so there was no need for a signed witness report. Furthermore, according to feedback, four sessions was too long for many participants. This was because it usually took one session on the narration of their previous trauma experiences of traumatic life events, but 10 of the 22 participants had no other trauma experiences except the earthquake. Therefore, most changes to the narrative and to symptoms appeared to occur in the first two

sessions (though there is no empirical evidence for this, so it will be necessary to conduct further research to test this). Some participants reported automatically reduced PTSD symptoms (e.g. better sleep and less intrusion) and improved well-being (e.g. starting to hum while walking) after two sessions. This may suggest the standard four-session NET could perhaps be adapted and shortened for disaster-related traumatic events. In addition, participants showed great interesting in lifeline construction; they seemed to enjoy recalling their important life events, and agreed that the lifeline encouraged them to rethink the meaning of earthquake in their lives. Our study provides evidence for the applicability of a Western developed approach in the Chinese population.

5.5 Chapter summary and conclusion

In conclusion, the NET appears to be an effective treatment for earthquake survivors displaying psychological symptoms. Not only is it effective for PTSD symptoms, but also for anxiety, depression and general mental health. NET, though initially designed for use with refugees and other victims of war, may be an effective treatment programme for a wider range of traumatic and stressful events. The benefits of NET are clear. However, some issues were also raised that indicated that NET could be adapted and shortened for this setting. In light of these clinical possibilities, the following chapter reports the further adaptation of NET and the exploration of the efficiency for the revised NET.

Chapter 6: Adapting Narrative Exposure Therapy for earthquake-related posttraumatic stress: A randomised waiting list controlled study (NET-2 study)

6.1 Introduction

The NET-1 study in CHAPTER 5 supported the effectiveness of NET in treating posttraumatic stress of Chinese earthquake survivors. However, as discussed in previous chapters, some practical issues were also raised in the process of therapy and interview, suggesting that NET could be further adapted and shortened for posttraumatic stress after a single natural disaster. This chapter reports the second RCT study in the research programme and presents the adaptation and evaluation of the revised NET.

The modification of NET is firstly specified and discussed in Section 6.1.1, and the hypotheses are then presented. This is followed by a description of the method used in this study of Section 6.2, including information about the study participants, data collection, measures, procedure, and statistical treatments conducted to analyse the data. Next, the results of the study are presented in Section 6.3. Major findings are then interpreted and discussed in light of the study's research questions, literature review, and practical feasibility. The chapter concludes with a summary of the results and considerations in terms of the efficacy of the revised NET.

6.1.1 Issues raised in previous studies

According to the cross-sectional survey and NET-1 study, three issues were recognised. First, it was found that participants' earthquake memories were easily triggered by the scale items, which initiated the participants' involuntary narration of their earthquake experience at the halfway point of the assessment. As presented in CHAPTER 4, the triggered narratives were fragmented, intrusive and emotional. It was possible that the unorganised traumatic memory could distress participants after the interview, and expose them to traumatic scenes and emotions. However, further help was not immediately provided.

Second, in practice, it was found that four-session treatment was too long for many earthquake survivors as most of them only experienced one traumatic event, and changes to the narrative and to symptoms appeared to occur in the first two sessions. With regard to those who experienced multiple traumatic events, they reported previous traumatic experiences including difficult life conditions, family member's terminal disease, or accidental injury. They did not report events such as violence, torture or persecution, which were described in previous NET studies of refugees. All participants spent no more than one session on narrating previously experienced traumatic events as they narrated previous events coherently. Most participants reported automatically reduced PTSD symptoms after one-session's earthquake narration, which suggested that earthquake experience was their main "hot" memory. In addition, some participants also asked whether they could end the treatment after two sessions as they thought they had recovered. However, this did not mean that the lifeline was useless. On the contrary, participants of NET-1 study showed significant interest in lifeline construction; they seemed to enjoy recalling their important life events, and agreed that the lifeline encouraged them to reflect to the meaning of earthquake in their lives.

Third, participants were not interested in signing off their final written biography. This may be because that the earthquake did not influence survivors' dignity like the man-made war, torture, or violence, so they had no need to regain it through the explicit human rights orientation of "testifying" (Schauer, Neuner, and Elbert 2005).

The above issues indicate that the original format of NET may not be ideal for people who experienced a single traumatic event. This raises the questions of (1) whether faster improvement can be achieved if NET is delivered in a shortened and intensive format, (2) whether a reinforcement on earthquake narration would lead to a better treatment effect, (3) how well such intensive treatments are tolerated, and (4) whether the testimony signing is necessary for earthquake survivors.

6.1.2 Adaptation of NET

Therefore, NET was modified based on the NET setting from the handbook (Schauer, Neuner, and Elbert 2005) and above questions. The authors of NET have summarised the effective elements of NET as following (*p.25*):

1. Active chronological reconstruction of the autobiographical/episodic memory.
2. Prolonged exposure to the "hot spots" and full activation of the fear memory to modify the emotional network (i.e., learning to separate the traumatic memory from the conditioned emotional response, and understanding triggers as cues, which are just temporarily associated) through detailed narration and imagination of the traumatic event.
3. Meaningful linkage and integration of physiological, sensory, cognitive and emotional responses to one's time, space and life context (i.e., comprehension of the original context of acquisition and the re-emergence of the conditioned responses in later life).
4. Cognitive revaluation of behaviour and patterns, as well as a reinterpretation of the content through reprocessing of negative, fearful, and traumatic events – completion and closure.

5. Regaining of one's dignity through satisfaction of the need for acknowledgement through the explicit human rights orientation of "testifying".

The modification principle was retaining the effective elements of NET, but making it more feasible and adaptable in the context of single traumatic event. Table 6.1 shows the session settings of the original NET and revised NET (NET-R).

Table 6.1 Comparison of the treatment processes of the original NET and the revised NET

	Original NET for PTSD after organised violence	Revised NET for PTSD after earthquake
Session 1	• Introduction • Pre-treatment diagnostics • Psychoeducation	• Introduction • Pre-treatment diagnostics • Psychoeducation
Session 2	• Lifeline • Starting the narration beginning birth continuing through to the first traumatic event	• Starting the earthquake narration
Session 3 and subsequent sessions	• Reading of the narrative collected in previous sessions. Continuing the narration of subsequent life and traumatic events	• Continuing the narration of the earthquake if needed
The last session	• Rereading and signing whole document	• Lifeline • Narrating from birth to current time, including reading of the earthquake narrative collected in previous sessions. • Reading the recorded final autobiography
Frequency	➢ Weekly or biweekly	➢ 1-2 days interval

It can be seen that the first change of NET-R is shortening the treatment length to one week, and the interval between each session was cut down to one-to-two days. Intensive and short trauma-focused approaches, such as CBT, have been evaluated for treating PTSD. Ehlers et al. (2010) found that an intensive five-to-seven working

day CTB for PTSD was a feasible and promising alternative to weekly treatment. Basoglu et al. (2007) evaluated a single-session behaviour treatment for earthquake-related posttraumatic stress, and this brief behavioural treatment has promised to be a cost-effective intervention for disaster survivors. However, all trauma-focused treatment protocols require the patient to confront their trauma memories and trauma reminders, but methods of confrontation and its duration vary (Ehlers, Clark, et al., 2010). It is unclear how well patients with PTSD would tolerate these procedures in an intensive treatment format.

The second change is shifting the therapeutic order by bringing forward the earthquake narration before the lifeline construct. This is because, as previously stated, participants in the present study could narrate their previous life stories coherently, but they could not report the related earthquake experience in a consistent, chronological order, indicating that the earthquake trauma was their main trigger of PTSD symptoms. Therefore, it is possible that dealing with their most problematic memory first, and then integrating the earthquake experience into their autobiography in a later lifeline, could strengthen the treatment effect. However, the lifeline could serve as a way of developing trust, so the postposition may also weaken the effects. This needs to be identified in the following research. Moreover, the advanced earthquake narration could also work as a quick response to their "intentional recall" in the diagnostic session. This change aims to reinforce the effect of earthquake narration and respond to the disturbance caused by the interview, but it is unknown whether the order change would affect the later lifeline construct, and the integral effects of NET.

The third change is removing the testimony signing-off. Because participants of NET-1 study showed little interest in their testimony, this change could ease the therapist's burden and enable them to treat more people in need following a

large-scale disaster.

Besides these timing and order changes, the therapeutic process (e.g. narration correction, emotion habituation, etc.) should be retained and followed by the instructions of NET handbook.

This chapter focuses on the exploration of the feasibility, acceptability, and effectiveness of the revised the NET for earthquake-related posttraumatic stress. It is expected that an intensive version of NET would be adaptable for Chinese earthquake survivors, and would lead to same recovery effect over a shorter period of time than the original NET.

It was hypothesised:

1. NET-R and NET would both significantly decrease symptoms of PTSD, depression and anxiety, and general mental health.
2. Both treatments would significantly improve perceived social support and coping.
3. Both treatments would lead to positive change.
4. Participants in the NET-R group present with a better outcome post treatment and three-month follow-up.

6.2 Method

6.2.1 Participants

The study used waiting list controlled balanced randomization (1:1:1) and took place between October 2010 and January 2011 (30-34 months after the earthquake) in Beichuan County. Individuals who experienced the Sichuan earthquake and reported PTSD symptoms were included in this study. Participants were initially screened by door-to-door visit of a small research team of four researchers led by the author. If residents' symptoms were considered to be probable PTSD, they were subsequently

screened and assessed in a face-to-face interview based on the PTSD diagnostic scale (PDS, Foa et al., 1997). Eligible participants were adults aged 18 or over who met the DSM-IV criteria of PTSD as measured by the PDS. Exclusion criteria included participation in another psychological treatment programme, and an inability to finish the treatment. Forty-six residents were interviewed initially; 30 participants met the inclusion criteria and were recruited to participate in this study. All participants gave informed consent after receiving a full explanation of the study design and objectives and explicit information regarding what the study entailed. This information was presented orally by a small research team of four researchers led by the author.

6.2.2 Measures

- Symptoms of PTSD were measured with *Impact of Events Scales (IES-R)*.
- The *General Health Questionnaire (GHQ-28)* was used to measure the severity of general psychiatric morbidity (i.e., distress and social dysfunction) of the participants.
- *Hospital Anxiety and Depression Scale (HADS)* was used to assess the anxiety and depression symptoms.
- The Simplified Chinese version *Short Form of the Changes in Outlook Questionnaire (CiOQ-S)* was used to assess participants' positive and negative changes after the earthquake.
- Social support was assessed by *Multidimensional Scale of Perceived Social Support (MSPSS)*.
- Coping was assessed by the *Brief COPE,* not the Simplified Coping Style Questionnaire (SCSQ) as the NET-1 study.

6.2.3 Procedure

Thirty participants were randomly allocated to either NET (n=10), NET-R (n=10) or a waiting list condition (WL; n=10) by a computer-generated list of random numbers.

Those in the NET condition received original NET immediately; those in the NET-R condition received the revised NET immediately; those in the WL condition received the NET-R treatment after a waiting period. The assessment of screening process (T1) was used as the baseline. Those in the NET condition received four or more therapy sessions of 60-90 minutes each, which were administered about twice weekly for two weeks. The NET-R group received three or more therapy sessions of 60-120 minutes each, and the sessions were one-to-two days apart. Both NET and NET-R were assessed post treatment (T2), after another one week (for NET condition) or two weeks (for NET-R condition) (T3) and then after three months (T4) by using the same scales. The WL controls were assessed two weeks after trial entry (waiting period) (T2), then given NET-R and assessed post treatment (T3) and finally assessed after three months (T4). Participants were informed that all scale items were focused on the earthquake as the trauma event to make sure that the latent psychological variables were associated with exposure to the earthquake. Figure 6.1 presents the research and treatment schedules for the three conditions. There were no drop-outs, with all participants completing the entire course of treatment and follow-up.

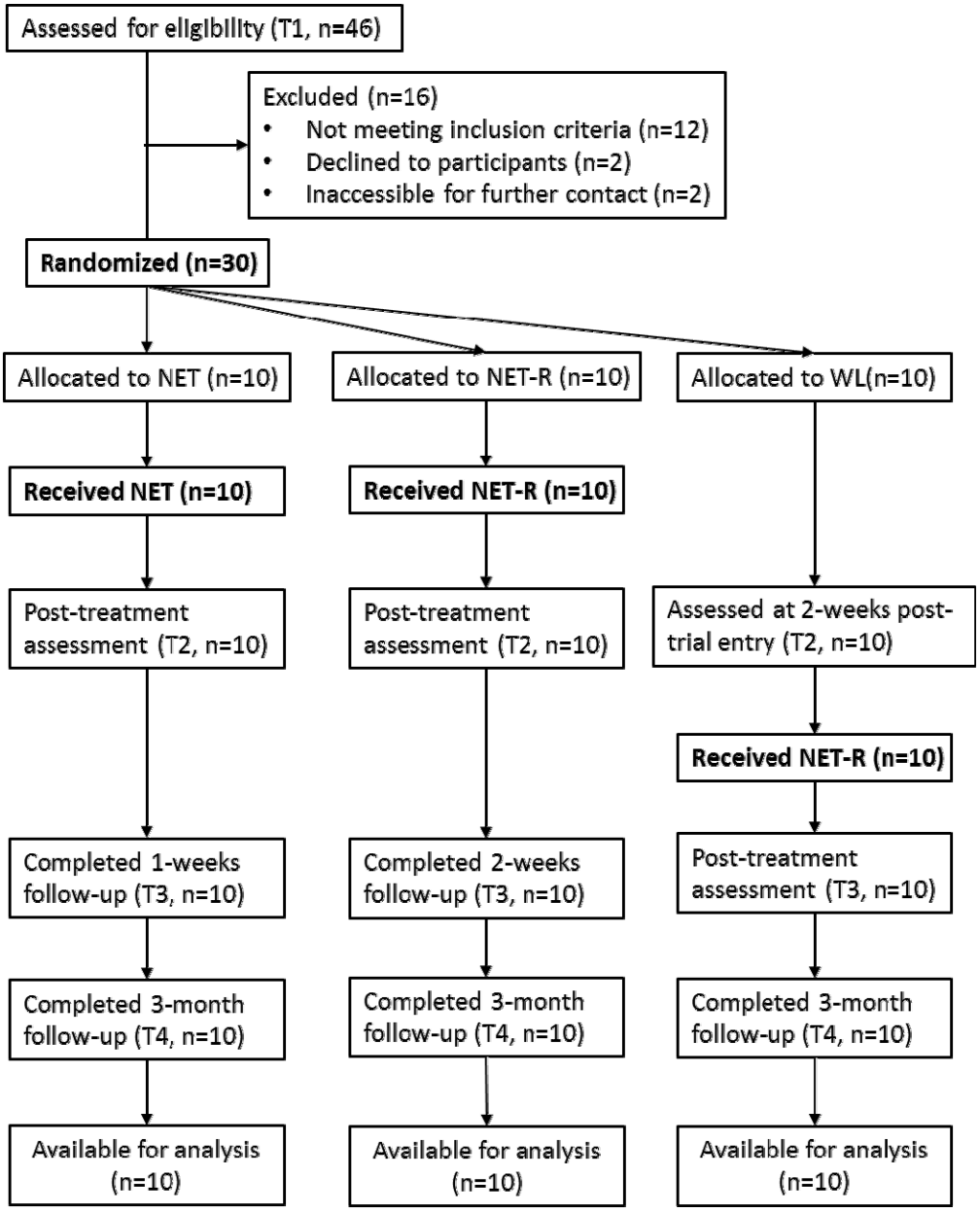


Figure 6.1 CONSORT diagram showing the flow of participants through each group

The screening process and treatments for both the NET and WL groups were carried out by the research team led by the author. The team was composed of three female psychological counsellors. All of them were native Chinese speakers, psychologists with Chinese national psychological counsellor certificates (Masters level) and were trained in the use of NET and NET-R based on the manual (Schauer, Neuner, and Elbert 2005) and the modifications. Counsellors were closely tutored

under supervision before beginning to work with clients. Cases and personal supervision were maintained on a weekly basis. Treatment adherence was monitored by the direct observation of treatment sessions, by case discussions in supervision meetings, and by a review of the records and treatment protocols. The pre- and post-treatment assessments were carried out by a trained assessor who was not involved in the treatments and blind to the treatment conditions. The details of the condition were unknown to the assessor. The three-month follow-up assessment was conducted by the author by telephone before the data analysis. All scales were administered orally by interview as most participants were illiterate or had difficulty in reading (e.g. sight degeneration).

6.2.4 Treatment

The treatment started shortly after the pre-test. Sessions of NET and NET-R were given to the participants as outlined in the manual. During the NET sessions, the patient, assisted by the therapist, constructed a detailed chronological report of his/her own biography with a special focus on the traumatic experiences. In the NET-R condition, the patient would construct a detailed earthquake narrative at first, and then complete the chronological autobiography with the assistance of the therapist. In both conditions, the narrative was recorded by the counsellor and corrected with each subsequent reading. The participants were encouraged to relive emotions while reporting the events. In the last session, the participant of the NET group received a written report of his biography, and the NET-R participants had the final reading of their autobiography without a written report.

6.2.5 Statistical analysis

Group differences in demographic data and pre-treatment measures were analysed

by using chi-square tests and two-tailed t-tests. Pre- to post-treatment changes in questionnaire scores were analysed using univariate analyses of covariance (ANCOVAs), while controlling for pre-treatment scores. Within-group changes of each group from pre- to post-treatment were tested using paired t-tests. Hedge's g was calculated as effect size for within- and between-group changes. The long-term treatment effects were analysed using repeated measures ANOVAs with the pre-test, post-test, and follow-up scores and three groups. Pair wise differences were measured using paired t-tests with a Bonferroni correction. All analyses were performed in SPSS version 16.0.

6.3 Result

6.3.1 Treatment adherence

All participants constructed and completed a detailed chronological account of their own biography. The number of traumatic events they experienced was reported in table 6.2. Participants' reported previous traumatic experiences included difficult life conditions, a family member's terminal disease, or accidental injury. They did not report events such as violence, torture or persecution, events described in previous NET studies of refugees. All participants spent no more than one session on narrating previous traumatic events, with two to three sessions focused on the single incident of the earthquake. Participants of the NET group completed the treatment with four sessions in two weeks, and participants of the NET-R and WL conditions finished the therapy within three sessions in one week. All participants completed the treatment. No major deviation from the study protocol was apparent.

6.3.2 Baseline data

The age range of the sample was 28 to 80 (53.63 ±12.91). The socio demographic characteristics of the participants are described in Table 6.2. All of them were of low socio-economic status. There were no significant differences among the three groups regarding age, gender, education, marital status, income, injury, and house damage.

Table 6.2 Sociodemographic characteristics of participants within the three treatment groups

	NET	NET-R	WL	Analysis	
	N=10	N=10	N=10	χ^2	*p*
Gender:				2.22	0.33
Male	1	2	0		
Female	9	8	10		
Marital status:				2.65	0.62
Single	0	1	0		
Married	8	6	8		
Divorced or widowed	2	3	2		
Education:				1.25	0.54
Primary school or below	7	9	8		
Junior middle school	3	1	2		
Income:				2.24	0.70
No fixed income	4	6	7		
Below £100	2	2	1		
£100-£300	4	2	2		
House damage				3.36	0.17
Partially damaged	0	3	2		
Slightly damaged	10	7	8		
Injured in the earthquake:				1.36	0.51
Yes	4	2	2		
No	6	8	8		
Bereavement				5.16	0.08
Yes	8	3	6		
No	2	7	4		
Number of traumatic events experienced				6.00	0.20
No	8	8	8		
Once	0	0	2		
2 or 3 times	2	2	0		
Age	M(SD)	M(SD)	M(SD)	*F*	*p*
	53.50 (1.24)	56.50 (1.47)	50.90 (1.23)	0.45	0.64

Table 6.3 shows the mean scores of scales, except for brief COPE, of three groups at each time point (T1, T2, T3, and T4). At baseline (T1), there was no significant difference among three groups.

Table 6.3 Measures over time for NET, NET-R and WL groups

Measures		T1		T2		T3		T4	
		Mean	***SD***	***Mean***	***SD***	***Mean***	***SD***	***Mean***	***SD***
IES-R	*NET*	50.90	10.65	25.50	6.72	16.10	6.85	12.70	9.59
	NET-R	52.10	9.06	16.90	4.93	16.50	4.81	12.70	6.48
	WL+NET-R	56.80	10.91	54.70	10.81	16.60	5.13	13.80	6.63
GHQ-28	*NET*	9.90	8.80	2.70	3.23	2.40	3.03	1.60	2.59
	NET-R	15.80	7.33	1.30	2.06	1.70	2.31	0.60	1.26
	WL+NET-R	14.40	5.62	14.30	6.15	0.80	1.48	0.50	0.97
Anxiety	*NET*	10.50	3.69	4.60	4.14	5.00	3.20	3.90	4.93
	NET-R	10.60	3.66	4.80	3.77	3.90	2.85	2.90	1.52
	WL+NET-R	12.40	6.08	12.80	6.65	4.40	2.84	3.60	2.22
Depression	*NET*	11.10	6.08	4.50	4.12	4.00	3.89	3.10	4.18
	NET-R	10.40	4.81	4.00	3.97	2.80	1.75	2.40	1.84
	WL+NET-R	10.50	5.60	10.40	6.47	2.20	1.75	2.40	1.84
Positive changes	*NET*	18.70	8.77	25.50	6.65	25.20	6.12	25.80	6.00
	NET-R	20.80	6.75	26.30	4.62	26.90	4.18	26.10	3.67
	WL+NET-R	23.90	6.14	25.30	6.45	26.00	4.27	26.30	3.56
Negative changes	*NET*	17.70	7.09	10.80	4.59	10.20	4.66	8.70	4.40
	NET-R	21.30	6.40	10.90	3.11	10.70	3.62	9.80	2.90
	WL+NET-R	15.10	6.05	14.20	5.87	7.20	2.35	6.40	1.90
MSPSS	*NET*	61.50	13.29	64.80	9.24	64.80	9.57	65.20	9.10
	NET-R	60.00	11.92	64.20	7.86	64.40	8.21	65.00	8.01
	WL+NET-R	63.70	7.85	65.60	7.34	69.80	6.76	70.50	6.80

To note, comparisons of scores on PTSD and positive change were also analysed. Results show participants of the present study reported less positive change than those of the NET-1 study in CHAPTER 5 ($t(50) = 3.08$, $p < 0.01$). No significant difference was found on PTSD symptoms.

6.3.3 Initial treatment outcome

The initial treatment outcome analyses are described in Table 6.4.

Table 6.4 Results of outcome measures of T1 and T2

Means difference, 95% CI, paired t-test, within group effect sizes, ANCOVA analysis, and between group effect sizes

Measures	Group	Mean difference (T1-T2)	95% CI	Within-groups		Effect size	Between-groups		Effect size (vs. WL)	Post-hoc
				df	*t*		*df*	*F*		
IES-R	*NET*	33.90	(29.85 to 37.95)	9	18.93***	3.65	2,26	103.70***	4.01	1/3***
	NET-R	35.20	(26.47 to 43.93)	9	9.12***	4.62			4.31	2/3***
	WL	2.10	(0.54 to 3.66)	9	3.04*	0.19				
GHQ-28	*NET*	7.20	(2.00 to 12.35)	9	3.17*	1.04	2,26	40.05***	2.26	1/3***
	NET-R	14.50	(9.21 to 19.79)	9	6.20***	2.58			2.71	2/3***
	WL	0.10	(-1.23 to 1.42)	9	0.17	0.02				
HADS	*NET*	5.90	(3.55 to 8.25)	9	5.69***	1.44	2,26	10.16***	1.42	1/3***
Anxiety	*NET-R*	5.80	(2.86 to 8.74)	9	4.47**	1.50			1.42	2/3***
	WL	-0.40	(-1.09 to 0.29)	9	-1.31	0.06				
HADS	*NET*	6.60	(3.98 to 9.22)	9	5.71***	1.22	2,26	14.57***	1.04	1/3**
Depression	*NET-R*	6.40	(2.36 to 10.44)	9	3.59**	1.39			1.14	2/3**
	WL	-1.40	(-2.48 to -0.32)	9	-2.94*	0.02				
CiOQ	*NET*	-6.80	(10.90 to -2.70)	9	-3.75**	0.84	2,26	1.84	0.03	
Positive	*NET-R*	-5.50	(-9.86 to -1.14)	9	-2.85*	0.91			0.17	
	WL	0.09	(-1.39 to 1.58)	9	0.17	0.21				
CiOQ	*NET*	6.90	(3.69 to10.11)	9	4.87**	1.11	2,26	9.18***	0.62	1/3*
Negative	*NET-R*	10.40	(5.87 to 14.93)	9	5.20***	1.98			0.67	2/3**
	WL	0.90	(0.27 to1.53)	9	3.25*	0.14				
MSPSS	*NET*	-3.30	(-7.75 to 1.15)	9	-1.68	0.28	2,26	0.14	0.09	
	NET-R	-4.20	(-12.21 to 3.81)	9	-1.19	0.40			0.18	
	WL	-1.90	(-4.04 to 0.24)	9	-2.00	0.24				

**p<0.05; **p<0.01; ***p<0.001.*

Paired t-tests revealed that all three groups experienced significant reductions on PTSD symptoms and negative change from T1 to T2. On the scales of GHQ-28, anxiety, positive change, there were no significant within-group changes in the scores for WL group across its waiting period, but there were significant within-group changes on the scores of NET group and NET-R groups. Significant scores reductions of the NET and NET-R groups and a significant score increase of the WL group were found on depression. With regard to social support, no significant changes were found on the MSPSS scale for all three groups.

Univariate ANCOVAs on post-treatment scores controlling for pre-treatment scores revealed significant between-group effects for IES-R, GHQ-28, anxiety, depression

and negative change. Following the treatment at the waiting period (T2), there were significant differences between the scores of all three groups on PTSD, GHQ-28, anxiety, depression and negative change. Post-hoc tests revealed that the NET and NET-R groups displayed fewer score than the WL group on above measures. No significant differences were observed between the two active treatment conditions.

Within- and between-group effect sizes for the outcome measures are also included in Table 6.3. From pre- to post-treatment, large (>=.80) within-group effect sizes were found for the NET and NET-R groups on PTSD, GHQ-28, anxiety and depression, positive changes and negative change; very small (<=.20) within-group effects were found for WL group on the PTSD, depression and negative change. Large between-group (NET vs. WL & NET-R vs. WL) effect sizes were found on the PTSD, GHQ-28, anxiety and depression. Moderate (.50-.79) between-group effect sizes were found on the negative change.

6.3.4 Three-month follow-up outcome

Table 6.5 Repeated ANOVA of time (pre-treatment, post-treatment, follow-up) × group (NET, NET-R, WL) with post-hoc Bonferroni tests

	Time		Time × group		*pre/post*	*pre/fu*	*post/fu*
Measures	***df***	***F***	***df***	***F***	***p***	***p***	***p***
IES-R	2,26	172.89***	4,52	0.33	***	***	**
GHQ-28	2,26	51.09***	4,52	0.18	***	***	-
HADS Anxiety	2,26	26.00***	4,52	0.70	***	***	-
HADS Depression	2,26	36.91***	4,52	0.94	***	***	-
CiOQ Positive	2,26	7.46**	4,52	1.30	**	**	-
CiOQ Negative	2,26	44.08***	4,52	1.24	***	***	**
MSPSS	2,26	6.01**	4,52	0.07	[a]	**	-

**p<0.05; **p<0.01; ***p<0.001*

[a] *p=0.05*

As the WL group received the treatment after T2, the scores of T2 for WL group were taken as their pre-test baseline. The pre-test, post-test and three month

follow-up scores were analysed using repeated measures ANOVAs with three groups. Table 6.5 presents the repeated measures ANOVAs with three levels of time; pre-treatment (T1 for NET and NET-R; T2 for WL), post treatment (T2 for NET and NET-R; T3 for WL) and at three-month follow-up (T4 for all three groups) and treatment group (NET, NET-R and WL) as between-subjects variable.

There were significant time effects post-treatment for the measures of IES-R, GHQ-28, HADS, CiQQ and MSPSS. There were no significant time × group interaction effects for any of the measures. Comparison of pre-, post-, and follow-up showed a significant reduction of scores after treatment on IES-R, GHQ-28, HADS, CiON, and a significant increase on positive change and MSPSS. From post-treatment to follow-up, a further significant reduction of scores was revealed in IES-R and negative change. No significant differences of scores from post- to follow-up were found in GHQ-28, HADS, and MSPSS. These findings indicated that, for all three groups, overall PTSD symptoms across the three PTSD symptom clusters (intrusion, avoidance, and hyperarousal, see Figure 6.2), general distress, depression and anxiety, and negative change all decreased with treatment. The positive change of the CiOQ (Figure 6.3) and MSPSS increased significantly. The PTSD symptoms and negative change further decreased after treatments. The treatment effect sizes at three-month follow-up of PTSD were 3.61 for NET condition and 4.79 for NET-R condition.

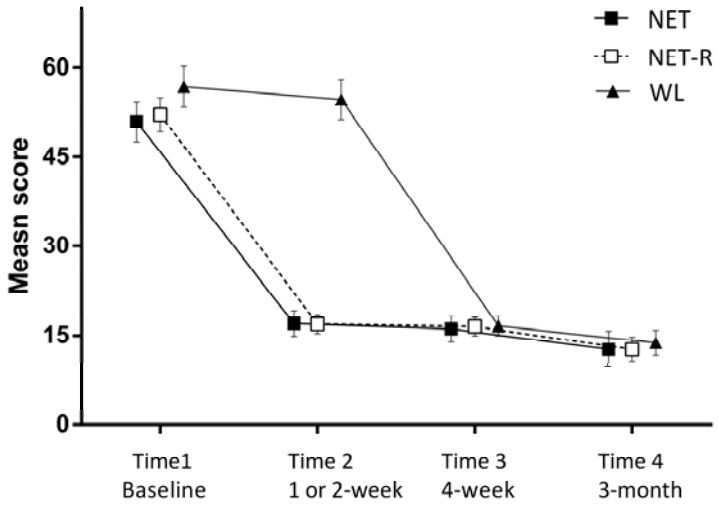


Figure 6.2 Mean scores for IES-R of two groups

The WL group did not undergo treatment during the first two weeks of the study. At Time 2, participants in the NET and NET-R had significantly lower self-reported symptoms of PTSD than the participants in the WL group. At Time 3, after the WL group completed the NET-R treatment, a difference no longer existed between the groups. A further reduction was shown from Time 3 to Time 4 (three-month follow-up). Error bars indicate standard errors.

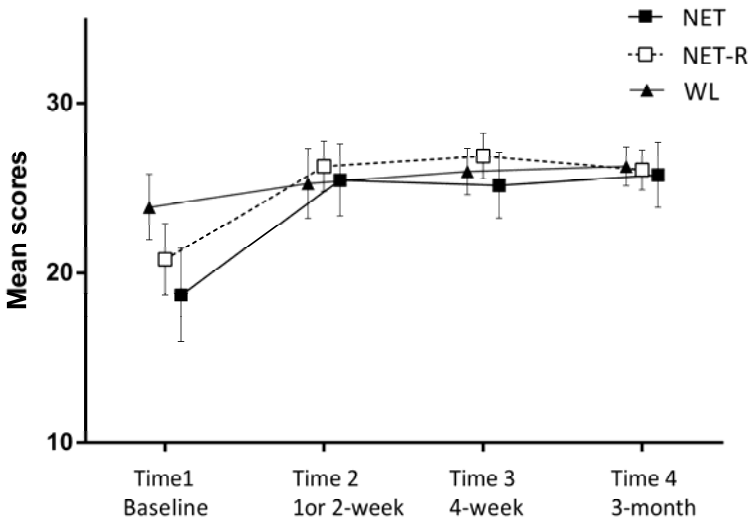


Figure 6.3 Mean scores for positive changes of two groups

At Time 2, after the NET and NET-R groups underwent the treatments, their positive change scores were significantly higher than the scores at Time 1, and there was no significant change for the WL group. At Time 3, after the WL group completed the NET-R treatment, its positive score increased. The effects of three groups maintained at three-month follow-up. Error bars indicate standard errors.

6.3.5 Treatment effect on coping

The means and SDs of Brief COPE are showed in Table 6.6. At baseline, ANOVAs revealed between group differences on active coping ($F(2,27)=6.07$, $p=0.01$), substance use ($F(2,27)=5.44$, $p=0.01$), instrument support ($F(2,27)=5.77$, $p=0.01$), and planning ($F(2,27)=4.89$, $p=0.02$). Post-hoc comparisons revealed significant differences between the NET and NET-R on active coping and substance use, between NET-R and WL on instrumental support and planning, and between NET and WL on planning.

The paired t-tests found significant within-group score changes in active coping, reframing, planning, religion, and self-distraction (see Table 6.7). Analyses revealed significant increases on active coping of the NET-R group, on reframing of both NET and NET-R groups, on planning of the NET group, on religion of the WL group, and on self-distraction of the NET-R group. Large (>=.80) within-group effect sizes were found for the NET on planning, for the NET-R on active coping, reframing, and self-distraction. Moderate within-group effect sizes were found for the NET on planning, and small effect size was found for the WL on religion.

Univariate ANCOVAs on post-treatment scores controlling for pre-treatment scores revealed a significant between-group effect on self-distracting. The NET-R reported more distraction coping than the other two groups, with large effect size vs. NET group, and moderate effect size vs. WL group.

Repeated measures ANOVAs of pre-, post- and follow-up scores showed significant time effects post-treatment for the measures of active coping, reframing, and planning. There were no significant time × group interaction effects for any of the measures. Comparison of pre-, post-, and follow-up showed a significant reduction of scores after treatment in these three subscales, and the increases were stable at

three-month follow-up.

Table 6.6 Coping scores over time for three groups

Measures		T1		T2		T3		T4	
		Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Self-distraction	*NET*	7.70	0.48	7.20	1.03	7.30	0.82	7.40	0.84
	NET-R	6.90	1.20	7.90	0.32	7.80	0.63	7.90	0.32
	WL	6.30	1.95	6.40	2.07	7.10	1.52	6.80	1.48
Active coping	*NET*	4.60	1.78	5.40	2.01	5.30	1.83	5.30	1.49
	NET-R	3.40	1.07	5.40	1.35	5.10	1.37	5.30	1.49
	WL	5.70	1.49	5.90	1.60	6.80	1.40	7.00	1.15
Denial	*NET*	3.60	1.58	3.60	2.12	4.00	1.63	4.10	1.73
	NET-R	3.60	1.84	3.90	1.79	4.20	1.14	3.90	1.20
	WL	4.70	1.34	4.60	1.26	4.10	0.99	3.80	1.03
Substance	*NET*	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
	NET-R	4.10	2.85	4.40	3.10	4.70	2.91	4.40	3.10
	WL	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
Emotional support	*NET*	5.40	1.90	6.10	2.08	5.40	1.58	5.60	1.35
	NET-R	6.50	1.72	6.60	1.51	6.70	1.64	6.80	1.03
	WL	5.40	1.84	5.40	2.17	5.00	1.56	5.40	1.26
Instrumental support	*NET*	4.30	1.49	4.30	1.95	4.00	1.89	3.80	1.62
	NET-R	5.30	1.70	4.00	1.70	5.00	2.16	5.10	1.85
	WL	3.00	1.33	3.00	1.70	3.30	1.57	3.50	1.35
Behavioural disengageme	*NET*	5.00	1.56	4.90	1.85	5.10	1.91	4.80	1.75
	NET-R	5.30	1.25	5.30	1.42	5.40	1.35	5.50	1.08
	WL	6.00	1.63	5.70	1.49	4.00	1.41	3.60	1.35
Venting	*NET*	5.90	2.02	6.10	2.08	5.60	2.17	6.10	2.08
	NET-R	6.00	2.11	6.80	1.87	6.80	1.87	6.80	1.99
	WL	6.00	1.15	5.90	1.29	6.50	1.72	6.60	1.43
Positive reframing	*NET*	4.40	1.90	5.50	2.01	5.60	1.84	6.00	1.76
	NET-R	4.70	1.64	6.70	1.42	6.60	1.43	6.10	1.37
	WL	5.90	1.29	6.10	1.52	7.50	1.08	7.40	1.07
Planning	*NET*	4.40	1.65	6.00	2.00	5.10	1.66	5.80	1.40
	NET-R	4.10	1.66	4.90	1.97	5.30	1.42	5.00	1.33
	WL	6.10	1.29	6.30	1.70	6.90	1.29	6.80	1.23
Humour	*NET*	2.00	0.00	2.10	0.32	2.10	0.32	2.10	0.32
	NET-R	2.10	0.32	2.20	0.63	2.20	0.63	2.00	0.00
	WL	2.10	0.32	2.00	0.00	2.00	0.00	2.10	0.32
Acceptance	*NET*	7.90	0.32	7.50	0.71	7.30	0.82	7.00	0.82
	NET-R	7.10	1.45	7.80	0.42	7.30	0.95	7.30	0.95
	WL	7.40	0.52	7.60	0.52	7.70	0.48	7.30	0.67
Religion	*NET*	3.20	1.93	3.60	2.17	3.50	1.84	3.70	2.16
	NET-R	3.90	2.08	4.40	2.41	4.10	2.23	4.10	2.23
	WL	4.30	2.06	4.80	2.30	5.50	2.17	5.50	2.17
Self-blame	*NET*	3.40	1.35	3.90	1.85	3.80	1.62	3.80	1.55
	NET-R	4.20	1.75	4.00	1.56	4.20	1.69	3.80	1.48
	WL	5.00	1.05	5.20	1.14	4.30	1.70	4.30	1.34

Table 6.7 Significant results of coping

Coping		Within group change		Between group change		Time effect
		T1-T2	Effect size	T1-T2	Effect size	Pre-post-followup
Active coping	NET-R	*t* (9)=-3.87**	1.57			*F* (2,26)=9.90***
Reframing	NET	*t* (9)=-2.91*	0.54			*F* (2,26)=11.99***
	NET-R	*t* (9)=-2.68*	1.25			
Planning	NET	*t* (9)=-2.28*	0.84			*F* (2,26)=5.03*
Religious	WL	*t* (9)=-3.0*	0.22			
Self-distraction	NET-R	*t* (9)=-3.87**	1.09	*F* (2,26)=5.13	0.88 vs. NET 0.47 vs. WL	

**p<0.05; **p<0.01; ***p<0.001*

6.4 Discussion

This study examined the feasibility, effectiveness, and safety of NET-R, an intensive, modified version of NET treatment for Chinese earthquake survivors, and compared NET-R with original NET. The results indicated that both NET and NET-R were effective in treating survivors of the Sichuan earthquake, and no significant difference in effectiveness was found between these two therapies. Significant effects of both treatments were found across a number of psychological variables post treatment. Levels of reported symptoms of PTSD, anxiety, depression, general distress and negative changes were significantly decreased. The PTSD symptoms and negative change were further decreased at three-month follow-up. The reductions of anxiety, depression, and general mental health were stable for the three-month follow up. NET and NET-R also showed effects on social support and coping. The positive change, perceived social support, and some positive coping (active coping, reframing and planning) increased after the treatments and the changes were stable at follow up.

The improvements in posttraumatic symptom categories, anxiety, depression, and general mental distress after the treatment replicated the results of the NET-1 study, and again, supported the mechanism of emotional habituation elicited by the

exposure (Edna B. Foa & Rothbaum, 1998) and the efficiency of the narrative approach in the remediation of distortion of the explicit autobiographic memory about traumatic events, such as intrusive memory fragment, avoidance of thoughts, and trauma reminders (Ehlers & Clark, 2000). The comparable effectiveness of the NET-R with the original NET justified the modifications, indicating the revision did not undermine the basis of NET, but made the therapeutic process more adaptable for Chinese earthquake survivors. The sizes of the treatment effect on PTSD symptoms at posttest (3.65 for NET & 4.62 for NET-R) were higher than effect sizes in NET-1 study (1.09-1.35) and the previous NET studies with traumatized refugees populations, e.g. 0.6 in Neuner et al. (2004). The treatment effect sizes on three-month follow-up (3.61 for NET and 4.79 for NET-R) were also higher than the long-term follow-up effect sizes reported in previous NET studies, e.g. 1.6-1.9 in Neuner et al. (2004) and 1.4 in Neuner et al. (2008).

The joint reduction of PTSD symptoms and negative changes indicated that treatments might function better in this test compared to the NET-1 study. These findings also provided support of the predicting ability of the negative change on PTSD. As discussed in Chapter 5, the preferable outcomes of the NET-1 study to the previous NET research might be ascribed to the Chinese state-led support and assistance after the earthquake, as opposed to the insecurity and severe economical problems with refugees. In addition, compared with participants in NET-1, which was conducted 1.5 years after the earthquake, participants of the present study (carried out at 2.5 years after the earthquake) had been better materially settled. Although participants in NET-1 study expressed satisfaction with the state-led assistance, most of them were still living in temporary residences, and uncertain about where to move. One year later, the survivors, assisted by the government, had finished their house rebuilding. Some of them had already lived in their new accommodation, and the others were in the process of decorating. In this case, the

improved stable environment probably also contributed to the effectiveness of the treatments – the lessened livelihood burden could facilitate the treatment progress by avoiding the distraction of the secondary stressors.

With regard to the changes following adversity, the baseline score on positive change (21.13±7.38) was found to be lower than that of the NET-1 study (25.77± 3.15), but there was no significant difference on PTSD. In the present study, similarly to the NET-1, participants still reported a high positive appraisal of the central government's rapid response to the earthquake, but expressed dissatisfaction with the local government. Some participants believed the local government did not keep their promises and was responsible for the extension of the reconstruction. A study exploring the relationship between psychological harmony and satisfaction with government after this earthquake (Bai et al., 2009) found that satisfaction with local and central government was significantly related to the psychological harmony of survivors, but the satisfaction with local government was a stronger predictor, and partially mediated the effect of satisfaction with central government on psychological harmony. Social and political context, in this case the negative view of the local government, could play a role in shaping survivors' positive change after the earthquake. Nevertheless, a significant improvement on positive change and a reduction on negative change after the treatments were found, and the effects were stable at the three-month follow-up. This result parallels with the NET-1 study, and may link to meaning making produced by the narrative process (Hunt and McHale 2008; Schauer et al., 2005).

Contrary to the NET-1 study, the perceived social support increased after the treatments. This inconsistency may also link to the improved environment and settled residence of participants in this study. The reduced sources of pressure may facilitate survivors' reappraisal of the supportive efforts of others after the

treatments. The effect provides support of the findings from previous studies, that social support is important in the development and maintenance of PTSD in diverse trauma population (Guay, Billette, & Marchand, 2006; Krzysztof Kaniasty & Norris, 2008), but implies that the relationship could be moderated by environmental factors and changes.

In terms of coping, the measure was replaced for this study. Compared to SCSQ, the Brief COPE consists of 14 subscales measuring different coping. Results indicated that treatments had a complex effect on coping, but, in general, both NET and NET-R promoted some positive coping. Contrary to expectations, the NET-R induced more self-distraction coping at the post-treatment, and the effect size was big (1.09). There are two explanations for this finding. First, the NET-R may induce more earthquake-related intrusive thoughts or stress that the participants chose to deal with by avoidance. However, the decreased posttraumatic symptoms did not support this explanation. The second interpretation is that the increased distraction reflects enhanced adaptive response to the life stress. The exposure procedure of NET-R weakened the fear triggered by the effect of earthquake memory (Foa & Rothbaum, 1998) and reduced intrusive thoughts of traumatic memory might provide a decent experience of anxiety management; they might be able to learn from this experience and apply it to other stresses. During the assessment interview, some participants explained that since thinking about the difficulties was useless, so they might as well do some other productive things. This feedback from the participants may offer support of the second explanation. To note, the increased distraction coping was only produced by the NET-R. The forward shift and reinforcement of the earthquake narrative in NET-R might better benefit participants through symptom reductions in the early phase of the therapy. The improvement in positive coping (active coping, reframing, and planning) might be because the experience of successfully solving the psychological distress enhanced their sense of

control; they might start to respond to some other solvable difficulties in their lives. Previous NET studies did not assess coping, but these findings manifest that a short-term intervention could have a subtle and indirect effect on coping by reducing distress.

The study with a larger sample replicated and extended the findings of CHAPTER 5. It investigated and compared the effects of a modified NET and original NET in a Chinese setting, and on earthquake-related PTSD. It provides evidence for the effective treatment elements of the Western developed approach in the Chinese population. Although the efficacy of NET has already been shown across cultures in Europe, Africa, and Asia (Bichescu et al., 2007; Neuner et al., 2008, 2004) and in NET-1 of Chapter 5, the psychosocial environment in this study was different from that of previous work which largely focused on people affected by war and torture, and was also different from the unsettled living conditions in the NET-1 study. Nevertheless, it demonstrated that modifications could be made to make the NET function more adaptively and quickly.

The lack of dropouts in the NET was in line with other NET studies (Bichescu et al. 2005; Neuner et al. 2004). Most participants informally reported better sleep and being relieved after NET and NET-R. In addition, the sample's participants were mostly at an old age and with low SES, and they found the therapeutic approach of narrative acceptable and comfortable. The use of narration in NET, which is the approach used by all in daily life, is one of the reasons that NET treatment was employed and tested in this sample. The narrative format has good face validity and would not intimidate people; it also has few limitations on the participant's social and educational background. In addition, participants of the present study were talkative; most patients could initiate the narrative about the earthquake smoothly. Only two female participants – one who lost her daughter in the earthquake, and

the other whose husband was physically injured (lost an arm) – were initially reluctant to recall the earthquake memory. Their avoidance was understandable, as the loss still had miserable effects on their lives. It also implicates that practitioners may need to adjust the sessions in future practice according to the survivors' loss and current psychological conditions. The intensity of sessions in the NET-R was practically acceptable. However, it must be remembered that the reinforcement of earthquake narrative aimed at people with only one incoherent, fragmented, and traumatic memory; thus, the early assignment could take effect rapidly. The participants' previous trauma experiences need to be clarified in the diagnostic interview before application of the NET-R.

In addition, the results also support extending the approach outside of situations where testimony may be required, and that people want to create narratives under different types of situations. This time, participants in the NET group were not interested in signing off their final written biography. They explained that because they felt much release, there was no need to keep a written document to remind them, and they preferred to keep their own memory in mind. Furthermore, as most of the participants were at an old age and with low SES, they did not read regularly. In the NET-R group, no participant asked for a written testimony at the final session. It supported the observation in the NET-1 study that as there are no perpetrators, participants did not think their human rights and dignity had been prejudiced.

The main limitation of the study was the sample size and the lack of a longer-term follow-up. The size of the sample was still relatively small as the study aimed to test the effectiveness of a newly-modified treatment, NET, and practical considerations meant that a longer term follow-up was impractical in this disaster area. Similarly with the sample of NET-1, there were many more women than men in this study. As mentioned before, most men were out for work during the day time after the

earthquake. However, the utility of NET-R in such circumstances was demonstrated.

6.5 Chapter summary and conclusions

In conclusion, NET-R appears to be a feasible and cost-effective intervention for Chinese earthquake survivors. Further studies are needed to replicate these findings in other survivor populations, in a larger sample and for longer periods. The oral narrative approach is useful in the context of single natural disaster. Cost-effective dissemination of a treatment is particularly important after large-scale disasters, which often overwhelm the national mental health care resources of the affected countries. The relatively easily captured procedure and cross-culturally acceptable format of NET-R may facilitate its wider delivery after major disasters, and particularly within people of low SES. Future research to explore the most effective ways of training people to administer it is warranted.

So far, two NET studies have explored the feasibility and effectiveness of oral narrative strategy in adult earthquake survivors. Both of them offered empirical support of the mechanism underlying the narrative intervention. In order to further evaluate its utility, written narrative strategies were developed and evaluated as a group intervention with the child survivors in the school. The studies will be reported in the following chapter.

Chapter 7: Effects of a Guided Narrative Technique (GNT) among children traumatised by the earthquake

7.1 Introduction

Previous chapters presented studies applying oral narrative therapy to treat adult survivors in a one-to-one setting by facilitating the reconstruction of their own narratives and the integration of the traumatic memory into their autobiography. Although the results supported the effectiveness of NET in treating PTSD and comorbidity of adult earthquake victims, the individual intervention may not be feasible or efficient enough for the large number of traumatised children of school age. As discussed in CHAPTER 2, children and adolescents may develop PTSD and other mental health problems after exposure to an earthquake; reported rates range from 21% to 70%, (Ng, 2005; Norris et al., 2002). Long-term persistence of PTSD symptoms have been reported in follow-up studies (Goenjian et al., 1995). Notwithstanding high prevalence rates and a significant impact on public health, there are relatively few published studies evaluating the efficacy of interventions in this area for children. Given the extent of mental health problems following earthquakes, it is important to find simple and effective techniques that can be used with groups of child disaster survivors.

This chapter focuses on the application of the written narrative programme as a group intervention applied in the school setting for child survivors. The development of the Guided Narrative Technique (GNT) is described. Two randomised controlled studies are included, showing the effects, practical issues,

improvement, and implications of GNT with children traumatised by the earthquake. Two writing examples are provided for audiences to better understand the writing processes of children.

7.1.1 Features of traumatic memories

It has been discussed in previous chapters that trauma is the result of enduring maladaptive responses (Brewin et al., 1996; Ehlers & Clark, 2000). The core of trauma is the traumatic memory. Within the adult literature, it has been found that when experiencing a serious traumatic event, explicit memory, such as facts, are inhibited and only implicit memories, such as perceptual memories and emotions, are processed (Bremner, Krystal, Southwick, & Charney, 1995). This could be reflected in a greater description of highly emotional recollections of traumatic experience during narrative reporting. This is the reason why traumatic memories are normally dominated by sensory, perceptual, and emotional components that are harder to be integrated into the conscious narrative as they may not have verbal components (Brewin et al., 1996). The shock of a traumatic event interferes with normal cognitive, behavioural, and affective responses to the world, effectively causing a breakdown in a person's life story or autobiographic memory. Before the traumatic event, a person may look on themselves, others, and the world generally in a positive way, but afterwards they may feel very badly towards all three. They may feel guilty or ashamed that they didn't behave differently, they may be frightened of, or mistrust, other people, and they may be afraid to go out into the world. So while normal memories are integrated into autobiographies, traumatic memories are not so integrated. Similar memory processes have also been found to occur for children, in such a way that explicit memory processes tend to be inhibited during a traumatic event, leaving implicit memory (emotions) intact (Bremner et al., 1995).

7.1.2 Guided narrative technique

The literature about expressive writing was reviewed in CHAPTER 3 (*p*69). EW uses a simple written format, and could bring immediate cognitive and emotional changes. These characteristics are particularly important when groups of people need assistance, and showed the potential of this written narrative strategy to serve as a group intervention for school children after disasters. However, by inspecting the writing content, previous studies suggest it needs to be further developed to be more effective and feasible for school children.

Therefore, a series of straightforward written narrative methods are currently being developed to help children define and explore their emotions that can be used with traumatised child. These are based on methods already validated, and are called Guided Narrative Techniques (GNT) (Hunt, 2012). Studies in this chapter will move beyond the simple writing task to explore whether more sophisticated instructions help writers express their trauma-related thoughts more effectively. For 20 minutes a day, over three consecutive days, participants are provided with specific instructions to help them develop effective narratives.

7.1.3 Writing instructions

The completed EW instructions used in the present study are reported in Appendix 4 (*p*255). They are based on the instructions of Pennebaker's expressive writing programme (Pennebaker & Chung, 2007). Because participants in this study were children of primary school age, the instructions were written accordingly. The same instructions were provided over each of the three days.

The GNT instructions were developed according to previous research inspecting the effective content of individuals' writings. Based on the requirements of EW, more

instructions on emotion expression and personal growth were included. The first day instruction of GNT was as same as EW, but at the second day's writing, participants were required to write down their negative feeling, thoughts, and reasons for the negative feelings. On day three, instructions were provided for participants to explore and write their experiences and growth of the experiences in a positive way. In summary, the GNT programme adds more specific instructions to facilitate the expression of negative and positive emotions, and exploration of personal growth, future orientated perspective (Foa et al., 1995; Hariri et al., 2000), causality and insight reflection (Pennebaker & Francis, 1996), which are found to relate to improved health outcomes. The GNT instruction is listed in Appendix 4 (*p*255).

No study has been conducted with children traumatised by an earthquake to date, and the effectiveness of expressive writing with normative samples of youth is less clear. Some beneficial effects of the writing were expected. It was hypothesized that:

1. Young people assigned to both groups will show decreases in symptoms, and the children in GNT would show more reduction than the children in the standard EW group on PTSD symptoms and comorbidity including anxiety, depression and panic disorder.

2. Both interventions will increase the perceived social support and lead to more active coping.

3. The GNT will lead to more positive changes and fewer negative changes.

It was also expected that the sophisticated instructions would facilitate a cognitive restructuring of the meaning of the event. In other words, writing would provide a new structure, major organisation, and cohesion in the representation of the

episode, facilitating the cognitive assimilation of the memory of the episode.

7.2 Study-1

The first GNT study was carried out among the students of sixth grade. Children of this grade are the oldest students (12-13-years old) in Chinese primary school education. The selection of this grade to conduct the first study considered that a certain level of sophistication, understanding, cognition development, and verbal ability was needed to develop the narrative. It aimed to (1) explore the feasibility and acceptance of the written narrative intervention in traumatised early adolescents, (2) compare the effectiveness of GNT and EW preliminarily, and (3) seek further implications for next GNT study.

7.2.1 Method

7.2.1.1 Participants

A total of 108 students from three sixth grade classes in a single primary school participated in the study. The school is situated in Beichuan County, an area heavily damaged by the earthquake. Written consent was obtained from the school principal and class teachers. All students provided oral consent. There was no initial selection of participants for evidence of trauma.

7.2.1.2 Measures

The details and psychometric properties of measure used for children have been introduced in CHAPTER 3 (*p.*69).

- PTSD symptoms were assessed using the *Children's Revised Impact of Event Scale* (CRIES)

- Anxiety, depression and panic disorder were assessed by the subscales of *Revised Child Anxiety and Depression Scales* (RCADS).
- The *Changes in Outlook Questionnaire* (CiOQ) was applied to assess positive and negative changes in the aftermath of adversity.
- The coping was assessed by the *KIDCOPE*.
- The *multidimensional scale of perceived social support* (MSPSS) was applied to assess the children's social support.

7.2.1.3 Procedure

The study used parallel-group randomisation and was carried out in October 2010 and March 2011 (29-34 months after the earthquake). The primary school was one of the aid targets of an ongoing psychological recovery programme. Before the writing, students were assured that their questionnaire responses or writing samples would not be shown to their teachers or parents. Teachers were not present during survey administration or the intervention. Because the GNT was evaluated as a group intervention, each class was selected as a unit to administrate the intervention. A pre-post design was employed with treatment (GNT, 2 classes) and control (EW, 1 class) groups. Children in both groups completed the questionnaire one day before and one day after the sessions. The classrooms were randomly assigned to treatment or control condition. The assessments were administered by trained psychological volunteers at one-day pre- and post- the writing. Papers with printed instructions were distributed to students by the administrator. He/she provided a simple explanation of the objects and requirements for the following writing and answered students' questions. A time reminder was given to students at 10 minutes and 15 minutes after the programme. Papers were collected after 20 minutes of writing. The administrator kept quiet during the writing process.

7.2.1.4 Writing conditions

The EW and GNT programmes were used. In summary, in the GNT condition, students were asked to consider and write down their experiences, thoughts, and feelings about the earthquake for three consecutive days. Briefly, Day 1: describe the earthquake experience and their deepest feelings and thoughts: Day 2: write down any negative thoughts and feelings relating to the earthquake: Day 3: write down any positive thoughts and feelings about the earthquake and their perspective of the future. In EW, students were asked to write about the earthquake experience and their deepest feelings and thoughts for three consecutive days. All participants of both conditions were told not to be concerned about spelling or grammar. All writing lasted 20 minutes for each session.

7.2.1.5 Statistics analysis

First, group differences at baseline in demographic data and pre-treatment measures were analysed by using chi-square tests and two-tailed t-tests. Second, analyses were carried out to examine the preliminary effects of GNT and EW. Pre- to post-treatment changes in questionnaire scores were analysed by univariate analyses of covariance (ANCOVAs), while controlling for pre-treatment scores. Within-group changes of each group from pre- to post- treatment were tested using paired t-tests. Cohen's d was used to calculate effect sizes using the formula $(M_{pre} - M_{post})/SD_{pooled}$. Third, the writing content was analysed and scored to assess adherence to the intervention instructions. Groups were divided by adherence level. Finally, analyses exploring difference between subgroups were conducted by ANCOVAs and paired t-tests.

7.2.2 Results

7.2.2.1 Baseline data

The age range of the sample was 11 to 13 (11.90 ±0.53). No statistically significant differences were found between the groups in relation to gender, age, ethnic severity of injury to oneself, family and friends (See Table 7.1).

Table 7.1 Demographic characteristic of children within the two treatment groups

	GNT	EW	Analysis	
	N=73	N=35	χ^2	*p*
Gender:			0.01	0.99
Male	36	17		
Female	37	18		
Ethnic			0.04	0.84
Han	18	8		
Qiang	55	27		
Injured in the earthquake			2.13	0.35
No injury	61	28		
Slightly injured	12	6		
Severely injured		1		
Family injured			0.58	0.75
No injury	43	18		
Slightly injured	15	8		
Severely injured	15	9		
Friend injured			1.50	0.47
No injury	39	23		
Slightly injured	13	5		
Severely injured	21	7		
Age	**M(SD)**	**M(SD)**	**t**	***p***
	11.92 (0.52)	11.85 (0.55)	0.56	0.58

7.2.2.2 Initial intervention effect

Table 7.2 and 7.3 showed the mean and SDs of measures for two groups at pre- and post-treatment. At pre-test, significant differences between two groups were found on anxiety, depression, and negative changes.

Table 7.2 Means and SDs of CRIES, RCADS, CiOQ, and MSPSS

Measures	Groups	Pre assessment		Difference at pre-test	Post assessment	
		Mean	SD		Mean	SD
PTSD	*GNT*	21.08	11.50		19.81	11.95
	EW	18.20	11.34		16.66	12.55
Anxiety	*GNT*	6.25	3.88	*t* (106) =2.97,	5.60	3.76
	EW	4.11	2.48	*p* <0.01	3.86	3.23
Panic disorder	*GNT*	5.29	4.54		4.70	4.33
	EW	4.09	4.42		4.20	4.82
Depression	*GNT*	7.22	4.08	*t* (106) =2.98.	6.96	4.73
	EW	4.74	3.97	*p* <0.01	4.80	4.78
Positive changes	*GNT*	41.44	9.29		41.18	8.66
	EW	43.54	7.20		40.77	9.73
Negative changes	*GNT*	30.56	12.65	*t* (106) =2.58,	30.38	11.39
	EW	24.54	7.89	*p* <0.05	24.80	8.31
Social support	*GNT*	58.55	11.40		54.78	12.73
	EW	58.00	13.45		54.29	13.94

GNT, n=73; EW, n=35.

Table 7.3 Means and SDs of Kidcope

Measures	Groups	Pre-test		Post-tet	
		Mean	SD	Mean	SD
Distraction	*GNT*	1.26	0.80	1.49	0.71
	EW	1.09	0.85	1.17	0.86
Social withdrawal	*GNT*	1.11	0.72	1.18	0.71
	EW	1.26	0.61	1.20	0.76
Cognitive restructuring	*GNT*	0.88	0.33	0.84	0.37
	EW	0.89	0.32	0.80	0.41
Self criticism	*GNT*	0.53	0.50	0.42	0.50
	EW	0.43	0.50	0.40	0.50
Blaming others	*GNT*	0.19	0.40	0.30	0.46
	EW	0.09	0.28	0.11	0.32
Problem solving	*GNT*	1.49	0.56	1.59	0.60
	EW	1.40	0.55	1.49	0.66
Emotional regulation	*GNT*	1.26	0.69	1.27	0.75
	EW	1.11	0.53	1.17	0.71
Wishful thinking	*GNT*	1.71	0.59	1.63	0.68
	EW	1.66	0.64	1.40	0.88
Social support	*GNT*	0.86	0.35	0.84	0.37
	EW	0.86	0.36	0.80	0.41
Resignation	*GNT*	0.18	0.39	0.34	0.48
	EW	0.14	0.36	0.14	0.36
Coping efficacy	*GNT*	9.48	2.64	9.90	2.93
	EW	8.91	2.06	8.69	3.48

The initial treatment outcome analyses are described in Table 7.4. Paired t-tests revealed significant within-group changes for the GNT group on the scores of anxiety, distraction cope, and resignation cope. The score of anxiety decreased significantly with very small effect size (<.20). The increases of distraction and resignation cope were with small effect size (.20-.49). Significant reduction on perceived social support was found on both groups, with small effect sizes.

Table 7.4 Within-group means difference, 95% CI, paired t-test, and effect sizes

Measures	Group	Mean difference	95% CI	Within-groups		Effect size
				df	*t*	
Anxiety	*GNT*	0.65	(0.04 to 1.25)	72	2.12*	0.17
Distraction	*GNT*	-0.23	(-0.41 to -0.05)	72	-2.57*	0.30
Resignation	*GNT*	-0.16	(-0.29 to -0.04)	72	-2.66**	0.37
Social support	*GNT*	3.77	(1.08 to 6.45)	72	2.80**	0.31
	EW	3.71	(1.54 to 5.89)	72	3.48**	0.27

**p<0.05; **p<0.01.*

Univariate ANCOVAs on post-treatment scores controlling for pre-treatment scores revealed no significant effects over all scales, indicating there was no significant treatment difference between two groups.

7.2.2.3 Writing adherence

A content analysis was conducted to verify the adherence of the essays to the instructions. The analysis was done by two Chinese psychologists (PhD level). The content was scored by the criterion described in Table 7.5. The assessors scored the content independently, and then discussed the results until an agreement was reached.

Table 7.5 Scoring criteria for adherence analysis

EW	GNT
1. Described the earthquake experience 2. Expressed his/her own thoughts, feeling or emotions related to the earthquake (no matter positive or negative)	1. Described the earthquake experience 2. Expressed the negative thoughts, feeling or emotions related to the earthquake 3. Expressed the positive thoughts, feeling, or emotions related to the earthquake
Scoring: • *0=No criterion was met* • *1=Only one criterion was met for EW condition, and only one or two criteria were met for GNT condition* • *2=All criteria were met*	

In total, 64.8% participants followed through the instructions fully, and 35.2% participants partially followed the instructions. In the GNT group, 24 (32.9%) participants' writing partially met the criteria, and 49 (67.1%) participants fully met the criteria. In the EW group, 14 (40%) participants' writing partially met the criteria, and 21 (60%) participants fully met the criteria. There was no significant difference on the writing adherence between groups.

7.2.2.4 Further analysis

In order to further explore the effects of writing programmes, both groups were divided by the adherence score, namely *GNT-P* (n=24) for students in the GNT who partially met the writing criteria, *GNT-F* (n=49) for students in the GNT who fully met the writing criteria; *EW-P* (n=14) and *EW-F* (n=21) for students in the EW group. The results of further analysis were showed in Table 7.6

Table 7.6 Means and SDs, paired t-test, within group effect sizes, ANCOVA analysis, and between group effect sizes

Measures	Group	Pre-assessment		Post-assessment		Within-groups		Effect size	Between-groups		Post-hoc	Effect size
						df	*t*		*df*	*F*		
PTSD	*GNT-P*	20.71	10.23	24.58	12.18	23	-2.7*	0.34	3, 103	183.59***	1/2***	1.04
	GNT-F	21.27	12.17	17.47	11.23	48	3.44**	0.32			1/4***	1.13
	EW-P	19.14	14.30	22.29	13.85	13	-2.60*	0.22			3/2*	1.10
	EW-F	17.57	9.19	12.90	10.31	20	2.64*	0.49			3/4**	1.19
Anxiety	*GNT-P*	6.58	3.83	6.79	4.06	23	-0.50		3, 103	2.28		
	GNT-F	6.08	3.94	5.02	3.50	48	2.69**	0.28				
	EW-P	4.57	2.74	4.71	3.91	13	-0.20					
	EW-F	3.81	2.32	3.29	2.63	20	1.19					
Panic disorder	*GNT-P*	5.38	4.11	6.17	4.38	23	-1.31		3, 103	4.25**	1/2*	0.63
	GNT-F	5.24	4.78	3.98	4.16	48	2.48*	0.28				
	EW-P	5.86	5.59	6.71	6.24	13	0.83					
	EW-F	2.90	3.03	2.52	2.60	20	0.98					
Depression	*GNT-P*	6.71	3.87	8.63	4.95	23	-2.80**	0.43	3, 103	6.07***	1/2***	0.96
	GNT-F	7.47	4.19	6.14	4.44	48	2.70**	0.31			1/4*	0.83
	EW-P	5.93	4.97	6.86	5.97	13	-1.05					
	EW-F	3.95	3.01	3.43	3.28	20	0.98					
Positive changes	*GNT-P*	39.88	9.41	39.92	7.83	23	-0.03		3, 103	1.50		
	GNT-F	42.20	9.23	41.80	9.05	48	0.33					
	EW-P	43.93	5.59	43.79	7.50	13	0.07					
	EW-F	43.29	8.22	38.76	10.66	20	2.44*	0.48				
Negative changes	*GNT-P*	32.25	13.09	35.00	11.85	23	-1.72		3, 103	3.26*	1/2**	0.49
	GNT-F	29.73	12.48	28.12	10.56	48	1.14				1/4**	0.44
	EW-P	24.79	8.48	26.21	8.51	13	-0.52					
	EW-F	24.38	7.68	23.86	8.24	20	0.34					
Social support	*GNT-P*	54.50	8.39	50.08	7.82	23	2.52*	0.55	3, 103	0.55		
	GNT-F	60.53	12.21	57.08	14.05	48	1.89					
	EW-P	60.71	12.14	54.86	12.76	13	4.04**	0.47				
	EW-F	56.19	14.26	53.90	14.98	20	1.59					

1=GNT-P (n=24); 2=GNT-F (n=49); 3=EW-P (n=14); 4=EW-F (n=21)
**p<0.05; **p<0.01; ***p<0.001.*

After dividing the groups, significant difference among four groups were found on general anxiety (F (3, 104) =3.14, p<0.05) and depression (F (3, 104) =3.84, p<0.05) at pre-assessment. Post-hoc tests revealed that the GNT-P group reported a higher score on general anxiety than the EW-F group, and the GNT-F group reported a higher score on depression than the EW-F group. No significant differences were found across other variables.

Paired t-tests revealed that all four groups experienced significant changes on PTSD

symptom score from pre to post intervention. There were significant reductions in the GNT-F and EW-F group, but significant increase in the GNT-P and EW-P groups. All changes were with small effect sizes. On anxiety, panic disorder, and depression, significant reductions on the scores were found for the GNT-F group with small effect sizes. The GNT-P group reported significantly higher scores on depression, with small effect size and lower score on social support with medium effect size. Significant decrease on positive changes with small effect was found for the EW-F group. The results showed that partially developed narrative is harmful.

Univariate ANCOVAs on post-treatment scores controlling for pre-treatment scores revealed significant between-group effects for the PTSD, panic disorder, depression, and negative changes. Post hoc tests revealed significant differences on the PTSD score between the two fully completed groups (GNT-F & EW-F) and two partially completed groups (GNT-P & EW-P) with large between-group effect sizes. This suggested that the intervention benefited the students who fully followed the instructions, but distressed the students who could not meet the writing criteria.

There were significant differences in relation to scores of depression and negative changes between GNT-P and two fully completed groups (GNT-F and EW-F), with large effect size for the depression and small effect size for the negative changes. In the scale of panic disorder, significant difference was found between GNT-P and GNT-F with medium effect size.

With regard to the coping (see table 7.7), significant increases were found on distraction and resignation coping of GNT-P group, and significant decrease on wishful thinking of EW-F group. All changes were with medium effect size.

Table 7.7 Paired t-tests on coping

Measures	Group	Pre-assessment		Post-assessment		Within group		effect
						df	t	size
Distraction	GNT-P	1.21	0.88	1.63	0.71	23	-2.85**	0.51
Wishful thinking	EW-F	1.71	0.56	1.29	0.90	20	2.12*	0.56
resignation	GNT-P	0.08	0.28	0.38	0.49	23	-3.08**	0.75

**p<0.05; **p<0.01.*

7.2.3 Discussion of Study-1

This study examined and compared the feasibility, acceptance and effectiveness of two writing narrative interventions in a sample of Chinese early adolescent earthquake survivors. It was expected that both interventions would lead to improved mental health, and the GNT would function better than EW in reducing adolescents' posttraumatic symptoms, negative changes and passive coping style, and increasing the positive changes, social support, and active coping. However, the preliminary results indicated that both written narrative interventions had no effects on posttraumatic symptoms, and only GNT had a very small effect in changing participants' anxiety and coping. Contrary to the hypothesis was the fact that both interventions decreased the students' perceived social support.

By inspecting the writing adherence, it was found that more than one-third (35.19%) of participants did not fully meet the writing criteria, suggesting the interventions were not well accepted in traumatised early adolescents. Most of the previous studies which applied EW or writing disclosure in adolescents did not report the writing adherence (Reynolds, Brewin, & Saxton, 2000; Warner et al., 2006). One study used EW on peer problems in adolescents reported a satisfied writing adherence around 90%. The relatively low level of adherence might be caused by several reasons. The first is the coping that people used to deal with unpleasant or traumatic memory. The most adaptive strategy utilised by the general population is

distancing themselves from the situation as the outcome of the situation is not dependent on their will (Lazarus & Folkman, 1984). That might be true in children where the development of the ability to use problem-focused strategies is still developing (Griffith, Dubow, & Ippolito, 2000). Second, it may be because of the characteristics of early adolescents. Cognitive development in early adolescence result in greater self-awareness, greater awareness of others, and their thoughts and judgments (Carlson et al., 2006). It is possible that the developed self-concept will inhibit the disclosure of inner negative thoughts and feelings.

In addition, the importance of speaking of, or writing about, trauma experience may be underscored by the reluctance of many children who have been through trauma (White, 2005). While there are numerous theories about this reluctance – for example, as a result of psychological mechanisms of denial and suppression – concerns about disclosure of trauma experience, and about the potential risk of reliving trauma in the context of giving voice to this, are high on the list of relevant understanding of children's reluctance to speak about their experiences of trauma. This concern about encountering re-traumatisation upon disclosing the traumatic experiences is also significant when using GNT. It is understandable that, in writing down their experiences of trauma, children would become trapped in the immediacy of their traumatic experience that distressed them. This very outcome could be witnessed in circumstances in which children give voice to their traumatic experience in ways that contribute to a reinforcement of the negative conclusions they hold about their identity and their lives. This is usually associated with an escalation of a sense of vulnerability, of hopelessness, of desolation, and of futility (White, 2005).

After dividing the groups by the level of writing quality, although significant differences were found among four groups on the anxiety and depression at

pre-test, the differences were not systematic to conclude whether diversity existed between the partially and fully completed students that could lead to reluctance. It was found that people who fully followed the instruction could benefit from the interventions. The EW decreased the PTSD symptoms but had no effect on symptoms of anxiety, depression, and panic disorder. This result is consistent with prior research with samples of youth, showing that expressive writing had effects but on limited outcomes (Giannotta et al., 2009; Reynolds et al., 2000).

Although both GNT and EW lead to reduction on the PTSD symptoms with small effect sizes, compared with EW, GNT decreased the comorbidity, anxiety, depression, and panic disorder. The positive effects of these interventions for psychological health are consistent with theories about how EW works (James W Pennebaker, 1993). The preferable outcome of GNT may result from the sophisticated instructions, which could better guide participants to express their emotions effectively and gain strength from the experience (Hunt, 2012). The small effect could be anticipated. There was no initial selection of participants for evidence of traumatic symptoms as the programmes were tested as a school-based intervention for all children who experienced earthquake. It is possible that, for the healthy children, intervention may yield little benefits because of a floor effect – there is too little room to improve.

The increased PTSD symptoms of students who did not fulfil the writing requirements may link to the triggering effect of the instructions. Previous studies found that disclosure may lead to an immediate, but transient, increase in negative mood (Sloan & Marx, 2004). In this study, writing assessors found that these participants did describe their earthquake experiences, but failed to express their inner thoughts and feelings. The links to the mechanism proposed to account for the benefits of emotional disclosure; exposure and cognitive processing (Sloan &

Marx, 2004). This model emphasized that volitional access to the stressful memory, and the feelings associated with it, permits restructuring of the memory. It was possible that the unsuccessful emotion expression made the intervention work as a traumatic reminder instead of a useful solution. In addition, less perceived social support at post-intervention was also found among these students. This could be explained by the increased PTSD symptoms. Many studies have shown that social support is important in the development and maintenance of PTSD in diverse trauma populations (Guay et al., 2006). Some longitudinal studies conducted after a natural disaster revealed a reciprocal interaction between PTSD and social support (Kaniasty & Norris, 2008). The aggravated distress may impede survivors' appraisal of the supportive efforts of others.

In addition, participants of the GNT-P reported more depression, distraction and resignation coping after the intervention, but the EW-P did not. The increased depression might have happened because the GNT instructions distressed the students with partially developed narrative more than the EW. The detailed demonstration (e.g. the death of friends or families) exposed the adolescents to their loss and negative emotions. The increased passive coping – distraction and resignation – may reflect how they coped with the increased symptoms. Moreover, participants of EW-F reported less wishful thinking coping at post-test. It is consistent with a recent study exploring the mental health and coping style of traumatised children after Sichuan earthquake. Their findings showed that fantasy and avoiding, negatively correlated with mental health, are significant determinants (Zhang et al., 2010). The wishful thinking may reflect a passive response and impotence to the distress.

With regard to the positive changes, the EW resulted in less positive changes for students who fully developed their narrative. Post traumatic growth theory

postulates that PTG and PTSD share antecedents (i.e., seismic events) and processes (e.g., intrusive rumination), and research on the relation between PTG and PTSD among adults (Helgeson et al., 2006; Park, Aldwin, Fenster, & Snyder, 2008) has consistently demonstrated a positive association between the two. Several studies conducted with children and adolescents have also examined this hypothesis by using a longitudinal design (Ickovics et al., 2006; Wolchik, Coxe, Tein, Sandler, & Ayers, 2009). The reduced positive changes might be the result of the decreased intrusive rumination. However, compared with EW-F, although decreased posttraumatic symptoms were found for GNT-F, the sophisticated instructions of GNT-F could encourage students to explore the potential growth through the traumatic experiences.

This was the first study applying written narrative interventions with Chinese traumatised adolescents. A unique strength of this study is the assessments of the social support, coping, and changes after adversities. The changes of these variables enable people to better understand the impacts and functions of the interventions. The main limitation of the study is the lack of follow up. This is because the study aimed to test the acceptance and feasibility of a newly-modified strategy, GNT, in a new population (Chinese traumatised children), and practical considerations meant that a longer term follow up was impractical; students of sixth grade entered the junior high school in the same year and would not be traceable.

The results have several crucial implications for future research. Guided narrative technique may improve the posttraumatic symptoms better than the simple instruction of expressive writing in a short time if writing instructions were fully followed through. Although more than half of the participants could meet the writing criteria to express their thoughts, the writing adherence was still of a low level, indicating the writing narrative strategy presumably was not suitable for

traumatised early adolescents. Finding methods or resources to enhance the intervention adherence emerged as an important goal of protocol improvement for subsequent study, suggesting some strategic condition could be added to amplify the treatment effects. Besides, it is also worth examining the GNT in a younger sample, e.g. preadolescents, to further investigate whether it is more feasible and acceptable.

7.3 Study-2

Study-2 was carried out on the students from the fourth grade (9-10-years-old) in the same primary school in Beichuan County, China. The same writing strategies (GNT and EW) were tested and compared. According to the results and implications of Study-1, the study protocol was changed; a third intervention condition of GNT with encouragement (GNTE) was set to improve children's writing adherence level. Participants of this study were generally two years younger than the students of Study-1, and were of preadolescence. This study applied a randomised control method to compare the effects of GNT, GNTE, and EW. Beside the common hypothesis of the intervention effect as in Study-1, it was also expected that there would be a generally better writing adherence of this sample than the students of Study-1, and that, comparing with GNT and EW, the GNTE group would have the highest rate of satisfied writing adherence, and more preferable effect on psychological variables.

7.3.1 Methods

7.3.1.1 Participants

Eighty-two students from three fourth grade classes in a single primary school in

Beichuan County participated in the study. Written consent was obtained from the school and class teachers. All students provided oral consent. There was no initial selection of participants for evidence of trauma.

7.3.1.2 Measures

Details were described in CHAPTER 3 (*p.*69).

- PTSD symptoms were assessed using the *Children's Revised Impact of Event Scale* (CRIES).
- Anxiety, depression, and panic disorder were assessed by the subscales of *Revised Child Anxiety and Depression Scales* (RCADS).
- The *Changes in Outlook Questionnaire* (CiOQ) was applied to assess positive and negative changes in the aftermath of adversity.
- The coping was assessed by the *KIDCOPE.*
- The *multidimensional scale of perceived social support* (MSPSS) was applied to assess the children's social support.

7.3.1.3 Procedure

The study also used parallel-group randomization and was carried out on October 2010 and May 2012 (29-48 months after the earthquake) in Beichuan County. Before the writing, students were assured that their questionnaire responses or writing samples would not be shown to their teachers or parents. Teachers were not present during the survey administration, or the intervention. No expectation of benefit was given to participants. Because the GNT was evaluated as a group intervention, each class was selected as a unit to administer the intervention. A pre-post design was applied with GNT (1 class), GNT with encouragement (GNTE, 1 class), and mixed expressive writing and painting (MEWP, 1 class) groups. Eighty-two children in all groups completed questionnaires at one day before and

one day after the sessions. Seventy-seven students finished the 18-month follow-up. Five students did not attend the follow-up assessment as they were no longer attending the school. The classes were randomly assigned to one of the three conditions. The assessments were administered by trained psychological volunteers at one-day pre- and post- the writing, and at an 18-month follow-up. Papers with printed instructions were distributed to students by the administrator. He/she provided a simple explanation of the objects and requirements for the following writing and answered students' questions. Time reminders were given to students 10 minutes and 15 minutes after the writing. Papers were collected after 20 minutes' writing. In the GNT and MEWP groups, the administrator kept quiet during the writing process. In the GNTE group, the administrator would supervise the writing process by saying encouraging or urging words to promote the writing adherence. The speaking sentences included "please do not stop writing", "keep writing and express your deep thoughts" and "please make good use of this opportunity to express your feelings" and so on.

7.3.1.4 Writing conditions

The EW and GNT programmes were used. In summary, in the GNT and GNTE condition, students were asked to consider and write down their experiences, thoughts, and feelings about the earthquake for three consecutive days: Day 1 – describe the earthquake experience and their deepest feelings and thoughts: Day 2 – write down any negative thoughts and feelings relating to the earthquake: Day 3 – write down any positive thoughts and feelings about the earthquake and their perspective for future. In MEWP, students were asked to write about the earthquake experience and their deepest feeling and thoughts for three consecutive days. All were told not to be concerned about spelling or grammar. Many students in MEWP found it is difficult to write for three consecutive days with

the same instructions, so they were told they could draw or paint their thoughts instead on the third day. Children's drawings are an effective way of dealing with trauma-related emotion (Wertheim-cahen, Euwema, & Nabarro, 2005). All writing and painting lasted 20 minutes for each session.

7.3.1.5 Statistics analysis

The writing content was analysed and scored to assess adherence to the intervention instructions. Group differences at baseline in demographic data and pre-treatment measures were analysed by using chi-square tests and two-tailed t-tests. Pre- to post-treatment changes in questionnaire scores were analysed using ANCOVAs, while controlling for pre-treatment scores. Within-group changes of each group from pre- to post-treatment were tested using paired t-tests. The long-term treatment effects were analysed using repeated measures ANOVAs with the pre-test, post-test and follow-up scores. Pairwise differences were measured using paired t-tests with a LSD correction. Cohen's d was used to calculate effect sizes.

7.3.2 Results

7.3.2.1 Writing adherence

The writing adherence of three groups is reported in Table 7.8. There was no significant difference on the writing adherence among three groups.

Table 7.8 Writing adherence of three groups

	GNT	MEWP	GNTE
Partially met the criteria	5 (16.70%)	8 (26.70%)	1 (4.50%)
Fully met the criteria	25 (83.30%)	22 (73.30%)	21 (95.50%)

Compared with Study-1 (64.8%), the percentage of fully criteria met writings (82.9%)

was significantly higher ($x^2(1) = 7.69$, $p<0.01$) in this sample.

7.3.2.2 Baseline data

The age range of the participants was 9 to 14 (9.77±0.73). There were no significant differences among the three groups regarding gender, age, ethnic, individual, family, and friend injured status in the earthquake (See Table 7.9).

Table 7.9 Demographic characteristic of children within the two treatment groups

	GNT	EW	GNT-E	Analysis	
	N=30	N=30	N=22	χ^2	*p*
Gender:				0.31	0.86
Male	12	14	9		
Female	18	16	13		
Ethnic				2.30	0.32
Han	5	10	5		
Qiang	25	20	17		
Injured in the earthquake				6.23	0.18
No injury	20	26	19		
Slightly injured	8	4	3		
Severely injured	2	0	0		
Family injured				7.96	0.09
No injury	11	21	13		
Slightly injured	8	2	3		
Severely injured	11	7	6		
Friend injured				1.50	0.47
No injury	39	23			
Slightly injured	13	5			
Severely injured	21	7			
Age	**M(SD)**	**M(SD)**	**M(SD)**	**F**	***p***
	9.70(0.47)	9.77(0.63)	9.86(1.08)	0.32	0.73

7.3.2.3 Initial intervention effect

Means and SDs of scale scores, except the Kidcope, of three groups at each time point (pre-, post-, and follow-up) are shown in table 7.10. At pre-assessment, there was significant difference among groups on positive changes (F (2, 79) =5.47, p <0.01); post-hoc tests revealed the GNTE group reported significant fewer positive

changes than the MEWP group.

Table 7.10 Measures over time for GNT, MEWP and WL groups

Measures		Pre-		Post-		Follow-up	
		Mean	***SD***	***Mean***	***SD***	***Mean***	***SD***
Intrusion	*GNT*	8.77	3.65	7.87	4.65	4.76	4.11
	MEWP	8.43	5.35	5.57	3.27	4.14	3.52
	GNTE	10.09	4.61	5.86	4.02	5.90	4.27
Avoidance	*GNT*	8.90	4.57	8.47	4.50	8.62	5.35
	MEWP	6.70	5.06	8.57	5.70	7.04	5.66
	GNTE	8.64	4.08	8.64	3.96	6.80	4.97
Arousal	*GNT*	10.47	4.20	9.10	5.22	9.17	5.01
	MEWP	9.87	4.50	7.83	5.72	7.82	5.03
	GNTE	9.36	4.27	7.64	4.10	9.35	4.93
PTSD	*GNT*	28.13	7.51	25.43	10.24	22.55	10.57
	MEWP	25.00	11.64	21.97	11.51	19.00	9.82
	GNTE	28.09	9.30	22.14	9.21	22.05	10.84
Anxiety	*GNT*	7.07	4.29	7.17	5.14	7.48	4.48
	MEWP	7.03	3.85	5.37	4.37	6.14	3.86
	GNTE	7.14	3.91	5.36	3.87	5.95	4.06
Panic disorder	*GNT*	6.80	4.78	5.90	6.23	5.97	4.33
	MEWP	5.87	4.96	4.87	4.86	6.21	5.25
	GNTE	6.73	4.43	6.00	5.20	6.80	4.97
Depression	*GNT*	6.70	4.22	6.63	5.02	7.90	4.30
	MEWP	7.67	3.82	7.10	4.78	7.75	4.80
	GNTE	8.09	4.66	6.73	4.81	8.35	4.57
Positive changes	*GNT*	39.17	9.18	42.33	8.37	47.17	8.56
	MEWP	43.40	8.46	41.27	10.35	43.18	11.40
	GNTE	34.77	10.59	40.95	11.84	43.40	9.17
Negative changes	*GNT*	33.90	11.91	32.10	10.91	30.41	10.20
	MEWP	32.80	11.68	33.30	11.80	33.21	11.52
	GNTE	34.45	12.97	28.32	14.05	30.60	8.71
Perceived social support	*GNT*	53.43	15.28	53.43	15.33	54.97	14.00
	MEWP	54.83	13.32	54.40	13.88	53.39	13.71
	GNTE	50.91	14.00	50.23	17.41	55.85	15.21

Table 7.11 shows the means and SDs of Kidcope of three groups at each time point (pre-, post- and follow-up). At pre-assessment, there were significant between-group differences on distraction (F (2, 79) =6.50, p <0.01) and wishful thinking (F (2, 79) =5.54, p <0.01). Post-hoc tests revealed that the GNT group

reported fewer score on distraction the other two groups and the GNTE group reported fewer score on wishful thinking than the MEWP and GNT groups.

Table 7.11 Means and SDs of Kidcope over time for GNT, MEWP and WL groups

Measures	Groups	Pre assessment		Post assessment		Follow-up	
		Mean	SD	Mean	SD	Mean	SD
Distraction	*GNT*	0.73	0.83	1.00	0.83	1.41	0.78
	MEWP	1.37	0.61	1.27	0.69	1.43	0.74
	GNTE	1.00	0.53	1.14	0.77	1.55	0.60
Social withdrawal	*GNT*	1.67	0.61	1.53	0.63	1.59	0.50
	MEWP	1.33	0.61	1.37	0.67	1.32	0.72
	GNTE	1.00	0.69	1.27	0.70	1.45	0.51
Cognitive restructurin	*GNT*	0.83	0.38	0.77	0.43	0.83	0.38
	MEWP	0.87	0.35	0.87	0.35	0.89	0.31
	GNTE	0.77	0.43	0.82	0.39	0.80	0.41
Self - criticism	*GNT*	0.47	0.51	0.30	0.47	0.52	0.51
	MEWP	0.47	0.51	0.43	0.50	0.43	0.50
	GNTE	0.50	0.51	0.45	0.51	0.70	0.47
Blaming others	*GNT*	0.23	0.43	0.37	0.49	0.24	0.44
	MEWP	0.30	0.47	0.23	0.43	0.21	0.42
	GNTE	0.36	0.49	0.32	0.48	0.20	0.41
Problem solving	*GNT*	1.43	0.57	1.57	0.57	1.66	0.48
	MEWP	1.47	0.68	1.40	0.67	1.39	0.63
	GNTE	1.09	0.68	1.27	0.70	1.65	0.59
Emotional regulation	*GNT*	1.30	0.53	1.23	0.50	1.24	0.58
	MEWP	1.20	0.61	1.10	0.66	1.25	0.65
	GNTE	1.32	0.65	1.18	0.50	1.40	0.60
Wishful thinking	*GNT*	1.87	0.35	1.90	0.40	1.72	0.53
	MEWP	1.77	0.43	1.40	0.77	1.64	0.68
	GNTE	1.41	0.73	1.41	0.73	1.85	0.37
Social support	*GNT*	0.93	0.25	0.87	0.35	0.86	0.35
	MEWP	0.87	0.35	0.87	0.35	0.89	0.31
	GNTE	0.77	0.43	0.77	0.43	0.95	0.22
Resignation	*GNT*	0.33	0.48	0.40	0.50	0.31	0.47
	MEWP	0.30	0.47	0.40	0.50	0.29	0.46
	GNTE	0.36	0.49	0.41	0.50	0.15	0.37

The initial treatment outcome analyses are presented in Table 7.12. Paired t-tests revealed that the MEWP and GNTE groups experienced significant reductions on intrusion and anxiety scales from pre- to post-test. Significant increase on avoidance scale and significant decrease on arousal scale were reported of the MEWP group. The GNTE group experienced significant increase on positive changes scale, and significant reductions on anxiety and negative changes. A trend towards lower

arousal (p=0.07) was found for the GNTE group at post-assessment. With regard to the total PTSD score, there was a significant reduction for the GNTE group after the intervention.

Univariate ANCOVAs on post-treatment scores controlling for pre-treatment scores revealed significant between-group effects for intrusion and anxiety. A marginally significant between-group difference (p=0.05) was found for the negative changes. Post-hoc tests revealed that the MEWP and GNTE groups displayed fewer score than the GNT group on intrusion and anxiety. The GNTE group reported fewer score than the MEWP group on the negative changes.

Within- and between-group effect sizes for the outcome measures are also included in Tables 7.12. From pre- to post-treatment, large (>=.80) within-group effect size was found for the GNTE group on the intrusion. Medium within-group effect size (.50-.79) was found for the MEWP group on the intrusion, and for the GNTE group on positive changes. Small within-group effect size (<=.20) were found for the MEWP group on avoidance, and for the GNTE group on arousal, anxiety, and negative changes. Medium between-group effect sizes were found on the intrusion (GNT vs. GNTE), anxiety (GNT vs. MEWP, GNT vs. GNTE) and negative changes (MEWP vs. GNTE). Small (.20-.49) between-group effect size was found on intrusion between GNT and MEWP groups.

Table 7.12 Results of outcome measures of T1 and T2

Means difference, 95% CI, paired t-test, within group effect sizes, ANCOVA analysis, and between group effect sizes

Measures	Group	Mean difference (pre-post)	95% CI	Within-group		Effect size	Between-group		Post-hoc	Effect size
				df	*t*		*df*	*F*		
Intrusion	*GNT*	0.90	(-0.94 to 2.74)	29	0.33		2,78	3.54*	1/2*	0.40
	MEWP	2.87	(1.01 to 4.72)	29	3.16**	0.65			1/3*	0.69
	GNTE	4.23	(2.17 to 6.29)	21	4.27***	0.98				
Avoidance	*GNT*	0.43	(-0.77 to1.64)	29	0.73		2,78	0.94		
	MEWP	-1.87	(-3.69 to -0.05)	29	-2.10**	0.35				
	GNTE	0.00	(-2.27 to 2.27)	21	0.00					
Arousal	*GNT*	1.37	(-0.69 to 3.42)	29	1.36		2,78	0.38		
	MEWP	2.03	(0.09 to 3.98)	29	2.14*	0.40				
	GNTE	1.73	(-0.12 to 3.58)	21	1.94[a]	0.41				
PTSD	*GNT*	2.70	(-0.56 to 5.96)	29	1.69		2,78	0.85		
	MEWP	3.03	(-0.91 to 6.97)	29	1.57					
	GNTE	5.95	(1.23 to 10.67)	21	2.62*	0.64				
Anxiety	*GNT*	-0.10	(-1.61 to 1.41)	29	-0.14		2,78	3.20*	1/2*	0.52
	MEWP	1.67	(0.68 to 2.65)	29	3.47**	0.40			1/3*	0.56
	GNTE	1.77	(0.69 to 2.86)	21	3.40**	0.46				
Panic disorder	*GNT*	0.90	(-0.54 to 2.34)	29	1.28		2,78	0.08		
	MEWP	1.00	(-0.38 to 2.38)	29	1.48					
	GNTE	0.73	(-1.03 to 2.48)	21	0.86					
Depression	*GNT*	0.07	(-1.20 to 1.33)	29	0.11		2,78	0.56		
	MEWP	0.57	(-0.69 to 1.83)	29	0.92					
	GNTE	1.36	(-0.43 to 3.16)	21	1.58					
Positive changes	*GNT*	-3.17	(10.07 to 1.84)	29	-1.72		2,78	1.78		
	MEWP	2.13	(-1.15 to 5.42)	29	1.33					
	GNTE	-6.18	(10.57 to -1.79)	21	-2.93**	0.55				
Negative changes	*GNT*	1.80	(-1.20 to 4.80)	29	1.23		2,78	3.02[b]	2/3*	0.62
	MEWP	-0.50	(-4.32 to 3.32)	29	-0.27					
	GNTE	6.14	(1.35 to 10.93)	21	2.66*	0.45				
Social support	*GNT*	0.00	(-4.22 to 4.22)	29	0.00		2,78	0.14		
	MEWP	0.43	(-4.80 to 5.66)	29	0.17					
	GNTE	0.68	(-6.32 to 7.68)	21	0.20					

**p<0.05; **p<0.01; ***p<0.001.*

[a] p=0.07; [b] p=0.05

7.3.2.4 Eighteen month follow-up outcome

The 18-month follow-up outcome is shown in Table 7.13. Repeated measures ANOVAs revealed significant intervention effects post-assessment for all three

groups on intrusion. A comparison of pre-, post-, and follow-up showed significant reductions of scores after treatment for the MEWP and GNTE groups, and the reductions were stable at follow-up. However, a significant score reduction on the intrusion was found from pre- and post-test to follow-up for the GNT group, suggesting that the GNT intervention did not take effect immediately after the intervention, but had a longer effect than the other two groups (see Figure 7.1). The effect size was large (1.81) from pre-test to follow-up. Medium effect sizes were found for all three groups on the total PTSD score change from pre- to follow-up, with 0.61 for GNT, 0.56 for MEWP, and 0.64 for GNTE.

On the avoidance scale, the GNTE group reported significantly fewer scores from post-assessment to follow-up, and the MEWP had a marginally significant increase (*p=0.05*) from pre- to post-assessment. The result indicated that the GNTE intervention had a longer reducing effect on avoidance, but the MEWP could induce more avoidance symptom in the aftermath of the intervention (see Figure 7.2). There was a significant intervention effect for the MEWP group from pre- to post-assessment in the arousal. The total PTSD score decreased significantly for the MEWP and GNTE after the intervention, and the reductions were stable at 18-month follow-up. The GNT group experienced less PTSD symptoms after the intervention, and reported significant reduction at follow-up, suggesting the GNT functioned slower than the MEWP and GNT.

With regard to the positive change (see Figure 7.3), there was a significant increase found from post-test to follow-up for the GNT group, and significant increase after the intervention of the GNTE group was stable for the 18-month follow-up. The positive change increased significantly and the negative changes decreased significantly for the GNTE group. At follow-up, for the GNTE group, the increase on the positive changes was stable, and the decrease of the negative changes was

likely stable (*p*=0.07). This suggested that the GNTE had an immediate and stable effect on both positive and negative changes, and the GNT had a slower effect on positive changes. There were no significant intervention effects on the scores of the panic disorder, depression, and social support.

Table 7.13 Repeated measures ANOVA of time (pre-treatment, post-treatment, follow-up) for three groups (GNT, MEWP and GNTE) with post-hoc LSD tests

Measures	Groups	Intervention		*pre/post*	*pre/fu*	*post/fu*
		df	*F*	*p*	*p*	*p*
Intrusion	*GNT*	2,27	8.20**		***	*
	MEWP	2,26	8.88**	**	**	
	GNTE	2,18	10.86***	**	***	
Avoidance	*GNT*	2,27	0.06			
	MEWP	2,26	2.06	[a]		
	GNTE	2,18	2.85			*
Arousal	*GNT*	2,27	1.42			
	MEWP	2,26	2.88[b]	**		
	GNTE	2,18	1.31			
PTSD	*GNT*	2,27	5.48**		**	
	MEWP	2,26	3.16[c]	*	*	
	GNTE	2,18	3.12[b]	*	*	
Anxiety	*GNT*	2,27	0.02			
	MEWP	2,26	6.45**	**		
	GNTE	2,18	5.48*	**		
Positive changes	*GNT*	2,27	7.89**		***	*
	MEWP	2,26	0.65			
	GNTE	2,18	4.35*	*	*	
Negative changes	*GNT*	2,27	1.02			
	MEWP	2,26	0.10			
	GNTE	2,18	3.64*	*	[b]	

**p<0.05; **p<0.01; ***p<0.001.*

[a] p=0.05; [b] p=0.07; [c] p=0.06.

In terms of the coping, distraction coping significantly increased from pre-assessment to follow-up for the GNT group (*t* (28) =-3.09, *p* <0.01), and for the GNTE group (*t* (19) =-3.25, *p* <0.01). Large effect sizes (0.84 for GNT, and 0.89 for GNTE) were found for both groups. The problem-solving coping increased significantly from pre-assessment to follow-up for the GNT group (*t* (28) =-2.25, *p*

<0.05) with small effect size (0.47), and for the GNTE group (*t* (19) =-2.70, *p* <0.05) with medium effect size (0.79).

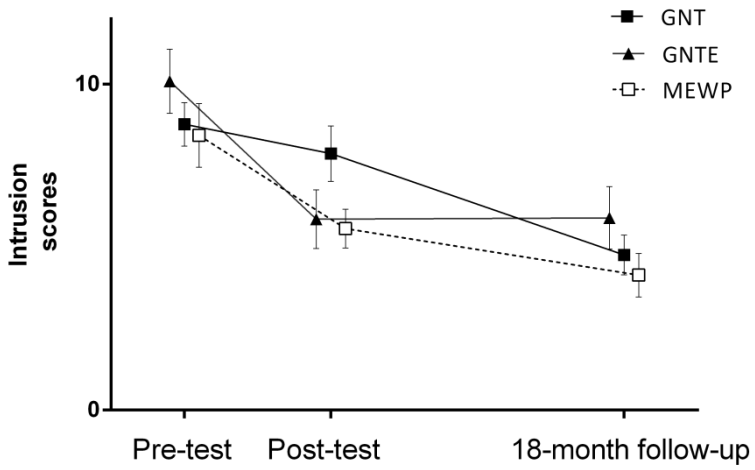


Figure 7.1 Mean scores for intrusion of three groups

All three groups underwent intervention from pre- to post-test. At post-test, participants in the GNTE and MEWP had significantly lower self-reported symptoms of intrusion than participants in the GNT group and the changes were stable at follow-up. The GNT group showed significantly less intrusion after the intervention, and reported significantly fewer score than the pre-test. Error bars indicate standard errors.

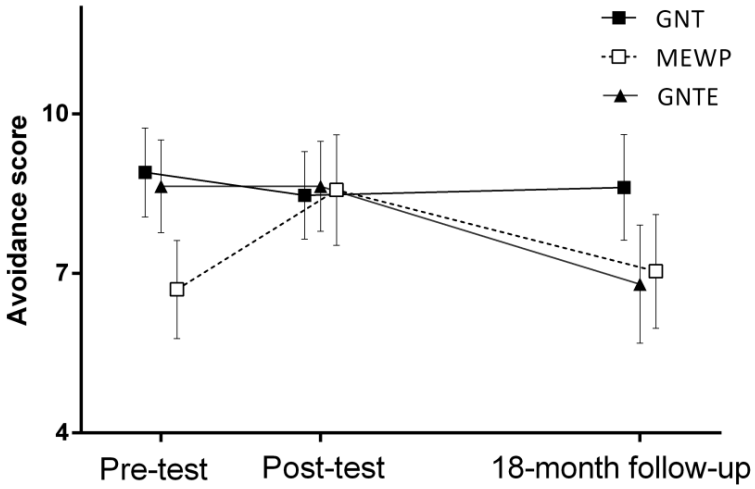


Figure 7.2 Mean scores for avoidance of three groups

Participants in the MEWP led to immediate increase of avoidance at post-test, but the increase was not stable at 18-month follow-up. The GNTE group showed long-term reducing effect from the post-test to follow-up. Error bars indicate standard errors.

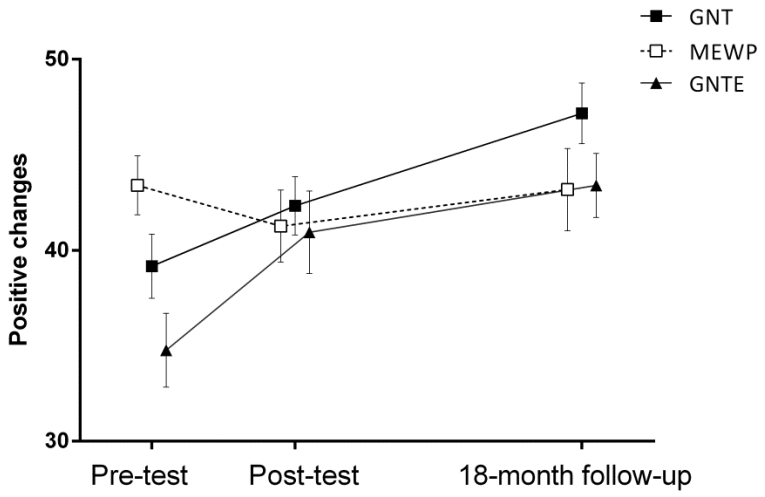


Figure 7.3 Mean scores for positive changes of three groups

The GNTE led an immediate and stable promotion on positive changes. The GNT showed a slower and stable increasing effect on positive changes. Error bars indicate standard errors.

7.3.3 Child narrative examples

The following are two typical examples of students' writing in the GNT group, chosen because they effectively demonstrate the kind of writing produced by 10-year-old children. The student improved after three days' writing, with reduced scores on the psychological measures.

Day 1

I think I am a very good person, and I like reading and handwriting. But I feel something is not good for me. Because of the earthquake, our family's life is not as good as before. I feel I am not as happy as before. The earthquake buried our house in ruins and I am very sad. But I still focus on my studies. However, of my many relatives, some died, and some were hurt seriously. I feel very sad as well. I really miss our former home, former life. I had so many relatives, but how about now? Some of my relatives had gone, and the house had gone… don't have the life as before. Although those had gone, now some Shushu and Ayi from Qingdao (city name) helped us rebuild our new school, and new home. I thank them very much. So I want to speak to Shushu and Ayi

that you worked hard and thank you.

Day 2

I feel I am very angry today. Because of many things, because I miss my friends and relatives very much, because some friends and relatives were buried in ruins, our house and some material were also buried in ruins. I am very sad, but I will still try to get good scores in the exams. Because only by this, I won't be looked down by my parents, classmates and relatives, and won't lose face. But I cannot forget those dead good friends, relatives, and my family members. Because they were all good to me, I won't disappoint them. Miss X, I want to say thanks to you, because you can let me speak my innermost thoughts and feelings, thank you, Miss X. I also find that I changed since the earthquake, change to anger. Because some of my friends and relatives had gone, and the house had gone, I get angry. I also feel fear, because lots of people died in the earthquake, and had an awful death, so I am very fearful.

Day 3

The missing for dead family members and friends is really heavy and hurt, because I and she were very, very good (friends). We were best friends, but when I missed her, I always feel very, very unhappy. However, I thank to those Shushu, Ayi and teachers, because some Shushu and Ayi help me construct many buildings, which enable us grow up happily. And teachers, they teach us lot of knowledge, I thank this very much. If it wasn't because of you, I won't grasp so good knowledge, and won't be polite like this. So I thank you very much. I also thank my parents, because they raise me up, and teach me a lot as well. Although I miss my dead family and friends, I know they were also unhappy, and so were their parents. So when I grow up, I will help my friend take care of your mother and Dad, so you don't need to worry about this, rest assured and go ahead!

This person was only 10-years-old and was demonstrating a sophisticated awareness of the world. This is an important point; many researchers and clinicians fail to acknowledge this level of sophistication, thinking that they know best rather than trying to draw out what the child is thinking. Here the child immediately notes that she thinks of herself as a good person, indicating an inner resourcefulness and

an understanding that the earthquake was not her fault. She recognises the support that she has received from her parents, from her teacher, and from the help within society. Again, this gratitude and recognition of the importance of other people shows a high level of sophistication. The words are all used in their appropriate context. She is able to discuss this, and at the same time, acknowledge the negative emotions she is experiencing, the sadness, the anger, and the fear. These emotions are all appropriate. There is no sense of how traumatic stress can lead to abnormal emotional and cognitive responses. She feels sadness and anger because she has lost family and friends; and she feels fear because another earthquake might occur that could be as equally devastating.

When she is expected to express her negative emotions on Day 2, she uses causal word “because” to explain why she had negative emotions, showing the insight of her mental status. After saying she feels angry, she notes how she wants to do well in her education as a way of thanking the teachers and parents who have helped her. It appears that the earthquake is very much in the past (i.e. contextualised in memory), though the feelings relating to loss are in the present. Indeed, she says that she will work hard for them.

On Day 3, when she was expected to try to say positive things, she still initially focuses on the negative, on the feelings she has for her lost friend. This may demonstrate that even when instructions to the contrary are given, it is difficult for the person to focus on the positive – there is perhaps a sense of guilt in focusing on the positive. The loss of friends and family will never, of course, be seen positively, but it appears from the writing that she has gained strength since the earthquake, and wants to succeed in some sense as a response to what happened. The problem is that we do not know what she was like before the earthquake, and whether what we see in the writing demonstrates change as a result of the earthquake or not.

The following is another example of students' writing in the GNT group. The student did not improve after three-days' writing with similar score on psychological measures.

Day 1

When the earthquake happened, I was taking the PE class. In the moment, I did not know why the earth was shaking. Suddenly, I saw opposite mountain fell down, and I cried. About at 6 o'clock, my uncle came to pick me, and pick my brother in passing. My uncle brought me into the tent. In that moment, I felt anger forthwith, because it destroyed a big area of trees, and killed our dog. I missed my puppy very much. Before the earthquake, I was very nice. Others rated me, I would not scold back. Now others rated me, I do scold back. Ai! Could it be that I become bad? And, at this moment, I like dog, and hug the dog secretly in usual, because Dad and Mum would rebuke me. At grandma's home, I felt lonely. I could do nothing except kill time by watching TV. In those kinds of days, I felt very sad, and often threw the pillow to blow off steam. That was not me. When I was 6, Dad and Mum went out to do works for others. When they were out, only grandma looked after me. I remembered that when Dad was out, knife slashed his head a long open. My Dad treated it, but there is still a scar in his head now. I think the money is hard-earned, and should save money.

Day 2

When the earthquake happened, I felt fear, because the chimney of the canteen fell down, almost pressed my classmate down, and the mountain opposite was falling. At the thought of Mum and other family members, I cried, and thought my family must get hurt. Luckily our house did not fall down, and family members did not get hurt. As a result, my uncle felt anxious very much when he heard their house had fallen down. The phone was out. The person lived in bungalow was my aunt. She was working in the river, and the water suddenly raised and buried her. I was afraid this kind of thing happened on my family. My grandma almost… because when the earthquake happened, my grandma walked besides the bridge over the river. The earth shook, Yangjia was our land, and fell down suddenly. My grandma hastened to ran up. I did not see my grandma when I was back home, I worried that my grandma had gone. After a few days, grandma came back; she lived on my Chen Popo's ("popo" is a respectful

> call for elderly woman) home. After detailed asking, knowing at that time, it rained for a few days, heard that: Aunt's Mum, which is my Zhang Nainai ("nainai" is a respectful name for an elderly woman, similar to "popo"), her house fell down and broke Zhang Nainai's feet, and (she) was hospitalized. I was afraid (she) couldn't walk anymore. The flood washed others' house away, I was afraid it washed my home away.
>
> Day 3
>
> After the earthquake, many kind-hearted people came to help us. I remember there is a saying of "when disaster strikes, help comes from all sides". Shushu and Ayi from Qingdao came to rebuild our home. Kind-hearted people all over the world are helping us, and many volunteers came to teach us, and used their own money to buy books for us to read. After our earthquake, many people came to play with us, such as Qiujie, teacher Dameng, Xiaoyun jiejie ("jiejie" is a respectful call for woman older than the caller) came to play with us. In our school, Gege ("gege" a respectful call for man older than the caller) Jiejie from Hong Kong came to play with us, such as Xiaoqiang Gege, Xiaoyu Jiejie, Xiaoru Jiejie, Xiaohui Jiejie , and a funny handsome boy. In fact we did not know his real name; he just let us call him Handsome. In the activity of Bao qiang yu wawa, I was supposed to bring one Gege or Jiejie to visit our people and material. Who knew I was sick and couldn't go? It was a shame. But now thinking about it, should thank them because they let us get warmth.

The first impression from this writing is that is not fully coherent. On Day 1, the narrative moved from the earthquake experience to the puppy, which is incoherent, and then to his father's scar from a different incident. Perhaps it is still difficult to ask an 11-year-old child to focus on a single thing within 20 minutes, or perhaps it is that the child is thinking about how accidents can cause damage to people. It is difficult to say. During Day 2, the narrative is about other people's experience, rather than his. This might reflect not his memories of the day of the earthquake but what he has heard afterwards. This is a difficulty with any narrative analysis of an historical event. Real narratives or memories are constructed from what actually happened and later interpretation, whether it is the person's own or someone

else's. The child wrote about negative feelings such as "fear" and "worry". However, compared to the first example, this child did not appear to express his negative emotions deeply – but again, this may be a lack of sophistication in his writing style. On day 3, he writes about his positive thoughts about the volunteers. He describes the scenes, but does not appear to explore his deeper thoughts and feelings as a child. It is unknown whether this reflects the instructions rather than something inherent in the child.

7.3.4 Discussion

The effectiveness of GNT, GNTE, and the MEWP were compared and examined to determine whether they would lead to a decrease in trauma-related symptoms, and promote positive effects such as the positive change, coping, and perceived social support. In this study, a third group condition was added to test whether encouraging words could enhance the writing adherence. After inspecting the narrative contents, no significant difference on adherence was discovered among the three groups, but the writing assessors found that participants in GNTE wrote more words than those of GNT and MEWP. Compared with Study-1, the preferable overall writing adherence of this study in a younger sample was consistent with expectations, which suggested that the low writing quality in Study-1 might be based on the reluctance of early adolescents to disclose their inner thoughts and greater awareness of others and their thoughts and judgments.

In general, all three interventions were effective at reducing PTSD symptoms over a long period of time, but the GNTE and MEWP functioned quicker, and showed effects immediately after the interventions. GNTE showed a quick and stable effect at reducing intrusion symptoms with a large effect size, a slow effect on avoidance, and transient effect on arousal. The MEWP took rapid effect in the symptoms of

intrusion and arousal, but the reduction on arousal was not stable, and it caused immediate increased avoidance. The GNT condition was different from the other two groups; it did not operate quickly but showed a slow and stable effect in decreasing intrusion with a large effect size (1.03) at follow-up. The results of the present study are inconsistent with the null finding of writing disclosure's effects among younger children (Reynolds et al., 2000; Warner et al., 2006). Although writing may require more demands on insight, verbal ability, or maturity, the studies find a better acceptance and writing adherence in preadolescent children than the adolescents.

The increase of avoidance in MEWP was unexpected, but it is consistent with Study-1 and a study which found EW could lead to an increase of repression (Giannotta et al., 2009). It also reflected that children were underdeveloped in their ability to use problem-focused strategies (Griffith et al., 2000). The two GNT groups did not induce an increase in avoidance. This is perhaps because the negative and positive emotion-focused instructions provide children with assistance in understanding the trauma experience and are helpful for the development of more problem-focused strategies, suggesting that the improved writing instruction in GNT may help provide more active coping. This explanation was also supported by the result that increased problem solving coping was found for the GNT and GNTE groups. Moreover, it is interesting to note that both GNT and GNTE led to more distraction coping. The former is comparable with the result of NET-2 study, in which increased self-distraction were found together with the decreased posttraumatic symptoms. Other intervention works have shown that the effects of the intervention operate through changes in coping (Giannotta et al., 2009; Short et al., 1995). Thus, it seems that the revised instruction of GNT help children take a more active stance toward their problems, and also increase their overall use of adaptive coping.

Both GNTE and MEWP led to less general anxiety of children in the aftermath of interventions, but the effects were not stable at 18-month follow-up. Furthermore, no effects were found on depression and panic disorder for all three groups. The null finding on the comorbidity is consistent with previous studies (Giannotta et al., 2009; Reynolds et al., 2000), suggesting the effects of written narrative intervention are limited.

With regard to the positive change, both GNT groups led to a stable improvement on it, and, specifically, the GNTE functioned quicker. These effects paralleled with the hypothesis. The instructions involving growth probably provide illumination and guidance for children to explore positive change and improve their perspectives on life. There is evidence that perceived positive change increases through treatment (Hagenaars & Van Minnen, 2010). In addition, the quicker effects of GNTE compared to the GNT may be because of the pre-test difference on positive change between these two groups. Because the GNTE had a lower level of positive at baseline, there was more room for them to improve in the aftermath of the intervention. However, it is not clear whether this is because GNT lead to further intrinsic improvements, or whether other factors were involved. In terms of the negative changes, it was reduced only by the GNTE condition. Previous studies and CHAPTER 4 reveal that negative change is one of the strong predictors for posttraumatic stress, and a decrease on it was detected in NET studies with treatment (CHAPTER 5 & CHAPTER 6). Nevertheless, the null effect of GNT and MEWP on negative changes was contrary to the hypothesis. It suggests the intensity and quality of writing tasks is essential for amplifying the intervention effectiveness.

The presence of these two examples shows how this intervention can work and the importance of participants' qualitative responses. Neither child wrote down a detailed description of the earthquake event. This is consistent with the result from

previous studies that children may also report incomplete narratives if they have not developed appropriate strategies to recall their memories (Johnson & Foley, 1984). As a result of an under-developed spatio-temporal memory system, children are likely to distort the actual time and context of events (Robert et al., 1997). These cognitive limitations provide implications in understanding children's reactions to trauma. These features are reflected in the content of children's trauma narratives of the examples. In addition, the second narrative example showed less coherence than the first one in terms of the absence of a uniting theme, and the presence of disorganisation. Coherence has been highlighted as a vital characteristic of a "good story", both theoretically and empirically. The use of further developed instructions should facilitate the building of a "good story" from children. From these examples, it could be speculated that the level of coherence may be able to predict improvement to some extent. Further analyses are needed to test this. It was also anticipated that trauma narratives might assist in identifying children who are experiencing difficulties post-trauma, and who would benefit from intervention. Further analysis, which combines the qualitative and quantitative data, is needed to be able to explore this.

One limitation of the GNT studies is that there was no control group using instructions to write neutrally. This is because of ethical considerations, and the school insisted that effective interventions should be used. Moreover, although the long-term (1.5 years) follow-up was conducted, no interval assessments were administrated. Hence, the initiation of the slow function for GNT group is unknown. Besides, in practice, the standard expressive writing technique was not feasible on children at 10 years of age, which means that it will need further adaptation.

In brief, these two studies support the view that guided written narrative strategy is a promising group treatment option of posttraumatic stress for children. The

findings suggest that, compared to a simple instructed program or the GNT alone, a GNT enhanced with supervision and urging can result in more extensive clinical outcomes, especially on the negative and positive change.

7.4 Chapter summary and conclusions

This chapter has reported studies that evaluated and improved the written narrative strategies among Chinese child earthquake survivors. These studies showed that narrating traumatic memory and expressing one's feelings about the event would decrease psychological distress, help youth cope with conflicts more actively and adaptively, and promote positive change following a disaster. The large effect sizes indicate a preferable clinical outcome on post-disaster resilience for school children. It justifies the supplementary encouragement as an appropriate protocol improvement by showing its advantages over the other two ways. Replication of the findings with a larger sample that includes children of different ages and an appropriate control group is warranted. Such studies should take care to involve traumatised adolescent participants with reluctance of disclosure emotions as harmful impacts were found through partially developed narratives. In addition, it is recommended that such studies include a detailed analysis of participants' writing content and structure. This would allow a check on adherence to the GNT protocol itself and investigation of the mediating role of cognitive and emotional processes in the observed outcomes. Despite the limitations in the present study, findings suggest that a simple, brief, and feasible, guided and theoretically derived writing intervention could help children dealing with posttraumatic distress.

Along with adult intervention studies of CHPATER 5 and 6, all research aims were achieved by providing supportive evidence of the efficiency of narrative

interventions in earthquake survivor populations. Having presented the results and discussion of each study, the following chapter provides an overall discussion of the significant results obtained in all empirical studies of this research and elaborates on the implications of these findings.

Chapter 8: General discussion, implications and future research

8.1 Chapter overview

The chapter begins by summarising the research findings (Section 8.2), and proceeds by discussing the implications of these findings with regard to the theory, method and practice in Section 8.3 to Section 8.5. The limitations and contributions are proposed in 8.6 and 8.7. The chapter concludes after discussing the possibilities for future research that would extend the work of this thesis (Section 8.8).

8.2 Summary of research findings

The main objective of the present research was to examine the efficacy and feasibility of narrative interventions in both adult and child earthquake survivors in the context of the Sichuan earthquake. To begin addressing these objectives, a literature review was performed. In CHAPTER 2, the review identified the distinct gaps within PTSD intervention research and practice.

- First, poor mental health, particularly the increased prevalence rate of PTSD following disasters, is an extensive global public health problem that affects individuals in low and middle-income countries. However, most of the PTSD treatment studies are carried out in developed areas, and few studies have evaluated the efficacy of interventions in developing districts or in population with low SES.

- Second, recommended PTSD therapies, such as the CBT and EMDR, are not simple or efficient enough to be widely delivered after disasters.

- Third, narrative interventions have acquired increasing accumulation of empirical evidence of their efficacy. Their simplicity, low cost, and relative ease in delivering training for their administration indicate their potential benefit to disaster victims with limited resources and low SES. However, they have not been applied after a single natural disaster or in the Chinese setting.

- Fourth, the Sichuan earthquake was enormously destructive and affected millions of people. Simple, low-cost, quick, and easily trainable interventions are urgently needed for survivors in China.

These findings from the existing body of research provided background knowledge for the following empirical studies that investigated the effectiveness and feasibility of narrative interventions and its adaptation within this setting. Next, the discussion in CHAPTER 3 justified the necessity and suitability of the employment of a cross-sectional survey and found RCTs to achieve the research goals.

Thus, CHAPTER 4 reported the cross-sectional survey and discussed the nature and extent of the psychological difficulties experienced by survivors after the earthquake. By using self-reported measures in 120 adult earthquake survivors, it was found that the prevalence rates were 30% for probable PTSD, 45.8% for probable anxiety, 27.5% probable depression, and 27.5% for general distress. These rates were comparable to those reported in epidemiological studies conducted within a short time after the earthquake. Correlation analysis revealed the factors related with the psychological well-being and psychosocial resources within the sample. In brief, women and those with lower SES and who experienced more loss, were found to be more vulnerable to the development of psychological morbidity and negative psychological change. Survivors with lower SES used less active coping and more passive coping, and perceived less social support from friends and others. Women also reported less perceived social support. These findings are consistent with previous literature and

empirical studies. Afterwards, high correlations between the total PTSD scores and other psychiatric symptoms were found. Of these related factors, insomnia and negative change were two strong predictors of PTSD in this population, accounting for 50.5% variance of PTSD symptoms. Positive change was only slightly related to the rumination–intrusion, active coping, and social support scores. Specifically, social support and rumination were the predictors of positive change, but could only explain 10% of the variance. The data provide valuable information, not only reflecting the psychological status of the targeted population, but also identified the importance of providing mental health relief services to this vulnerable population.

In light of the above findings, NET treatment was provided to adult survivors. Twenty-two adult survivors attended the first waiting-list RCT study 1.5 years after the earthquake. CHAPTER 5 presents the effect assessment of NET. Results showed NET was an effective treatment for Chinese earthquake survivors in reducing PTSD symptoms, depression, anxiety, general distress, negative change and increasing positive change. The overall effectiveness of NET demonstrated its utility in such circumstances. The benefits of NET are clear. However, some issues were also raised, indicating that NET could be further adapted and shortened for this setting.

Subsequently, CHAPTER 6 reports the second RCT study and presents the modification and evaluation of the revised NET. Of 30 participants, 20 received the NET-R, and 10 were treated by the original NET. Consistent with our hypothesis, both NET and NET-R were efficient in reducing PTSD symptoms, anxiety, depression, general distress, negative change, and led to positive change. In addition, they also showed effects on changing participants' coping and perceived social support. Compared with the NET-1 study, further reductions from post-treatment to three-month follow-up were found in PTSD symptoms and negative change. The NET-1 and NET-2 studies demonstrated the effectiveness and adaption potential of

an oral narrative strategy in adult earthquake survivors and provided cross-cultural empirical support for the mechanisms underpinning narrative exposure therapy.

In order to further explore the utility of narrative interventions, the written narrative strategies were developed and evaluated as a group intervention for the child survivors in primary school. CHAPTER 7 reported two RCT studies exploring and comparing the feasibility and effectiveness of GNT and EW programmes. In the first study, 108 adolescents (11-12-years-old) were administered these two written narrative interventions. Initial results indicated that both interventions had no effects on posttraumatic symptoms, and only GNT had a very small effect in changing participants' anxiety and coping. In addition, both interventions decreased the perceived social support of children. After inspecting the writing adherence, more than one third (35.19%) of participants were found to not fully meet the writing criteria, suggesting the interventions were not well accepted by traumatised adolescents. Further analyses indicated that uncompleted narrative development was harmful by triggering more symptoms of PTSD, lessening perception of social support, and leading to more passive coping. Only fully developed narratives could benefit the participants – both GNT and EW reduced PTSD scores but with a small effect. In addition, GNT decreased anxiety and depression, but EW did not. This study showed that the writing narrative strategy was presumably not suitable for traumatised adolescents. Finding methods or resources to enhance the writing adherence emerged to be an important goal in improving the protocol for the following study. Therefore, in the second GNT study, a third condition of GNT with encouragement or urging was set to enhance the intervention adherence. Eighty-two preadolescence children (9-10-years-old) participated in the study. A significantly higher level of intervention adherence was found in all three conditions than those of the first GNT study. Results showed all three conditions reduced symptoms of PTSD, but GNTE functioned more rapidly than GNT and more

extensively than both EW and GNT by leading to decreases on negative change. Besides, increased avoidance was found immediately in the aftermath of EW treatment. Overall, two studies suggested that the guided written narrative strategy seemed to be a promising group treatment for posttraumatic stress in children. However, further improvements and verification is needed in adolescent survivors.

Overall, the four RCT studies supported the use of a narrative intervention as a quicker and effective treatment in the context of large-scale disaster in developing areas, and in populations of low SES. Having summarised the research findings, these results are discussed in relation to their theoretical, methodological, and implications in the following sections. Practical implications that arose from the present research are also discussed.

8.3 Theoretical implications

8.3.1 Theoretical foundations and explanations for the effectiveness of narrative interventions

As described in CHAPTER 3, narrative interventions reduce distressing PTSD symptoms underpinned by cognitive and neurobiological processes through the process of narrating. Both NET and written narrative strategies have their theoretical foundations.

NET includes some of the components of other evidence-based therapeutic approaches such as prolonged exposure and TFCBT. However, as a result of the unique method of exposure and narration of the traumatic memories in NET, the traumatic experiences become embedded within the autobiographical context. The evidence of the effectiveness of NET in these studies supported the theoretical models and mechanism underlying NET. The development of NET was informed by

the theoretical understanding of both autobiographical memory (Conway & Pleydell-Pearce, 2000), the framework it provides in understanding intrusive symptoms in previous theories (Brewin et al., 1996; Ehlers & Clark, 2000), as well as fear networks and how these can be activated in the brain (Foa & Rothbaum, 1998). Respectively, the effects of NET justified the theoretical foundation of emotional habituation elicited by the exposure (Foa & Rothbaum, 1998) by activating the fear structure through exposure to the feared stimuli (indicated by high initial levels of emotional arousal – the traumatic memory) and providing corrective information about the stimuli, responses, and their meanings (indicated by habituation to stimuli between sessions). It supports the efficiency of the narrative approach in the remediation of distortion of the explicit autobiographic memory about traumatic events, such as intrusive memory fragment, avoidance of thoughts, and trauma reminders (Ehlers & Clark, 2000). The distinction proposed in dual memory theory (Brewin, Gregory, Lipton, & Burgess, 2010) between declarative 'cold' memory-contextualised information about one's life and non-declarative 'hot' memory which includes detailed sensory information, as well as cognitive and emotional perceptions, was sustained throughout this research.

GNT and EW are different from NET, which is specifically developed for PTSD. The written narrative paradigm has been related to improvements in physical health in a number of populations over the last decade (Pennebaker, 2004). However, it still remains unclear why this paradigm is effective, and why its effects appear widely. Sloan and Marx (2004) reviewed the literature on the written disclosure paradigm, and provided possible theoretical explanations for the beneficial effects of the written disclosure approach. Three theoretical models – emotion inhibition, cognitive adaptation, and exposure processing – were reviewed. This research programme provided both support and questions about the capability of the models, which will be discussed subsequently.

First, in terms of emotion inhibition, there has been a long tradition in psychology of hypothesising that it may bring about dysfunction, and it remains influential in contemporary psychology. Empirical evidence has linked inhibited emotions to physical impairments and psychological disease (Cohen & Williamson, 1991; Esterling, Antoni, Fletcher, Margulies, & Schneiderman, 1994; Smith, 1992). Pennebaker (Pennebaker & Beall, 1986) originally proposed that dis-inhibition of emotion was the mechanism of change associated with written narrative disclosure. From the present studies, the distinct harmful outcomes for children without emotional disclosure in GNT-1 study showed that the mental health of children who repressed their emotions was impaired by the intervention. However, non-sufficient evidence was provided to support the notion that decreases in inhibition mediates the relationship between writing about stressful/traumatic events and improved health. It is unknown whether the preferable outcome in participants who expressed emotions resulted from the emotion disclosure, or other procedures. Therefore, findings for the emotional inhibition theory are equivocal.

Second, cognitive adaptation to traumatic or stressful experiences share the notion that the processing of a traumatic experience requires changing existing schemas (Sloan & Marx, 2004). For example, the shattered assumptions theory (Janoff-Bulman, 1992) suggests a traumatic event will disrupt the core assumptions about self, world, and others, as such an experience is incompatible with these beliefs. Similarly, Foa & Rothbaum (1998) also highlighted that individuals with more rigid pre-trauma views would be more vulnerable to PTSD. Thus, coping with such an experience requires the individual to deal with these shattered assumptions. More specifically, such an individual must work to re-establish a conceptual system in which either the experience is assimilated into the old set of assumptions, or the core assumptions are changed so that they can accommodate the traumatic experience. Pennebaker (1997) and others (Smyth, True, & Souto, 2001) have

suggested that writing about a traumatic event may allow an individual to provide structure, organisation, and cohesion to the traumatic memory, which may not have been developed initially. Such changes may, in turn, promote insight into cognitive assimilation of traumatic memories (Pennebaker & Beall, 1986; Pennebaker, 2000). It is further speculated that these changes then result in decreased stress and, subsequently, improved physical health. In the current studies, the reduced PTSD score resulting from written disclosure seemed to offer support to this mechanism, as fragmented memory is an essential representation of PTSD. Nevertheless, it was found that only the GNT programme showed a joint outcome with increased positive change in outlook. The simple EW intervention had no effect on belief change, but it still reduced PTSD symptoms. Regarding these results, it is understandable that GTN provided additional instructions in growth seeking, which was likely to impact on positive change. However, if symptom reduction of PTSD originated from the assimilation of the traumatic experience, similar effects in positive change should be discovered in the EW condition. According to the cognition adaptation model, organisation and integration of the traumatic memory will lead to re-established assumptions and views. Moreover, the NET treatment, which also focuses on memory organisation and emotional habituation, was found to increase positive change. One distinct difference of NET and EW is that NET is terminated with ensured completion of memory re-organisation and integration, but EW is not. This distinction indicates that assimilation of traumatic memory does boost the reestablishment of assumptions and beliefs, which is supported by the NET studies. However, this seemed to not be the main mechanism of writing-led symptom reduction as 20 minutes' writing is unlikely to complete the memory integration in such a short time, and without assistance. Besides, only the GNTE condition, in which children produced longer writings than those in the EW and GNT, lessened negative change, also indicating that the completion extent of memory

organisation and integration mediates the following belief reconstruction. In the writing programme, the lack of close supervision on traumatic memory organisation would surely not activate this access. Thus, using the cognition adaption model to explain the effects of EW and GNT is still tentative. However, it can be seen that with appropriate protocol improvement, e.g. the added encouragement or urging in GNTE, written narrative strategies has potential to evoke this approach. Furthermore, from the two written examples provided, use of words reflecting causality (e.g. because), which indicated a cognitive adaption, was found in the example with distress reduction (the first example, *p*178). Although one example could not provide strong evidence, it paralleled with the study of Pennebaker and colleagues, which found that increases in the use of causal- and insight-related words across the writing sessions were related to improved physical health at follow-up (Pennebaker & Francis, 1996). Therefore, further qualitative analysis should be conducted to examine the writing contents to further explore the relationship of the casual and insight words with belief changes.

The third proposed theoretical model underpinning the writing narrative programme is emotional exposure, which was introduced in CHAPTER 2. If exposure underlies the written process, then changes in posttraumatic symptoms should be observed (e.g., changes in intrusive thoughts and avoidance behaviours) (Sloan & Marx, 2004). In the present studies, all writing strategies reduced intrusion, but EW caused a temporary rise of avoidance. Again, only GNTE resulted in lessened avoidance, but did not function immediately. The transient increase in avoidance was consistent with previous studies, which found exposure therapy to increase avoidance and negative emotions between sessions (Ehlers et al., 2005). Findings from this current study could not lead to a strong conclusion regarding the exposure/emotional processing model underpinning writing disclosure. Thus, further evidence, e.g. activation and habituation of negative emotion (Sloan & Marx,

2004), needs to be explored.

Although the mechanism of the written narrative programme is not clear, the effectiveness of both treatments in the present research supported the trauma-focused approach, which focuses on the patients' memories of their traumatic events, and the personal meanings of the trauma to treat posttraumatic stress. It is consistent with a large amount of empirical studies of PTSD treatment and meta-analyses (Ehlers et al., 2010; NICE, 2005; Seidler & Wagner, 2006).

8.3.2 The diagnosis of PTSD

In this research, high correlations of PTSD with depression, anxiety, and general distress was noted in the cross-sectional survey study in CHAPTER 4. From the NET studies, it was found that the treatment took effect not only on PTSD, but also jointly on depression, anxiety, and general distress. These results linked to one of the principle criticisms on the diagnosis of PTSD, i.e. that symptoms overlap with other disorders (Brewin et al., 2009). Researchers have pointed out some vague items of the PTSD diagnosis scale from DSM-IV (Brewin et al., 2009). Fox example, Symptom B1 (*recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions*) refers to any kind of intrusive memory, image, or thought, a symptom that is common to many psychiatric disorders. Patients who ruminate in the absence of any intrusive memory would therefore currently qualify for Criterion B, even though most clinicians would regard this as more characteristic of depression than PTSD. Sleeplessness, irritability, and concentration problems are found in both depression and in generalised anxiety disorder, which can also be accompanied by exaggerated startles. This lack of specificity is of particular concern because there are so many different combinations of symptoms that will all yield a diagnosis of PTSD. In addition, alternative four factor models of PTSD are found

(Andrews et al., 2004; Simms, Watson, & Doebbeling, 2002), and provide a good fit to the data (Palmieri, Weathers, Difede, & King, 2007). Based on empirical evidence, two re-experiencing symptoms of flashbacks and traumatic nightmares appear to be distinctive to PTSD, and should be better clarified in DSM-V (Brewin et al., 2009). The symptomatic overlap with other disorders may impede research regarding the underlying processes, and may obscure links with the psychology and biology of emotion. It may also give a false impression of the degree of comorbidity associated with the disorder.

Furthermore, strong predictive ability of negative change was revealed in CHAPTER 4. This links to the view that profound challenges to basic assumptions about the self, others, and the world, can be one of the most deleterious effects of traumatic experience (Janoff-Bullman, 1992). Although there is a theoretical basis (Ehlers & Clark, 2000; Ehlers et al., 1998; Janoff-Bullman, 1992) and empirical evidences (Butler et al., 2005; Difede, Apfeldorf, Cloitre, Spielman, & Perry, 1997), this phenomenon is not captured in the diagnosis of PTSD of DSM-IV. Generally, perhaps it is time to consider a reformulation of the diagnosis built on the formidable knowledge base that has accrued in the last several decades.

8.3.3 Implications of the positive change

With regard to the positive change, pre- to post-treatment increases were found in both the NET and the GNT studies, showing it indeed fluctuates over time and may be affected by external events like trauma (Frazier et al., 2001) or treatment. It may link to the importance of narrative development, or the assimilation of traumatic memory for meaning-making after traumatic events (Hunt & McHale, 2008) or the reconstruction of the core assumptions (Janoff-Bullman, 1992). Otherwise, the exposure processes in narrative interventions might also facilitate the rise of

positive change by literally creating new possibilities (i.e., improved life outlook), increasing a sense of mastery (i.e., personal strength), and improving one's social life by decreasing distress (i.e., release the importance of relating to others).

The fact that increases in positive change were associated with decreases in PTSD symptoms could indicate that positive change and PTSD are directly related and interact with one another. However, such correlations were not found in the survey study in CHAPTER 4, and only rumination-intrusion was found to relate to positive change, and was one of the predictors. Therefore, a third factor (e.g., the exposure procedure or the narrative development) may affect both posttraumatic growth and PTSD simultaneously. In addition, the weak predictive ability of the model in CHAPTER 4 suggested that positive change of this sample might be of an independent structure, or that these are other latent variables accounting for it. In this case, it probably refers to the positive appraisal of the government's rapid response to the earthquake reported by adult participants in the interview.

As a matter of previous research, positive change or posttraumatic growth is a theoretical concept that has been established within a Western cultural framework. Although, at an abstract level, the concept of posttraumatic growth appears cross-culturally valid, the operationalisation of the concept may serve to impose assumptions of a Western individualistic society (Splevins et al., 2010) which emphasizes the individuation, uniqueness, and internal attributes of people. Chinese people are more relational and interdependent and emphasise the social environment in comparison to their Western counterparts (Ho, 1999). It is logical to expect that such differences should be relevant to the phenomenon of posttraumatic growth. Therefore, the theoretical framework of positive change following adversity needs to be further established and confirmed by cross-cultural research.

8.4 Methodological implications

At a methodological level, the present work tries seem to meet all the gold standard criteria of treatment outcome studies of PTSD that were proposed by Foa and Meadows (1997). They are studies that (1) have clearly defined target symptoms, (2) use reliable and valid measures, (3) blind evaluators, (4) use trained assessors, (5) deploy manualised, replicable, specific treatment programs, (6) implement unbiased assignment to treatment, and (7) have significant treatment adherence.

Nevertheless, three methodological implications arose from the data collection and research findings. First, the mode of the administration of self-reported scales may have affected the results for psychological well-being. In the present study, the rating-scales were administered orally for all adult participants. Previous research study has proposed and demonstrated that in-person interviews are more vulnerable to socially desirable responding than self-administered modes (Moum, 1998). However, given the level of literacy among the participants, there were few alternatives. Few studies provided references about valid and feasible methods to assess the psychological stress in a population of low SES. This methodological gap reflects the insufficient amount of research in this population.

Second, the adult participants reported behaviour changes in their daily life after receiving the NET treatments, for example, starting to hum while walking, growing interpersonal communication, reducing quarrels with husbands, etc. Similarly, teachers reported better school performance and less disruptive behaviours in the school children participants at the time of 1.5-year follow-up. These “informal” feedbacks inspire researchers and clinicians to think about alternative ways to assess the benefits resulting from the interventions. Although self-report measures provide an insight into people’s theories of themselves, self-theories are coherent and

reliable. The problem, however, is that self-report measures are only modestly related to real-world behaviours (Pennebaker, 2004). This is a serious methodological problem on multiple levels. Some studies try to measure behaviour changes by assessing the time of consultation among clinic attenders (Cameron & Nicholls, 1998; Gidron, Duncan, Lazar, & Biderman, 2002), but it is not applicable in this study. Outcomes beyond the experimental level, such as the cost-economic effect, could be included to assess the intervention macroscopically in the context of large-scale disaster.

8.5 Practical implications

From a practical point of view, several implications emerge. The first concern is the involuntary recall of participants in the interview process. As described in sections 4.5 and 6.2, participants initiated narrating about their earthquake experience involuntarily when responding to related scale items. This issue is rarely reported and discussed in previous studies, but it poses the dilemma of whether the therapist should stop the participant, or suspend the interview. In this study, the interview was suspended and some of participants' narrative was collecctd, as considering that triggered recall is one of the symptoms of PTSD (Ehlers & Clark, 2000), it is unplanned, but valuable data to understanding the nature of memory of traumatised people. In addition, another concern was that interruptions might cause increased distress to participants. The solving method of course depends on the situation and timing of the interviews in the research setting. So far, few studies provided an argument or reference on the validity of the preferable way of measurement in a disaster context and in a population of low SES. Discussion and solutions regarding these issues in data collection should be considered in further studies.

Second, different groups have differential responses to traumatic events that will become apparent in the context of a group session. The writing programme increased some of the school children's reported PTSD symptoms in the GNT-1 study. Dealing with the harmful effects is of great practical and ethical importance for this traumatised population. After data collection, the school children were screened and those with higher scores on the psychological measures were referred to one-to-one treatment with counsellors. This can suggest that a psychological and emotional safety context and reserved protective measures are crucial for studies using vulnerable populations. It also suggests that, whereas intrusive thoughts and memories of a traumatic event may transcend cultural experiences, the avoidance/numbing symptoms and emotion repression might be highly determined by social demographic affiliation. This point offers implications for the application of more sophisticated interventions and explanations of the intervention process.

Third, demographically-based willingness to accept different "therapeutic" formats (e.g., written vs. oral vs. drawing) may have an impact on the intervention. Although storytelling and discussion in a group context is often common in many cultures, accommodation of the format must be considered to account for the characteristics of the groups. For example, EW was not acceptable for children of 9-10-years-old, indicating that EW needs to be modified or recreated for young children. A consideration of indigenous expressions of disorder, idioms of distress, formats, language, and concepts is vital in order to contextualise attribution and meaning arising out of a crisis. Further population-specific validation of the intervention needs to be defined.

Fourth, although the treatment involves exposure to traumatic memories, low dropout rates suggest that NET has high tolerability and is culturally acceptable for those treated. This may be because storytelling is common to many cultures

(Schauer et al., 2005). NET and GNT have been shown to be effective as a sole intervention in this study, but they can also be used as part of a psychological treatment package in which other approaches can be incorporated. The present research demonstrated how narrative accounts could be produced during narrative interventions, which can be used to guide further therapeutic work.

Finally, the enhancement of positive change after the treatment of NET and GNT may add a new perspective to existing psychotherapies in practice. Narratives are more than just a post hoc account for the changes that people undergo in response to life disruptions – though it also serves that vital, meaning attribution function. In addition, self-narratives reflect the disrupted traumatic memory, and the human penchant for meaning-making through the construction, deconstruction, and reconstruction of narratives. Fostering growth through the posttraumatic narrative is heavily implicated in posttraumatic resilience, repair, and transcendence. Such a process could be widely enhanced in clinical practice. It is feasible to suggest, though further research needs to be conducted, that providing instructions for people to think positively, to think about any good that might have come out of their experiences, might set them up to change the way they perceive their memories of the experience. Future clinical practice could spend time helping participants to focus on the positive aspects, enabling them to develop effective narratives of change.

8.6 Limitations

The specific limitations of each study have been informed in each chapter. Generally, three main limitations could be summarised.

The first is the sample size of the adult studies. The prevalence rate of psychological morbidity of the seriously affected population after the Sichuan earthquake could

not be estimated through the cross-sectional study because of the small sample size (N=120). However, as this study did not serve for an epidemiological purpose, the sample size was reasonable to provide information about the group regarding psychological status and impairments. The sample size of the two NET studies was also relatively small and there was a lack of a longer-term follow-up. As the study aimed to test the effectiveness of NET in a new population (Chinese earthquake survivors), practical considerations meant that a longer-term follow-up was impractical. Many participants were being moved into new accommodation in the period after the study, and would not always be traceable. In addition, the sample may not be representative of earthquake survivors in general – at least in part – because most participants were women. However, this reflected the sampling typically found in research in this area (Linley & Joseph, 2004) and in survivor populations, as most men were out for work during the day time. Nevertheless, a total of 52 adult survivors received the NET or NET-R treatments. The overall effectiveness of the NET demonstrated its utility in such circumstances. In addition, the author informs the potential of treating the small size RCTs as series of single case studies. Case studies could provide an in-depth investigation and a great amount of description and detail about each particular case, which could help to adapt ideas and produce novel hypotheses that can be used for later testing.

Second, there was no control group without treatment or writing about neutral and unemotional experience in GNT studies. This ascribed the ethical considerations and practical compromise, as the school insisted that effective interventions should be used. Moreover, although the long-term (1.5 years) follow-up was conducted, no interval assessments were administered. Hence, the initiation of the slow function for GNT group is unknown. However, the practical and ethical considerations required minimum disruption to the normal teaching schedule of the school.

Third, the follow-ups of the two NET studies were carried out by the author by telephone because of practical limitations. It is possible that the change of assessment format would affect the responses as the participants may fail to speak out their real thoughts or feelings without the presence of the assessor. A study with a large sample provides support for telephone assessment as a new approach to deliver care (Salisbury et al., 2013), but it could be associated with slightly lower patient satisfaction.

Fourth, in the process of translating the narratives, the author sometimes found it was hard to translate the Chinese qualitative data into fluent English essays. The first reason for this barrier lies in participants' education level and the oral format that made the original Chinese narrative not smooth enough for readers to follow. The second one is the challenge of balancing the readability and the loss of original meaning or word order. Cross-cultural qualitative research is challenging. The purpose of qualitative research is to understand human behaviour, the context in which it occurs, and the meanings that people ascribe to specific situations; it is therefore suggested that future analyses of the narratives should be carried out in the original language to minimise loss during translation. Rigorous translation standards of result interpretation and reporting need to be applied to accurately convey the true meaning of the participant's experience.

Finally, only quantitative data was applied to assess the intervention effects. In-depth qualitative analysis would be of great importance to explore the effective elements and the mechanism of the treatments. Further narrative analyses originating from this study will be carried out by the present author.

8.7 Contributions

The present research described a series of studies exploring and developing simple,

quick, and pragmatic psychological intervention after a destructive disaster in a developing area. The present work serves the threefold purpose of bridging theory, research, and practice.

First, the narrative interventions examined in this research have their theoretical foundation. The findings offer cross-cultural evidence about the underlying mechanisms and psychological processes involved in the traumatic memory, narrative development, PTSD intervention, and its associated consequences. It provides support for the effectiveness of Western-validated treatments in a different culture and a different population. Findings from the present study would stimulate further theoretical explanation and exploration about the macro-level factors in shaping post-disaster risk of PTSD, and facilitating posttraumatic growth.

Second, the studies explicitly and clearly discriminate interventions demanded for different populations (e.g. adults vs. children), and different environments (community vs. school). It takes diversity into consideration and brings unique perspectives to the understanding and treatment reactions of different groups of low SES populations to traumatic events such as an earthquake. It expands knowledge of evidence-based interventions to traumatic events following natural disasters, and will help lead to the discovery of the most suitable intervention regarding population, timing and mechanism factors.

Finally, the findings offer useful information for governmental and non-governmental agencies in developing management strategies and interventions to reduce the negative effects of disasters and promote positive prospects and resilience. In the real world, a large number of people need inexpensive, fast, and effective treatments to deal with trauma, emotional upheaval, and daily stressors. This research appreciates the bigger picture in a broader economic sense, and as a potential worldwide mental health promotion. The present research, with the

participation of a vulnerable population, makes distinct contributions in earthquake responding and preparedness by partnering with schools, medical care facilities, and other community agencies. From a primary preventive perspective, it participates in preparedness planning to mitigate the effects of future natural disasters, especially by the attention to the social and emotional needs of children. In general, this research programme provides empirical evidence for facilitating the wider dissemination of psychological interventions to promote recovery from traumatic stress after large-scale disaster.

8.8 Reflections for future research

Although the current research contributes to the growing body of literature on posttraumatic stress and recovery, a number of issues warrant research attention in the future.

The first includes applying interventions in larger and more diverse samples to extend the present findings. This could help determine whether such interventions can be developed to enhance the benefits for traumatised people of different ages and backgrounds.

Microscopically, another area where there is limited understanding is the biological substrate of the narrative process. Current psychological research has a very limited focus in this area, partly because it is difficult to break down the various linguistic components of a narrative, but without an understanding there cannot be a full picture of how people deal with traumatic events. There are a number of brain regions that are associated with narratives (Schauer et al., 2005), but the details are largely conjecture (Hunt, 2010). More language-based imaging studies are concerned with individual word processing rather than more complex linguistic structures. In addition, there are a limited number of neuro-imaging studies of

narrative production and processing. The major methodological difficulty is the language comprehension and temporal nature of stories. Although there is a long way to go to ascertain the specific systems involved, and the role played at different levels of the narrative, seminal studies exploring the neuroscience of narratives, which is new and little known, are encouraged.

Macroscopically, the general social and economic context may change after a disaster; for example, the government-led responses after the earthquake in 2008. However, there is a paucity of research that has systematically assessed the role of macro-level factors in moulding the unique responses in a particular context (Galea et al., 2005). The role of a number of demographic factors, including age, marital status, race/ethnicity, and socioeconomic status in post- disaster PTSD risk remains unclear. In addition, there is also the issue of culture. Cultural background tends to influence people's interpretations of the devastating event, their preferred coping strategies, and their attitudes toward accepting help from outsiders versus assuming that community members will care for one another (Rahardjo, Wiroatmodjo, & Koeshartono, 2008). Whereas Western cultures turn to scientific and chance explanations, and generally tend to have a strong focus on individually-oriented problem solving, the collectivist values of Eastern cultures tend to understand negative life events from spiritual perspectives, attribute natural disasters to a divine being, and favour coping methods that are relational, particularly involving family, and that focus on harmony with natural realities (Field, Shaffer, Motipara, Battar, & Lalani, 2003). Cultural beliefs influence preferences for obtaining assistance – through mental health services, medical interventions, or the counsel of family, friends, or religious leaders. For these reasons, assessing the specific problems and requests in the population directly affected by disasters is a high priority. Such information will provide valuable knowledge about the relevance and portability of interventions across cultures.

8.9 Conclusions

This research evaluated and developed narrative interventions for both adult and child Chinese earthquake survivors. It contributes to facilitating the wider dissemination of psychological interventions to promote recovery from traumatic stress after large-scale disaster. Finally, three conclusions are drawn from this work. First, the Sichuan earthquake brought serious psychological burdens to the severely affected area. Victims with low SES and more loss are vulnerable to the development of PTSD and comorbidity. Second, narrative exposure therapy seems effective and could be adapted for adult Chinese earthquake survivors according to their cultural features. Third, the written narrative strategy appears to be a promising group treatment option of posttraumatic stress in children, but there is a lot of room for improvement and refinement. It is intended that the present thesis will provide useful information for an in-depth understanding of the effectiveness, mechanisms, development, and future application of narrative interventions after mass disasters. A hope is that the research presented here has served to interest and inform the readers and laid a solid basis for further research in this important area.

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Appendix 1: Ethics approval

Institute of Work, Health & Organisations
http://www.nottingham.ac.uk/iwho

The University of Nottingham

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13/10/2009

Dear Yinyin

I-WHO Ethics Committee Review

Thank you for submitting your proposal on "Exploring the psychological influence and effective intervention for earthquake survivors". This proposal has now been reviewed by I-WHO's Ethics Committee to the extent that it is described in your submission.

I am happy to tell you that the Committee has found no problems with your proposal. If there are any significant changes or developments in the methods, treatment of data or debriefing of participants, then you are obliged to seek further ethical approval for these changes.

We would remind all researchers of their ethical responsibilities to research participants. The Codes of Practice setting out these responsibilities have been published by the British Psychological Society. If you have any concerns whatsoever during the conduct of your research then you should consult those Codes of Practice and contact the Ethics Committee.

You should also take note of issues relating to safety. Some information can be found in the Safety Office pages of the University web site. Particularly relevant may be:

The *Safety Handbook*, which deal with working away from the University.
http://www.nottingham.ac.uk/safety/
Safety circulars: Fieldwork P5/99A on
http://www.nottingham.ac.uk/safety/publications/circulars/fieldwk.html
Overseas travel/work P4/97A on http://www.nottingham.ac.uk/safety/publications/circulars/overseas.html
Risk assessment on http://www.nottingham.ac.uk/safety/publications/circulars/risk-assessment.html

Responsibility for compliance with the University Data Protection Policy and Guidance lies with all researchers.

Ethics Committee approval does not alter, replace or remove those responsibilities, nor does it certify that they have been met.

We would remind all researchers of their responsibilities:

- to provide feedback to participants and participant organisations whenever appropriate, and
- to publish research for which ethical approval is given in appropriate academic and professional journals.

Yours sincerely

Nadina Lincoln

Professor Nadina Lincoln
Chair IWHO Ethics Committee

Appendix 2: Informed consent form

Adult participant

This informed consent form is for adult participants in the Beichuan County, and whom we are inviting to participate in research, titled "Developing Effective Narrative Interventions for Earthquake Survivors".

Name of Principal Investigator: Yinyin Zang
Name of Organisation: The University of Nottingham
Name of Proposal and version: Developing Effective Narrative Interventions for Earthquake Survivors (Version2**)**

PART I: Information Sheet

I am Yinyin Zang, a psychologist from the Institute of Work, Health and Organisation. I am doing research on exploring the effect of narrative therapy for earthquake survivors. I am going to provide the study information and invite you to be a part of this research. You do not have to decide today whether or not you will participate the research. Before you decide, you can talk to anyone you feel comfortable with about the research.
This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask them with me or another researcher.

Purpose
It is likely that the earthquake will cause psychological distress. In this study we will use a narrative technique encouraging adult to talk about their earthquake experience. We will invite them to share their experience and feeling with us so that we can help them improve the mental health.

Type of intervention
This research will involve your participation in a 4-session (or 3-session) therapy that each session will take about 1-2 hours.

Participant recruitment

You are being invited to take part in this research because we think your experience as a earthquake survivor and your psychological status can contribute much to our understanding, and you would benefit from this study.

Do you know why we are asking you to take part in this study? Do you know what is the study about?

□*YES*

□*NO*

Voluntary Participation

You do not have to agree what we talk to you. You can choose to say no. We know that the decision can be difficult when the research includes traumatic topics like earthquake experience. You can ask as many questions as you like, and we take the time to answer them. You do not have to decide today. You can think about it and tell me what you decide later.

Do you know that you do not have to take part in this research study?

□*YES*

□*NO*

Procedure

You will fill out a questionnaire which will be provided by Yinyin Zang and collected by her.

If you do not wish to answer some of the questions included in the questionnaire, you may skip them and move on to the next question. The information recorded is confidential, and no one else except Yinyin Zang will have access to the questionnaire.

In the treatment session, Yinyin Zang will help you constructs a detailed chronological account of your own biography in cooperation with the therapist. The autobiography is recorded by the therapist and corrected with each subsequent reading. During discussions of traumatic experiences, the therapist will ask for current emotional, physiological, cognitive, and behavioural reactions and probes for relevant observations. You will be encouraged to relive these emotions while reporting the events. In the final session, you will (or not) receive a written report of his biography

Risks and Discomforts

If you feel uncomfortable talking about the earthquake experience. You must know you do not have taken part in the treatment. If you do not wish to do so, and that is also fine. You do not have to give us any reason for refusing to take part in the treatment.

Benefit

There would be immediate and direct benefit to you. Your mental health will be improved, and your participation is likely to help us find out more about the effect of this treatment. We hope that these will help the local psychological assistance and hospitals to treat people better in the future.

Reimbursements

Your will not be provided with any payment to take part in the research.

Confidentiality

Because something out of the ordinary is being done through research in your community, it will draw attention. If you participate, you may be asked questions by other people in the community.

We will not be sharing information about you outside of the research team. The information that we collect from this research project will be kept confidential. Information about you that will be collected from the research will be put away and no-one, but the researchers will be able to see it. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is, and we will lock that information up with a lock and key. It will not be shared with or given to anyone except the Institute Of Work, Health and Organisations.

Did you understand the procedures that we will be using to make sure that any information that we as researchers collect about you will remain confidential? Do you have any more questions?

☐ *YES*

☐ *NO*

Sharing of Research Findings

At the end of the study, we will share what we have learnt with the participants and the community. We will do this by meeting first with the participants and then with the larger community. Nothing that you will tell us today will be shared with anybody outside the research team, and nothing will be attributed to you by name. A written report will also be given to the participants which they can share with their families. We will also publish the results in order that other interested people may learn from our research.

Right to refuse or withdraw

You may choose not to have you participate in this study, and you do not have to take part in this research if you do not wish to do so. You may stop participating in the discussion at any time.

Who to Contact

If you have any questions, you may ask them now or later. If you wish to ask questions later, you may contact any of the following:

Yinyin Zang email: LWXYYZ@nottingham.ac.uk

This proposal has been reviewed and approved by the Institute of Work, Health and Organisations, which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find about more about the Institute of Work, Health and Organisations.

Website: http://www.nottingham.ac.uk/iwho/index.aspx

PART II: Certificate of Consent

Certificate of Consent

I have been asked to give consent for me to participate in this research study which will involve questionnaire and treatment.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily for me to participate as a participant in this study.

Name of participant_____

Signature of participant_____

Date _____

If illiterate

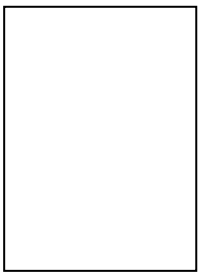
I have witnessed the accurate reading of the consent form to the parent of the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness_____ AND

Thumb print of participant

Signature of witness _____

Date _____



Teacher of child participants

This informed consent form is for the responsible person in the School of _____ and whom we are inviting to participate in research, titled "Exploring Effective Narrative Interventions for Earthquake Survivors".

Name of Principal Investigator: Yinyin Zang
Name of Organisation: The University of Nottingham
Name of Proposal and version: Exploring Effective Narrative Interventions for Earthquake Survivors (Version2)

PART I: Information Sheet

I am Yinyin Zang, a psychologist from the Institute of Work, Health and Organisation. I am doing research on exploring the effect of narrative interventions for earthquake survivors. I am going to provide study information and invite students of your class/school to be a part of this research. You do not have to decide today whether or not you and your students will participate the research. Before you decide, you can talk to anyone you feel comfortable with about the research.
This consent form may contain words that you do not understand. Please ask me to stop as we go through the information, and I will take time to explain. If you have questions later, you can ask them with me or another researcher.

Purpose

It is possible that the earthquake cause psychological problems. In this study we will use a narrative technique encouraging student in the age of 9- 12 to write down their earthquake experience and feelings so that we can help them improve his/her mental health.

Type of intervention

This research will involve children's participation in a 3-day writing asks that each session will take about 20 minutes.

Participant selection

Your class/school is being invited to take part in this research because we feel that the experience of the students and their age are suitable for this study, and their

participation can contribute much to our understanding. They would benefit from this study.

Do you know why we are asking the students of your class to take part in this study? Do you know what the study is about?

□*YES*

□*NO*

Voluntary Participation

You do not have to agree that your students must attend the study. You can choose to say no. We know that the decision can be difficult especially involve children. It is hard when the research includes traumatic topics like earthquake experience. You can ask as many questions as you like, and we will try our best to answer them. You do not have to decide today. You can think about it and tell me what you decide later.

Do you know that you do not have to take part in this research study?

□*YES*

□*NO*

Procedure

Student participants will fill out a questionnaire which will be provided by Yinyin Zang and collected by her.

If he/she do not wish to answer some of the questions included in the questionnaire, he/she may skip them and move on to the next question. The information recorded is confidential, and no one else except Yinyin Zang will have access to the questionnaire.

In the writing, Yinyin Zang will provide some topics; your child will be asked to write some about the topic. The writing task will last 3 days, and it will take 20 minutes each day.

Risks and Discomforts

If your student feel uncomfortable talking about the earthquake experience, you and your student must know he/she do not have to take part in the treatment. If he/she do not wish to do so, and that is also fine. He/she do not have to give us any reason for refusing to take part in the study.

Benefit

There would be immediate and direct benefit to your students. Their mental health will be improved, and their participation will help us find out more about the effects of this treatment. We hope this study will help the local psychological assistance and hospitals to treat children better in the future.

Reimbursements

Students from your class will not be provided with any payment to take part in the research.

Confidentiality

If students from your class participated, they may be asked questions by other people in the school. We will not be sharing information about your child outside of the research team. The information that we collect from this research project will be kept confidential. Information about your students that collected from the research will be kept carefully and no-one, but the researchers will be able to see it. Any information about them will have a number on it instead of his/her name. Only the researchers will know their numbers, and we will lock that information up with a lock and key. It will not be shared with or given to anyone except the Institute Of Work, Health and Organisations.

Did you understand the procedures that we will be using to make sure that any information that we as researchers collect about your child will remain confidential? Do you have any more questions?

□*YES*

□*NO*

Sharing of Research Findings

At the end of the study, we will be sharing what we have learnt with the participants and the community. We will do this by meeting first with the participants and then with the larger community. Nothing that you and your students tell us today will be shared with anybody outside the research team, and nothing will be attributed to them by name. A written report will also be given to the school. We will also publish the results in order that other interested people may learn from our research.

Right to refuse or withdraw

You may choose not to have your students participate in this study, and your child does not have to take part in this research if they do not wish to do so. They may stop participating in the discussion at any time.

Who to Contact

If you have any questions, you can ask them now or later, even after study has started. If you wish to ask questions later, you may contact any of the following:

Yinyin Zang email: LWXYYZ@nottingham.ac.uk

This proposal has been reviewed and approved by the Institute of Work, Health and Organisations, which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find about more about the Institute of Work, Health and Organisations.

Website: http://www.nottingham.ac.uk/iwho/index.aspx

PART II: Certificate of Consent

Certificate of Consent

I have been asked to give consent for my students to participate in this research which will involve their completing two questionnaires and 3-day writing task. I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily for my students to participate as a participant in this study.

Print Name of Teacher or Guardian _____
Signature of Teacher of Guardian_____
Date _____

If illiterate
A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb print as well.

I have witnessed the accurate reading of the consent form to the parent of the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness_____ AND Thumb print of participant
Signature of witness _____
Date _____

Appendix 3: Questionnaires

Adult scales

The Impact of Event Scale-Revised (IES-R)

Below is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you DURING THE PAST SEVEN DAYS with respect to _____, how much were you distressed or bothered by these difficulties? *0=not at all, 1= al little bit, 2 = moderately, 3= Quite a bite, 4= Extremely.*

Items					
Any reminder brought back feelings about it	0	1	2	3	4
I had trouble staying asleep	0	1	2	3	4
Other things kept making me think about it	0	1	2	3	4
I felt irritable and angry	0	1	2	3	4
I avoided letting myself get upset when I thought about it or was reminded of it	0	1	2	3	4
I thought about it when I didn't mean to	0	1	2	3	4
I felt as if it hadn't happened or wasn't real	0	1	2	3	4
I stayed away from reminders about it	0	1	2	3	4
Pictures about it popped into my mind	0	1	2	3	4
I was jumpy and easily startled	0	1	2	3	4
I tried not to think about it	0	1	2	3	4
I was aware that I still had a lot of feelings about it, but I didn't deal with them	0	1	2	3	4
My feelings about it were kind of numb	0	1	2	3	4
I found myself acting or feeling as though I was back at that time	0	1	2	3	4

I had trouble falling asleep	0	1	2	3	4
I had waves of strong feelings about it	0	1	2	3	4
I tried to remove it from my memory	0	1	2	3	4
I had trouble concentrating	0	1	2	3	4
Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart	0	1	2	3	4
I had dreams about it	0	1	2	3	4
I felt watchful or on-guard	0	1	2	3	4
I tried not to talk about it	0	1	2	3	4

The Hospital Anxiety and Depression Scale (HADS)

0= not at all, 1=not much, 2=sometimes, 3=definitely

Items				
1. I feel tense or wound up	0	1	2	3
2. I still enjoy the things I used to enjoy	0	1	2	3
3. I get a sort of frightened feeling as if something awful is about to happen	0	1	2	3
4. I can laugh and see the funny side of things	0	1	2	3
5. Worrying thoughts go through my mind	0	1	2	3
6. I feel cheerful	0	1	2	3
7. I can sit at ease and feel relaxed	0	1	2	3
8. I feel as if I am slowed down	0	1	2	3
9. I get a sort of frightened feeling like “butterflies” in the stomach.	0	1	2	3
10. I have lost interest in my appearance	0	1	2	3
11. I feel restless as if I have to be on the move	0	1	2	3
12. I look forward with enjoyment to things	0	1	2	3
13. I get sudden feelings of panic	0	1	2	3
14. I can enjoy a good book or TV programme	0	1	2	3

General Health Questionnaire-28 (GHQ-28)

We should like to know if you have had any medical complaints and how your health has been in general, over the past few weeks. Please answer ALL the questions on the following pages simply by underlining the answer which you think most nearly applies to you. Remember that

we want to know about present and recent complaints, not those that you had in the past.

1. Have you recently been feeling perfectly well and in good health?	Better than usual Same as usual Worse than usual Much worse than usual
2. Have you recently been feeling in need of a good tonic?	Not at all No more than usual Rather more than usual Much more than usual
3. Have you recently been feeling run down and out of sorts?	Not at all No more than usual Rather more than usual Much more than usual
4. Have you recently felt that you are ill? Not at all	No more than usual Rather more than usual Much more than usual
5. Have you recently been getting any pains in your head?	Not at all No more than usual Rather more than usual Much more than usual
6. Have you recently been getting a feeling of tightness or pressure in your head?	Not at all No more than usual Rather more than usual Much more than usual
7. Have you recently been having hot or cold spells?	Not at all No more than usual Rather more than usual Much more than usual
8. Have you recently lost much sleep over worry?	Not at all No more than usual Rather more than usual Much more than usual
9. Have you recently had difficulty in staying asleep once you are off?	Not at all No more than usual Rather more than usual Much more than usual
10. Have you recently felt constantly under strain?	Not at all No more than usual Rather more than usual

	Much more than usual
11. Have you recently been getting edgy and bad-tempered?	Not at all No more than usual Rather more than usual Much more than usual
12. Have you recently been getting scared or panicky for no good reason?	Not at all No more than usual Rather more than usual Much more than usual
13. Have you recently found everything getting on top of you?	Not at all No more than usual Rather more than usual Much more than usual
14. Have you recently been feeling nervous and strung-up all the time?	Not at all No more than usual Rather more than usual Much more than usual
15. Have you recently been managing to keep yourself busy and occupied?	More so than usual Same as usual Rather less than usual Much less than usual
16. Have you recently been taking longer over the things you do?	Quicker than usual Same as usual Longer than usual Much longer than usual
17. Have you recently felt on the whole you were doing things well?	Better than usual Same as usual Less well than usual Much less well
18. Have you recently been satisfied with the way you've carried out your task?	More satisfied Same as usual Less satisfied than usual Much less satisfied
19. Have you recently felt that you are playing a useful part in things?	More so than usual Same as usual Less useful than usual Much less useful
20. Have you recently felt capable of making decisions about	More so than usual

things?	Same as usual Less so than usual Much less than usual
21. Have you recently been able to enjoy your normal day-to-day activities?	More so than usual Same as usual Less so than usual Much less than usual
22. Have you recently been thinking of yourself as a worthless person?	Not at all No more than usual Rather more than usual Much more than usual
23. Have you recently felt that life is entirely hopeless?	Not at all No more than usual Rather more than usual Much more than usual
24. Have you recently felt that life isn't worth living?	Not at all No more than usual Rather more than usual Much more than usual
25. Have you recently thought of the possibility that you might make away with yourself?	Definitely not I don't think so Has crossed my mind Definitely have
26. Have you recently found at times you couldn't do anything because your nerves were too bad?	Not at all No more than usual Rather more than usual Much more than usual
27. Have you recently found yourself wishing you were dead and away from it all?	Not at all No more than usual Rather more than usual Much more than usual
28. Have you recently found that the idea of taking your own life kept coming into your mind?	Definitely not I don't think so Has crossed my mind Definitely has

Multidimensional Scale of Perceived Social Support

(MSPSS)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.
Circle the "1" if you **Very Strongly Disagree**
Circle the "2" if you **Strongly Disagree**
Circle the "3" if you **Mildly Disagree**
Circle the "4" if you are **Neutral**
Circle the "5" if you **Mildly Agree**
Circle the "6" if you **Strongly Agree**

1.	There is a special person who is around when I am in need.	1	2	3	4	5	6	7
2.	There I a special person with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
3.	My family really tries to help me.	1	2	3	4	5	6	7
4.	I get the emotional help and support I need from my family.	1	2	3	4	5	6	7
5.	I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7
6.	My friends really try to help me.	1	2	3	4	5	6	7
7.	I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8.	I can talk about my problems with my family.	1	2	3	4	5	6	7
9.	I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
10.	There is a special person in my life that cares about my feelings.	1	2	3	4	5	6	7
11.	My family is willing to help me make decisions.	1	2	3	4	5	6	7
12.	I can talk about my problems with my friends.	1	2	3	4	5	6	7

Simplified Coping Style Questionnaire (SCSQ)

The following is the possible attitude and measures when you encounter some unexpected troubles or stressful event. Please read every item carefully and choose the answer. Does not used is “0”, Used somewhat is “1”, Used quite a bit is “2”, Used a great deal is “3”

	Possible attitude and measures				
1.	Let the pressure off through work or study and activities	0	1	2	3
2.	Talk with other people	0	1	2	3
3.	Try to look on the bright side of the event	0	1	2	3
4.	Change own idea, find what is the importance in the life again	0	1	2	3
5.	Do not take the event too serious	0	1	2	3
6.	Insist on own standpoint, strive for what you want	0	1	2	3
7.	Find out some different measures	0	1	2	3
8.	Seek advices from families and friends	0	1	2	3
9.	Change the original method or improve your own problem	0	1	2	3
10.	Use other’s experience and measures for reference	0	1	2	3
11.	Relax from hobbies	0	1	2	3
12.	Try to restrain own disappointment, regret, sadness and anger	0	1	2	3
13.	Try to have a rest or holiday, forget the problem for a moment	0	1	2	3
14.	Smoking, drinking or taking medicine to let the pressure off	0	1	2	3
15.	Wait until time change the present situation	0	1	2	3
16.	Try to forget the whole thing	0	1	2	3
17.	Deal with the problem by relying on others	0	1	2	3
18.	Accept the actuality because there is no other methods	0	1	2	3
19.	Fancy that some kind of miracle will change the present situation	0	1	2	3
20.	Comfort yourself by your own	0	1	2	3

Brief COPE

These items deal with ways you've been coping with the stress in your life since you found out you were going to have to have this operation. There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one. Obviously, different

people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

1 = I haven't been doing this at all
2 = I've been doing this a little bit
3 = I've been doing this a medium amount
4 = I've been doing this a lot

Items
1. I've been turning to work or other activities to take my mind off things.
2. I've been concentrating my efforts on doing something about the situation I'm in.
3. I've been saying to myself "this isn't real.".
4. I've been using alcohol or other drugs to make myself feel better.
5. I've been getting emotional support from others.
6. I've been giving up trying to deal with it.
7. I've been taking action to try to make the situation better.
8. I've been refusing to believe that it has happened.
9. I've been saying things to let my unpleasant feelings escape.
10. I've been getting help and advice from other people.
11. I've been using alcohol or other drugs to help me get through it.
12. I've been trying to see it in a different light, to make it seem more positive.
13. I've been criticizing myself.
14. I've been trying to come up with a strategy about what to do.
15. I've been getting comfort and understanding from someone.
16. I've been giving up the attempt to cope.
17. I've been looking for something good in what is happening.
18. I've been making jokes about it.
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
20. I've been accepting the reality of the fact that it has happened.
21. I've been expressing my negative feelings.
22. I've been trying to find comfort in my religion or spiritual beliefs.
23. I've been trying to get advice or help from other people about what to do.
24. I've been learning to live with it.

25. I've been thinking hard about what steps to take.
26. I've been blaming myself for things that happened.
27. I've been praying or meditating.
28. I've been making fun of the situation.

Changes in Outlook Questionnaire-Short (CiOQ-S)

Positive changes	**Strongly disagree**					**Strongly agree**
3. I don't take life for granted anymore.	1	2	3	4	5	6
4. I value my relationships much more now.	1	2	3	4	5	6
5. I'm a more understanding and tolerant person now.	1	2	3	4	5	6
6. I no longer take people or things for granted.	1	2	3	4	5	6
10. I value other people more now.	1	2	3	4	5	6
Negative changes						
1. I don't look forward to the future anymore.	1	2	3	4	5	6
2. My life has no meaning anymore.	1	2	3	4	5	6
7. I have very little trust in other people now.	1	2	3	4	5	6
8. I feel very much as if I'm in limbo.	1	2	3	4	5	6
9. I have very little trust in myself now.	1	2	3	4	5	6

Child scales

Children's Revised Impact of Event Scale (CRIES)

1= Not at all, 2=Rarely, 3=Sometimes, 4=Often

Items				
Q1. Did you think about it when you did not mean to?	0	1	3	5
Q2. Did you try to remove it from your memory?	0	1	3	5
Q3. Did you have difficulties paying attention or concentrating?	0	1	3	5
Q4. Did you have waves of strong feeling about it?	0	1	3	5
Q5. Did you startle more easily or feel more nervous than you did before it happened?	0	1	3	5
Q6. Did you stay away from reminders of it?	0	1	3	5
Q7. Did you try not to talk about it?	0	1	3	5
Q8. Did pictures about it pop into your mind?	0	1	3	5
Q9. Did other things keep making you think about it?	0	1	3	5
Q10. Did you try not to think about it?	0	1	3	5
Q11. Did you get easily irritable?	0	1	3	5
Q12. Were you more alert and watchful even when there was no obvious need to be?	0	1	3	5
Q13. Did you have sleep problems?	0	1	3	5

Revised Child Anxiety and Depression Scale (RCADS)

- General anxiety dis order (GAD) 1, 13, 22, 27, 35, 37
- Panic disorder (PD) 3, 14, 24, 26, 28, 34, 36, 39, 41
- Major depressive disorder (MDD) 2, 6, 11, 15, 19, 21, 25, 29, 40, 47

Please put a circle around the word that shows how often each of these things happen to you. There are no right or wrong answers. 0=never, 2=sometimes, 3=often, 4 =always

Items				
1. I worry about things	0	1	2	3
2. I feel sad or empty	0	1	2	3
3. When I have a problem, I get a funny feeling in my stomach	0	1	2	3

6. Nothing is much fun anymore	0	1	2	3
11. I have trouble sleeping	0	1	2	3
13. I worry that something awful will happen to someone in my family	0	1	2	3
14. I suddenly feel as if I can't breathe when there is no reason for this	0	1	2	3
15. I have problems with my appetite	0	1	2	3
19. I have no energy for things	0	1	2	3
21. I am tired a lot	0	1	2	3
22. I worry that bad things will happen to me	0	1	2	3
24. When I have a problem, my heart beats really fast	0	1	2	3
25. I cannot think clearly	0	1	2	3
26. I suddenly start to tremble or shake when there is no reason for this	0	1	2	3
27. I worry that something bad will happen to me	0	1	2	3
28. When I have a problem, I feel shaky	0	1	2	3
29. I feel worthless	0	1	2	3
34. All of a sudden I feel really scared for no reason at all	0	1	2	3
35. I worry about what is going to happen.	0	1	2	3
36. I suddenly become dizzy or faint when there is no reason for this	0	1	2	3
37. I think about death.	0	1	2	3
39. My heart suddenly starts to beat too quickly for no reason	0	1	2	3
40. I feel like I don’t want to move	0	1	2	3
41. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of	0	1	2	3
47. I feel restless	0	1	2	3

KIDcope

Items	*Did you ever use this particular coping strategy?*		*How helpful do you perceive this strategy to be?*		
			Not at all	*A little*	*A lot*
1. Try to forget it?	Yes	No	1	2	3

2. Do something like watch telly or play to forget it?	Yes	No	1	2	3
3. Stay on your own?	Yes	No	1	2	3
4. Keep quiet about the problem?	Yes	No	1	2	3
5. Try to see the good side of things?	Yes	No	1	2	3
6. Blame yourself for causing the problem?	Yes	No	1	2	3
7. Blame someone else for causing the problem?	Yes	No	1	2	3
8. Try to sort out the problem by thinking of answers?	Yes	No	1	2	3
9. Try to sort it out by doing something or talking to someone about it?	Yes	No	1	2	3
10. Shout, scream, or get angry?	Yes	No	1	2	3
11. Try to calm yourself down?	Yes	No	1	2	3
12. Wish the problem had never happened?	Yes	No	1	2	3
13. Wish you could make things different?	Yes	No	1	2	3
14. Try to feel better by spending time with others like family or friends?	Yes	No	1	2	3
15. Do nothing because the problem could not be sorted anyway?	Yes	No	1	2	3

Multidimensional Scale of Perceived Social Support

Child Version (MSPSS-C)

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.
Circle the “1” if you **Very Strongly Disagree**
Circle the “2” if you **Strongly Disagree**
Circle the “3” if you **Mildly Disagree**
Circle the “4” if you are **Neutral**
Circle the “5” if you **Mildly Agree**
Circle the “6” if you **Strongly Agree**

	Items							
1.	There is a special person (teacher, classmate, or leader in school) who is around when I am in need.	1	2	3	4	5	6	7

2.	There I a special person (teacher, classmate, or leader in school) with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
3.	My family really tries to help me.	1	2	3	4	5	6	7
4.	I get the emotional help and support I need from my family.	1	2	3	4	5	6	7
5.	I have a special person (teacher, classmate, or leader in school) who is a real source of comfort to me.	1	2	3	4	5	6	7
6.	My friends really try to help me.	1	2	3	4	5	6	7
7.	I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8.	I can talk about my problems with my family.	1	2	3	4	5	6	7
9.	I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
10.	There is a special person (teacher, classmate, or leader in school) in my life that cares about my feelings.	1	2	3	4	5	6	7
11.	My family is willing to help me make decisions.	1	2	3	4	5	6	7
12.	I can talk about my problems with my friends.	1	2	3	4	5	6	7

Changes in Outlook Questionnaire Child Version (CiOQ-C)

Items	**Strongly disagree**					**Strongly agree**
1. I don't look forward to the future anymore.	1	2	3	4	5	6
2. My life has no meaning anymore.	1	2	3	4	5	6
3. I no longer feel able to cope with things.	1	2	3	4	5	6
4. I don't take life for granted anymore.	1	2	3	4	5	6
5. I value my relationships much more now.	1	2	3	4	5	6
6. I feel more experienced about life now.	1	2	3	4	5	6
7. I don't worry about death at all anymore.	1	2	3	4	5	6
8. I live every day to the full now.	1	2	3	4	5	6
9. I fear death very much now.	1	2	3	4	5	6
10. I look upon each day as a bonus.	1	2	3	4	5	6
11. I feel as if something bad is just waiting around	1	2	3	4	5	6

the corner to happen.						
12. I'm a more understanding and tolerant person now.	1	2	3	4	5	6
13. I no longer take people or things for granted.	1	2	3	4	5	6
14. I desperately wish I could turn the clock back to before it happened.	1	2	3	4	5	6
15. I sometimes think it's not worth being a good person.	1	2	3	4	5	6
16. I have very little trust in other people now.	1	2	3	4	5	6
17. I have very little trust in myself now.	1	2	3	4	5	6
18. I feel harder toward other people.	1	2	3	4	5	6
19. I am less tolerant of others now.	1	2	3	4	5	6
20. I am much less able to communicate with other people now.	1	2	3	4	5	6
21. I value other people more now.	1	2	3	4	5	6
22. I am more determined to succeed in life now.	1	2	3	4	5	6
23. Nothing makes me happy anymore.	1	2	3	4	5	6

Appendix 4: Writing instructions for Child participants

Expressive writing (EW)

Day 1

You will now be asked to complete the expressive writing task. I want you to express your thoughts by writing. In the following days, you will spend 20 minutes each day to write down **your earthquake experience**.

Requirement:

- Please write **your experiences and stories** in the earthquake
- The most important is: Please write down **your deepest emotions and feelings**
- You may **tie into your personal experiences to other parts of your life**: such as whom you are? How you have been? What things do you like to do? The relation to your childhood, your relationships with others, for example parents, relatives, friends significant persons, who you are,
- Whatever you write, please **explore your inner being seriously**, and write down your emotions and feelings relating to the earthquake.
- Please write as much as possible in the following 20 minutes, and do not stop. *Your grammar, sentence structure will NOT be examined. If you want to use some characters you have not learned, please use the phonetic alphabet.*

Day 2

Thank you for your yesterday's writing!

How do you feel now? Before today's writing, could you spend a little time to review what you wrote yesterday?

Please continue to write, and express your thoughts. The writing time is still 20 minutes.

Requirement:

- Please write **your experiences and stories** in the earthquake
- The most important is: Please write down **your deepest emotions and feelings**
- You may **tie into your personal experiences to other parts of your life**: such as whom you are? How you have been? What things do you like to do? The relation to your childhood, your relationships with others, for example parents, relatives, friends significant persons, who you are,

- Whatever you write, please **explore your inner being seriously**, and write down your emotions and feelings relating to the earthquake.
- Please write as much as possible in the following 20 minutes, and do not stop. *Your grammar, sentence structure will NOT be examined. If you want to use some characters you have not learned, please use the phonetic alphabet.*

- **Day 3**

Thank you for your yesterday's writing!
How do you feel now? Before your today's writing, you could spend a little time to review what you wrote yesterday?
Please continue to write, and express your thoughts. The writing time is still 20 minutes.

Requirement:
- Please write **your experiences and stories** in the earthquake
- The most important is: Please write down **your deepest emotions and feelings**
- You may **tie into your personal experiences to other parts of your life**: such as whom you are? How you have been? What things do you like to do? The relation to your childhood, your relationships with others, for example parents, relatives, friends significant persons, who you are,
- Whatever you write, please **explore your heart seriously**, and write down your emotions and feelings relating to the earthquake.
- Please write as much as possible in the following 20 minutes, and do not stop. *Your grammar, sentence structure will NOT be examined. If you want to use some characters you have not learned, please use the phonetic alphabet.*

Guided narrative technique (GNT)

Day1

You will now be asked to complete the expressive writing task. I want you to express your thoughts by writing. In the following days, you will spend 20 minutes each day to write down **your earthquake experience**.
Requirement:
- Please write **your experiences and stories** in the earthquake
- The most important is: Please write down **your deepest emotions and feelings**
- You may **tie into your personal experiences to other parts of your life**: such as whom you are? How you have been? What things do you like to do? The relation to your childhood, your relationships with others, for example parents, relatives, friends significant persons, who you are,
- Whatever you write, please **explore your inner being seriously**, and write down your emotions and feelings relating to the earthquake.

- Please write as much as possible in the following 20 minutes, and do not stop. *Your grammar, sentence structure will NOT be examined. If you want to use some characters you have not learned, please use the phonetic alphabet.*

Day2

Thank you for your yesterday's writing!

How do you feel now? Before your today's writing, you could spend a little time to review what you wrote yesterday?

Please **continue yesterday's topic**, write down your e**arthquake experience**, but I hope you can explore **your feeling and thoughts** more deeply according to the instructions.

Requirements

- Think carefully and write down the **NEGATIVE EMOTIONS** you experienced since the earthquake (e.g. anger, fear, sadness, horror, and grievance etc.) and **INNER CONFLICTS** (e.g. the changes in your character and behaviour, your thoughts about these changes). They may still affect your daily mood several months after the earthquake and even your present status.
- Think and write down **WHY you have these negative emotions and conflicts:** e.g. you may feel sadness about losing your friend or family: why do you feel sad? It may because you miss him/her very much, maybe because he/she treat you very well, care about you. You felt happy and warm when being together with him/her; you may find changes of your character, why did you change? Is it because the change of your view about life? Or, because there are still anger and grievance in your heart?

  You may tie these thinking to **your other parts of life** (your hobby, your childhood, your health etc.) Please explore and write down your own understanding
- Please write as much as possible in the following 20 minutes, and do not stop. *Your grammar, sentence structure will NOT be examined. If you want to use some characters you have not learned, please use the phonetic alphabet.*

- **Day 3**

Thank you for your yesterday's writing!

How do you feel now? Before your today's writing, you could spend a little time to review what you wrote yesterday.

You have re-experienced and realized a lot from the writings in the past two days. This is the last day's writing. Today I want you to look at your experiences from a **POSITIVE ASPECT**, from a different angle. Hope you can think and write down the **POSITIVE EMOTIONS AND PERSONAL GROWTH** you experienced since the earthquake. Today is the last day for writing; you may want to end it and finish

all you want to write.

Requirements:

- You could try to transfer your attention from what have happened, and focus on the **POSITIVE EMOTIONS** (e.g. moved, happy and warm) and **YOUR GROWTH**, and explore the **aspects which inspired you**.
  E.g. although it is sad when you miss your lost family and friend, but he/she left precious memory, you may feel grateful, and would value the friendship (or family affection) with others more?
- What is the **meaning** of these experiences **for your life**?
- Review your past: do these experiences make you a **better person** (e.g. more empathy, more considerate etc.)? Do you feel **more experienced** when confronting difficulties or frustrations **in the future**?
- What expectations do you have for **future**?
- Please review and think **positively** about the writing in the past two days.
- Please write as much as possible in the following 20 minutes, and do not stop. *Your grammar, sentence structure will NOT be examined. If you want to use some characters you have not learned, please use the phonetic alphabet.*