POSTTRAUMATIC-STRESS DURING LATER LIFE: A CROSS-SECTIONAL AND LONGITUDINAL INVESTIGATION

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TEESHA LEE PASSMORE

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To Nana and Pop,

who provided the inspiration for this project,

and who proudly encouraged me during the initial stages,

but passed away before its completion.

ABSTRACT

Older people may not only fall victim to traumatic events, but will inevitably encounter a host of late-life stressors that threaten psychological and physical well-being. In addition to current distressing occurrences, many older people will have past unresolved traumatic memories that have the capacity to generate trauma-related symptoms and impinge on present-day functioning.

Much of the existing literature and research on late-life traumatisation concerns the impact of prior war- or Holocaust-experiences. Empirical investigations into the traumatizing effects of lifetime trauma exposure and late-life stressors within community-based samples of older people are scarce.

The present study explored the manifestation of trauma-related symptoms in a sample of New Zealand's older (60+ years) citizens. The goal was to discover the extent that lifetime trauma, recent trauma and recent stressors impact on posttraumatic stress disorder (PTSD), trauma-related perceptions and physical health during later life. Additionally, a new theoretical framework of traumatisation, Trauma-Schema Theory, was introduced and given some preliminary testing. Trauma-Schema Theory maintains that trauma-schemata, cognitive-emotional frameworks that guide information processing, are responsible for traumatic-stress by eliciting beliefs and perceptions that confirm an overwhelming sense of threat, vulnerability and powerlessness. This theory provides viable explanations for occurrences specific to later life, including delayed PTSD reactions in older people, and the triggering of PTSD symptoms in response to late-life stressors.

The present study used a cross-sectional/longitudinal design with two data collection points, each one year apart. Questionnaires measuring PTSD, anxiety, depression, dissociation, self-rated physical health, control beliefs, posttraumatic vulnerability perceptions, trauma history and past-year stressors were mailed out to 2000 older adults who had responded to community based advertising. Of these 1489 adults returned questionnaire one (Q1). One year later consenting participants were sent questionnaire two (Q2), which was similar, but contained a measure of past-year trauma exposure in

place of lifetime trauma exposure. Altogether, 1050 respondents returned Q2. Mean ages for Time 1 and Time 2 were 72.1 years and 71.7 years, respectively. Each sample consisted of around one-third males and two-third females and most were of New Zealand European descent.

Lifetime trauma exposure and past-year stressors were reported at high rates among the samples. Nearly half of the longitudinal sample also reported at least one past-year traumatic event. Of the psychological measures, PTSD was most strongly associated with lifetime trauma, lifetime abuse, multiple lifetime trauma, past-year abuse and past-year multiple trauma. Depression was most strongly associated with past-year trauma. Due to the limited scope of the study, PTSD was the only symptom type further assessed in relation to the other variables.

A series of hierarchical multiple regressions were performed and a number of mediational models were tested. Cross-sectional data analyses showed that both lifetime trauma and lifetime abuse predicted PTSD symptoms. Distress from late-life stressors mediated the trauma-PTSD associations. Longitudinal data analyses indicated that late-life stressors establish the pathway from recent trauma to PTSD escalation over one year. Posttraumatic vulnerability perceptions and control beliefs mediated a large proportion of all associations between event variables (i.e., lifetime trauma, lifetime abuse, recent trauma, recent stressors) and PTSD, providing preliminary verification of Trauma-Schema Theory. Additional analyses also indicated that PTSD, not trauma per se, is responsible for late-life physical health decline.

Limitations of the study and practical implications of the findings are reported. An emphasis on the importance of future research is portrayed, and ideas for future empirical work on traumatic-stress in New Zealand's older population are provided. Finally, practical implications of the findings are reported with the hope that older traumatised adults will, one day, receive the appropriate clinical care necessary to enhance the quality of their lives.

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PREFACE

> "The older recipient is not simply the passive recipient of events and changes. The individual is an actor in his or her own life, coping and managing"
> (Hyer & Sohnle, 2001, p. 3)

Like many other countries in the western world, New Zealand's population is aging, and older people represent a growing number and percentage in society. By the year 2041 New Zealand's aging population is projected to rise by over 50%, from around half a million currently, to well over one million[1] (Statistics New Zealand, 2007). An increased older population comes with a number of consequences, including an escalating demand for health-care services.

A sizeable proportion of health problems in older adults utilizing health-care services will stem from traumatic stress. However, the majority of these symptoms will not be identified as having a trauma-related etiological basis. This is because physical- and mental-health professionals are limited in their knowledge about the extent and nature of trauma-related problems during later life. Although the psychological literature is brimming with information about the physical and psychological effects of trauma, research regarding the manifestation of trauma-related problems in older people is scarce.

Why older adults have been overlooked as the focus of traumatic-stress research is unknown. An acquaintance once insinuated that I was wasting my time studying older adults, since this group are living the last phase of their lives. Perhaps this perspective is shared by others who have disregarded older adults in research ventures on traumatic-stress. However, all people, regardless of age, have the right to an improved quality of life. Older adults deserve to be provided with help to assist with the alleviation of psychological distress. This includes being offered appropriate assessment and therapeutic care that cater to their unique developmental needs. Because psychosomatic symptoms increase and physiological functions take longer to return to baseline as aging

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[1] This projected figure is assuming low fertility, high mortality and long-run annual net migration of 5000 and is, therefore, conservative.

occurs (Hyer & Sohnle, 2001), it seems even more urgent that research efforts focus on understanding late-life traumatic stress, so that physical deterioration and increased health-care utilization by an increasing older population, can be prevented.

With this in mind, the present research was designed to enhance understanding of trauma-related problems during later life, with the ultimate goal of informing those who provide health-services to older adults. A cross-sectional/longitudinal study was designed. In putting together the questionnaire, a large number of inventories were utilized. Although I was aware that all data collected from the questionnaire could not be sufficiently evaluated within the limited scope of the present thesis, the opportunity to gather important longitudinal information on a large scale was embraced with future goals in mind. These included further statistical analyses of any unprocessed data, in addition to the continuation of longitudinal research on the psychological and physical well-being of the same sample for many years into the future. The extensive documentation of trauma-history, recent traumatic events and psychological symptoms also create an opportunity for detailed longitudinal analyses on subgroups of respondents (e.g., abuse victims; respondents currently meeting PTSD criteria; ethnic minorities) who have already given consent to be contacted in the future.

As detailed within the body of the thesis, choosing which variables to exclude from the project was based on the statistical assessment of symptom variables and their relationships with all lifetime and recent trauma variables. In the end PTSD symptomatology was kept to represent traumatic-stress in older people because PTSD had the strongest correlations with all but one of the trauma variables. Depression, dissociation and anxiety were eliminated from all subsequent analyses.

Finally, all test statistics presented in this thesis were rounded to two decimal places. Mean age and mean frequency of traumatic and stressful events were rounded to one decimal place, which was one extra place more than the original data. Percentages were rounded to one decimal place in the Results and to the nearest whole percent within the literature review and the Discussion as deemed appropriate by APA (1994).

Chapter One

TRAUMA AND OLDER PEOPLE

Traumatic events such as physical assault, rape, terrorist attacks, vehicle accidents, terminal illnesses, life-saving surgery and natural disasters may strike unexpectedly at any age. Older people may not only encounter such traumas, but are vulnerable to experiencing a range of late-life stressors that may impact on psychological and physical well being. In addition to being susceptible to the threat of distressing events, most will bring into later life a history rich in experiences, including at least one, if not more, past unresolved traumas.

Considering the high probability of past traumatic exposure, and the frequency of stressful and potentially traumatic late-life events encountered, it seems imperative that the phenomenon of traumatisation in a general sample of older people is investigated. The present study explored the elicitation and escalation of trauma-related symptoms in a sample of older citizens from New Zealand (NZ). The associated effects of trauma-related symptoms on physical well-being and perceptions, particularly as a result of adverse late-life events, were also studied. The advent of research on traumatisation in older people, and indeed the vast majority of literature on the topic, has been on the psychological and physical outcome of earlier war-trauma or Holocaust experiences. Although advantageous, research on the potentially traumatizing effects of lifetime trauma exposure and adverse late-life events within representative community-based samples of older people, is limited.

This chapter discusses various definitions of 'trauma' and specifies the acute and long-term responses typically identified in trauma victims, including posttraumatic stress disorder (PTSD). An overview of existing literature on the psychological effects of lifetime and recent trauma during later-life, as well as the potential for traumatic stress upon experiences of late-life stressors, elucidates what has been revealed about traumatisation during the later years.

1.1 Life-Events and Older People

Older adults are not only susceptible to unforeseen traumatic events that can occur during any stage of life, but frequently encounter a range of predictable 'on-time' events that are potentially traumatising. Such events, otherwise known as late-life stressors, include occurrences such as decline of sensory and functional capacity, life-threatening health problems, surgical procedures, death or illness of loved ones (Stuart-Hamilton, 2000), disabling illnesses and institutionalisation (Guarnaccia & Zautra, 1996). Increased dependency on other people due to cognitive or physical impairment may not only create vulnerability to emotional, physical and financial abuse (Frisch & Frisch, 2002), but may lead to social isolation which is a risk factor in the development of late-life depression (Glass, De Leon, Bassuk, & Berkman, 2006). Furthermore, common stressors, such as interpersonal conflict, financial difficulty and family illness or injury are known to be particularly distressing to older people (Kahana, Fairchild, & Kahana, 1982). Indeed, Ensel's (1991) study of approximately 1200 community-based elders aged 50 years and older, indicated that within the prior six months most had experienced at least one major life-event resulting in negative psychological consequences. Even the oldest old (80+), who have less exposure to social and environmental changes (Bowling & Browne, 1991), exhibit lower mood levels in response to negative life-events (Apollonio, Rozzini, Castelletti, & Trabucchi, 1998).

As well as being exposed to a number of late-life stressors, older adults are likely to carry into later life memories of past traumatic experiences. Epidemiological studies in the United States (US) and Australia, for example, report that those who have experienced at least one past traumatic event make up between 37% and 92% of participant samples (e.g., see Breslau, 1998; Creamer, Burgess, & McFarlane, 2001; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Flett, Millar, Long, and MacDonald (2002) discovered from a community based sample of 1500 New Zealanders, that 64% had experienced one trauma and 11% had experienced between four and nine traumatic events. Taking into account that research samples for such studies typically encompass all ages, it is probable that the majority of people over 60 years of age will have encountered at least one, if not more, potentially traumatic events within their lifetime.

In an epidemiological study of trauma exposure in the US, past-year trauma exposure in older adults was 14% (Norris, 1992). This study's rate for exposure to recent traumatic events in older adults may have been conservative, however, due to its stringent definition of a traumatic event (i.e., sudden or extreme violent encounters with humankind, nature or technology).

Potentially high lifetime and recent traumatic exposure rates of older people, in addition to high exposure to late-life stressors, indicates the necessity for increased understanding about traumatisation within older populations. The main aim of the present study is to investigate the manifestation of trauma-related symptoms within a sample of NZ's population (60+ years). As discussed next, however, understanding the major theme in the current project requires evaluating what is meant by the term 'traumatisation'.

1.2 Defining Trauma

Otherwise known as traumatic stress, the term 'traumatisation' concerns the emotional, cognitive, behavioural and physiological reactions of individuals whose coping abilities are overwhelmed due to exposure to a traumatic event (Shannon, 2002). Defining the criteria for a 'traumatic' event, however, is a daunting task that has resulted in some controversy within literature over the years (O'Brien, 1998). Uncontrollable, unpredictable events involving actual or potential for injury or death and inducing fear-provoking visual imagery have been defined as traumatic enough to induce severe psychological distress (Joseph, Williams, & Yule, 1997). Similarly, 'traumatic' events have been defined as sudden or extreme violent confrontations with people, nature or technology (Norris, 1992). In accordance with this definition, reviews (see O'Brien, 1998) have revealed that events involving violent loss, physical injury, exposure to grotesque death and threat to one's life are associated with a higher risk of trauma-related psychopathology. Often 'traumatic' events are defined as being extreme or disastrous; for example, as being so unpredictable, sudden and threatening, that natural biological responses shift to survival mode, with automatic preparations for fight, flight, freeze and/or dissociation (Resick, 2001).

TRAUMA AND THE ELDERLY

Debates encompassing the nature of trauma within the psychological literature have been largely prompted by the official recognition of PTSD within the *Diagnostic and Statistical Manual of Mental Disorders* (DSM IV) outlined by the American Psychiatric Association (APA, 1994). PTSD is a psychological disorder involving the mental and emotional re-experiencing of past trauma. It manifests with marked anxiety and hyper-arousal, and behavioural, mental and emotional avoidance of traumatic reminders that function to alleviate anxiety. As represented in Table 1, an essential criterion for being diagnosed with PTSD is that the individual has been exposed to a traumatic stressor. However, the struggle to specifically characterize the meaning of a 'traumatic stressor' has prompted its definition to be modified with each formal revision of the DSM (i.e., DSM-III, DSM-IIIR, DSM-IV). Currently, the first requisite for applying a PTSD diagnosis is that the victim must have (a) experienced, witnessed or been confronted with situation/s that involved either actual or threatened death, serious injury or threat to the physical integrity of self or others, and, (b) responded with intense fear, helplessness or horror (APA, 1994). Observed within this contemporary version of the 'traumatic stressor' is a shift away from the idea that traumatic events should be defined objectively. The increased emphasis on victims' perceptions, rather than characteristics of the stressor, has enabled a wider range of events to be accepted as eliciting PTSD.

Indeed, the notion that victims' perceptions and responses are significant in deciding whether an event is 'traumatic' has become extensively acknowledged. The experience of trauma is now often recognized as dependent on the appraisals and meanings given to an event by the individual (McFarlane & van der Kolk, 1996). Some researchers argue that if an event is shocking to an individual, then it is 'traumatic' regardless of its form (e.g., Breslau & Davis, 1987). Evaluating individual responses to events calls attention to why traumatic events should be defined on a meaning-driven basis and demands that normal events are considered as having traumatogenic potential depending on previous experiences, context and expectations (Speckhard, 1997). Hence, although connotations of 'traumatic' tend to conjure images and descriptions associated with severe threats to survival, normative events that clearly do not meet typical descriptions of 'trauma' can still trigger traumatic stress reactions. For example, experiences such as normal bereavement, marital difficulties and children's behavioural problems have been known

Table 1

Diagnostic Criteria for PTSD: DSM-IV (APA, 1994)

A. *The person has been exposed to a traumatic event in which both of the following are present:*

1. The person has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others.
2. The person's response involved intense fear, helplessness, or horror

B. *The traumatic event is persistently re-experienced in at least one of the following ways:*

1. Recurrent and intrusive distressing recollection of the event, including images, thoughts or perceptions.
2. Recurrent distressing dreams of the event.
3. Acting or feeling as if the event were recurring (including a sense of reliving the experience, illusions, hallucinations and dissociative flashback episodes, including those that can occur upon awakening or when intoxicated)
4. Intense psychological distress at exposure or internal or external cues that symbolize or resemble an aspect of the trauma.
5. Physiologic reactivity upon exposure to internal or external cues that symbolize or resemble an aspect of the trauma.

C. *Persistent avoidance of stimuli associated wit the trauma and numbing of general responsiveness (not present before the trauma), as indicated by at least three 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 effect (e.g., unable to have loving feelings)
7. Sense of foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

D. *Persistent symptoms of increased arousal (not present before the trauma), as indicated by at least two of the following:*

1. Difficulty falling or staying asleep.
2. Irritability or outbursts of anger.
3. Difficulty concentrating.
4. Hypervigilance.
5. Exaggerated startle response.

E. *Duration of the disturbance (symptoms B, C, and D) is more than one month.*

F. *The disturbance causes clinically significant distress or impairment in social, organizational, or other important areas of functioning.*

Specify if:

Acute: if duration of symptoms is less than 3 months

Chronic: if duration of symptoms is 3 months or more

Delayed onset: onset of symptoms is at least 6 months after exposure to the stressor

to induce traumatisation (Burstein, 1985). Furthermore, miscarriage and extramarital affairs by a spouse have been linked to PTSD symptomatology (Helzer, Robins, & McEvoy, 1987). Expected late-life events including retirement (Solomon & Ginzburg, 1998), bereavement (e.g., Hermann & Eryavec, 1994) and circumstances associated with declining health-status such as hospitalisation (Danieli, 1994; Hirschfield, 1977), also have the capacity to elicit posttraumatic stress symptoms in older adults.

In the context of the present research, trauma-related symptoms are not only expected to be elicited and intensified by objectively defined 'traumatic' events, but also as reactive to normative age-related stressors. In effect, trauma is considered to have a subjective component that is defined by victims' perceptions of events and situations. Classifying 'trauma' as a subjectively defined phenomenon may advance knowledge about the nature of trauma by encompassing a wider range of potentially traumatic situations and events. However, assessment procedures applying this definition would not fit the tight, rigorous standards essential to quantitative science. Solid empirical conclusions about trauma can not be based on research that acknowledges and identifies events that are only deemed traumatic by some people. If this were the case, then the construct of 'trauma' would inadvertently assimilate psychological responses to trauma. The more emotional distress experienced, the higher likelihood the event would be reported as traumatic by participants.

In the present study a measure of trauma exposure that relied on recognition, rather than recall, was used. Supporting this decision is research that has indicated that older adults who do not suffer from severe memory dysfunction tend to show a decline in recall ability, though not in recognition (Craik & McDowd, 1987). Some argue that the reason why recognition memory exceeds free recall is because free recall is an effortful process requiring self-initiated activity during the retrieval phase. Since older people have limited resources in terms of energy and attention, recognition tests which re-expose external stimuli and cue the mental operations required for remembering, make retrieval easier (Craik & McDowd, 1987). Consequently, while the present research used objectively defined measures of traumatic events to assess trauma exposure, an additional measure of conventional stressors and age-related events was expected to cover the range of

potentially traumatising events that may occur during later life. Typical late-life events are often recognized as being psychologically taxing, but are rarely regarded as potentially 'traumatic' within psychological literature. However, within the context of the present research, the subjective component of trauma was embraced; therefore, all and any potentially distressing late-life experiences were assessed for. The use of a stressor inventory acknowledged the subjective component of trauma while enabling the objective measurement of events for valid and reliable quantitative data assessment.

1.3 Posttraumatic-Stress During Later Life

1.3.1 Late-Life Reactions to Trauma

While some research indicates that declining psychological and social resources during later life inhibits effective coping and creates susceptibility to traumatic stress, other research suggests that older people are more resilient to the effects of stress and trauma due to increased life experiences (Solomon & Ginzburg, 1998). As will be discussed, the fact that age has been implicated as both a risk factor (e.g., Livingston, Livingston, Brooks & McKinley, 1992) and a protective factor (e.g., Clipp & Elder, 1996) in the development of PTSD depicts the value of further research regarding trauma-related symptoms and aging.

The vulnerability perspective of aging to stress and trauma was originally accepted as being self-explanatory and quite plausible. The argument was that older people suffer from physical, cognitive and social decline, therefore, psychological resources for dealing with stress must also be depleted. However, older people frequently use a strategy called selective optimization by compensation (SOC), by adjusting expectations and reducing the number of areas in their lives to be managed (Baltes & Baltes, 1990). Otherwise defined as proactive coping (Ouwehand, deRidder, & Bensing, 2007), SOC is considered crucial for successful aging as it involves active efforts at preventing potential threats to selected objectives and compensatory processes to make up for deficiencies or losses. For example, declines in health and physical ability can threaten the goal for

independent functioning and autonomy, influencing quality of life and psychological well-being. By using available physical and material resources to facilitate independent living within the most important areas of concern (e.g., living in one's own home; personal care activities), while accepting assistance in other areas (e.g., shopping), one can maintain life-quality and prevent psychological decline.

Supporting the resiliency perspective of aging and trauma are reviews of research (see Summers & Hyer, 1994) on the psychological effects of a series of natural disasters that have identified older people as reporting the lowest levels of depression (Gatz, 1999, as cited in Hyer & Sohnle, 2001; Havens, 1999, as cited in Hyer & Sohnle, 2001), PTSD (Bolin & Klenow, 1982) and anxiety (Bell, 1978), when compared with younger age-groups. Studies of acute posttraumatic reactions to natural disasters have also identified older adults as experiencing the lowest levels of anxiety, fear, worry, psychological distress and alcohol consumption, superior recovery and higher levels of positive affect, as compared to younger adults (Bell, 1978; Huerta & Horton, 1978).

Further scrutiny of the trauma literature, however, uncovers findings that challenge the resiliency perspective of aging and trauma. A study of survivors of the Lockerbie air disaster, for example, portrayed that although older and younger age groups had similar levels of PTSD, older adults had a higher incidence of coexisting major depression (Livingston et al., 1992). In the only study to date which assessed psychological sequelae in older victims of crime, participants reported moderate-to-severe levels of psychopathology, including excessive levels of depression and PTSD (Gray & Acierno, 2002). Another study revealed that older civilians experienced a stronger intensification of depressive mood in reaction to war stress when compared to younger civilians (Hobfoll, Lomranz, Eyal, Bridges, & Tzemach, 1989). The conclusion made by Hobfoll and colleagues was that older adults do not disengage from their social surroundings as suggested by stereotypical beliefs about aging; instead they remain in touch with and react strongly to their environment. It is possible, however, that many of the older civilians in the study had memories of previous war-related trauma that were elicited as a result of current war stress. Studies of older people who have experienced past chronic trauma (i.e., war veterans, Holocaust survivors, prisoners-of-war) indicate that PTSD is

highly comorbid with other psychopathological problems, including major depression, additional anxiety disorders, somatic conditions, cognitive disturbances and alcoholism (Averill & Beck, 2000).

Inconsistent research findings implicating aging as both a protective factor and a risk factor in posttraumatic stress may have been caused by variations in the constructs measured among studies (i.e., different psychological disorders) and varying methods of evaluation. Nevertheless, the question of whether or not aging generates vulnerability or resiliency to trauma should not be the main issue. Deciphering how older adults experience traumatic stress and what symptoms prevail most frequently during later life is more important. In cases where trauma-related symptoms are reported less among older adults, literature still indicates the older people suffer just as much, if not more, than younger adults as a consequence of trauma. This is particularly clear when assessments have incorporated subjective measures of participants' responses. For example, studies have suggested that emotionally, older adults perceive themselves as coping less well than younger adults. Bolin and Klenow (1982) found that older survivors of a major tornado reported fewer psychological symptoms than younger survivors. However, although suffering from comparable material losses to younger survivors, older survivors reported a stronger sense of loss and deprivation, and felt less recovered after a year. Similarly, an investigation into Israelis' responses to the Gulf War revealed that despite coping adequately on a practical level, older adults reported more difficulties coping emotionally. Older adults also reported greater levels of psychological distress as the war progressed than younger adults (Carmeli, Mevorach, Leiberman, et al., 1992).

Contradictory research findings regarding the role of aging in posttraumatic stress reactions has increasingly prompted researchers to identify the specific trauma-related ailments most frequently elicited during later life. For example, in a study of earthquake survivors, aging was a predictor of more intense PTSD and depressive symptoms (Salcioglu, Basoglu, & Livanou, 2003), while in another study PTSD scores did not differ between younger and older earthquake survivors (Goenjian, Najarian, Pynoos, et al., 1994). Further analyses of individual PTSD symptoms in these participants revealed

that older adults experienced significantly higher levels of arousal and lower levels of intrusive and reexperiencing symptoms, when compared with their younger counterparts (Goenjian et al., 1994).

In Gray and Acierno's (2002) study on psychological sequelae in older crime victims, very few participants reported flashbacks. The most widely endorsed intrusive symptoms were invasive thoughts, nightmares and distress when exposed to trauma-related cues. Also reported frequently was behavioural avoidance of traumatic reminders and internal avoidance of trauma-related thoughts and emotions. Feeling isolated and detached from others, memory deficits relating to the trauma, restricted range of affect and sense of foreshortened future were also common.

Further research on the manifestation of traumatic stress during later life has indicated that older people experience more difficulties expressing emotion and higher levels of survivor guilt (Hodgkinson & Stewart, 1991) and hyper-arousal (Goenjian et al., 1994). Older adults frequently exhibit trauma-related symptoms somatically (Lipton & Schaffer, 1986; Nichols & Czirr, 1986) and are often inaccurately identified as having medical concerns when suffering from trauma-related disorders such as PTSD (Lyons & McClendon, 1990). Associations between trauma exposure and health during later life have been revealed in a number of studies. Bowie's (2003) study of 225 older adults who had lost their houses to a hurricane revealed that many had multiple chronic health problems and required immediate medical and/or mental health assistance.

Comparisons between the above findings on acute traumatic stress reactions and research on older war-veterans indicates that posttraumatic stress may manifest similarly during later-life, whether trauma was recent or occurred during an earlier period of life. For instance, older war veterans who maintain elevated PTSD levels most frequently report persistent trauma-related thoughts, internal avoidance, as well as detachment, sleep and concentration difficulties, hyperarousal and depression (Blake, Nagy, Kaloupek, et al., 1990). Especially salient among older veterans of World War II and the Korean and Vietnam Wars were symptoms of intense distress when exposed to trauma-related cues and diminished interest in usual activities (Hyer, Summers, Braswell, &

Boyd, 1995). The association between trauma exposure and health has also been revealed in studies of older victims of past trauma. For example, Higgins and Follette (2002) observed that older female victims of past interpersonal trauma exhibited more health problems and took higher levels of medication than older females without such a history.

It seems, then, that regardless of when the trauma is endured, posttraumatic stress reactions during later life may manifest as poor health and particularly high levels of hyperarousal and anxiety. Restricted range of affect, detachment, depression and difficulties expressing emotion may also be typical. Intense distress when reminded of trauma-related cues and internal avoidance of distressing feelings and thoughts are also common in older PTSD sufferers.

Differences in how symptoms are expressed between younger and older adults may be a fundamental reason why contradictions regarding aging and traumatic stress occur across studies. Assorted measures of PTSD and traumatic stress may vary in their focus on specific types of symptoms, generating inconsistencies. For example, Salcioglu and colleagues (2003) used a screening test to measure traumatic stress in a study that identified aging as a predictive factor in PTSD. However, Goenjian and colleagues (1994) used DSM-IV criteria to assess PTSD symptoms and found no difference in PTSD scores across age groups. Because PTSD is an officially classified APA disorder, it seems logical that PTSD assessment in studies use tools that are DSM-IV compatible. The current undertaking used a measure that corresponded with DSM-IV assessment of PTSD. This was expected to aid comparison of the present results with other studies using similar measures.

The above review suggests that, like younger adults, older people are susceptible to experiencing adverse psychological and physical reactions associated with trauma exposure. As discussed next, it is hypothesized that 'traumatic' events alone are not solely to blame for trauma-related difficulties during aging. Late-life stressors are also theorized to play a key role in triggering, enhancing and maintaining posttraumatic stress symptoms during aging.

Because death of a loved one is an expected late-life stressor, bereavement may be thought of as less traumatic for older people when compared to younger age groups (Davies, 1996). While some research suggests that clinical grief is milder during later life (e.g., Hansson & Remondet, 1988), other research has found that older bereaved adults report more denial, social isolation, depersonalisation, death anxiety, loss of vigour (Sanders, 1981) and somatic illnesses including pain, gastrointestinal problems and sleep disorders (Wisocki, 1998). Furthermore, while younger bereaved adults initially respond with greater shock, confusion, guilt and anxiety, adjustment is more rapid than in older bereaved adults, whose grief responses tend to become more vigorous over time (Wisocki, 1998).

General stressors not specific to aging may also impact dramatically on the well-being of older people. Kahana and Kahana (1998) reviewed research on older people and found that conflict with others and financial difficulties are strongly associated with symptom distress, negative affect, depression and decreased life-satisfaction. Family illness or injury is also predictive of severe negative affect, while living with a life-threatening illness is associated with depression and symptom distress.

The above review portrays the potentially adverse impact of stressors on psychological and physical well-being during later life. However, lack of research on the association between late-life stressors and trauma-related symptoms such as PTSD, means that the 'trauma' value of such stressors remain unknown. Indeed, some researchers argue that although posttraumatic decompensation may occur after late-life stressors in victims of past trauma, this does not mean that 'normal' life events should be branded as pathogenic influences in themselves (Aarts & Op den Velde, 1996). To some extent, it makes sense to consider 'normal' stressors as insufficient in their ability alone to cause traumatisation. Each life event is a part of a process that should be considered together with what precedes and follows it (Orrell & Davies, 1994). However, while recognizing the role that lifetime experiences play in current expressions of traumatic-stress, 'normal' late-life stressors that cause emotional disruption and upheaval are predicted to be capable of eliciting and maintaining trauma-related pathology. Because of this, late-life stressors should be branded as traumatic influences, in and of themselves, when interpreted as

such by an individual. As discussed in subsequent chapters, even normative late-life stressors that defy the standard traumatic stressor definition can be labelled as 'traumatic' when trauma-related perceptions and associated pathology are elicited.

1.4 Chapter Summary

In summary there remains a need for a considerable amount of exploration and innovation within the geriatric trauma field. Aside from literature on older victims of past chronic trauma, research regarding traumatic stress within general samples of older people is limited. Due to inconsistent findings, aging has been implicated as both a protective factor and a risk factor in the role of traumatic stress. Research indicates, however, that typical late-life stressors play a role in eliciting or exacerbating trauma-related symptoms such as PTSD.

The present study explored the effects of lifetime trauma and recent traumatic events on a sample of NZ elders (60+ years) while considering the impact of general and unique developmentally-related stressors of later life. There was a central focus on both posttraumatic symptomatology and trauma-related perceptions and how late life-events, whether defined as 'stressors' or 'traumas', have the potential to impact on these trauma-related phenomena. Evaluating if 'traumatisation' is a concept requiring recognition with only past victims of chronic trauma (e.g., war veterans), or a concept that should be considered more regularly with all older adults experiencing emotional upheaval was an underlying goal of the current project. The subsequent chapter outlines the traumatisation process more specifically with particular emphasis on how PTSD is developed and maintained during the later years.

Chapter Two

PSYCHOLOGICAL RESPONSES TO TRAUMA

While immediate reactions to traumatic and shocking events have been noted as following a universal course of post-trauma psychological adjustment (Forster, 1992), chronic reactions are more varied and incorporate a range of pathological responses including PTSD, anxiety, depression and dissociation. This chapter specifies both the immediate and long-term psychological consequences of trauma in the general population. There is a central focus on PTSD, the chronic disturbance most commonly noted after a traumatic experience (Rothbaum & Foa, 1996), with particular emphasis on its manifestation in older populations.

Knowledge about PTSD during later life has derived mostly from studies on older survivors of military combat-captivity during World War II and the Korean War, and survivors of the Holocaust (Cook & Niederehe, 2007). PTSD is highly prevalent among older male survivors of such groups and has been revealed as a potentially chronic disorder that can persist for longer than 50 years after the initial trauma (Ruskin & Talbott, 1996). A review of the small number of studies conducted among general community samples of older adults, however, depict PTSD rates as relatively low among aging populations (Davidson, Hughes, Blazer, & George, 1991; Kessler et al., 1995; Norris, 1992). Explanations for these are discussed, along with a rationale for why the focus of the present study about trauma-related psychopathology in older adults is on PTSD symptomatology.

2.1 Acute Responses to Trauma

Immediately following a traumatic event, survivors experience adverse emotions, thoughts, physical reactions and behaviours that produce intense levels of distress. During this post-trauma phase survivors require a period of adaptation and adjustment until distress levels ameliorate (O'Brien, 1998). Selye's (1946) general adaptation syndrome (GAS) describing physiological reactions to chronic stress, and Forster's (1992) universal course of post-trauma psychological adjustment (PPA), indicate that what may appear like a 'disorder' are essentially natural reactions to extremely distressing situations. Initial symptoms of anxiety, insomnia, hyperarousal, mild depression, flashbacks and nightmares are all considered to be normal responses to extreme stressors.

Forster and Seyle both outline initial periods of alarm reactions in response to an extreme stressor. During this period of perceived danger, the autonomic nervous system becomes activated and prepares the body for flight or fight. Biological reactions increase blood pressure, respiration, heart-rate and muscle tone, while releasing stored sugar and heightening awareness. When fleeing or fighting is not adaptive, freezing or dissociating may occur to enhance chances of survival. While freezing may have the adaptive value of accomplishing avoidance of a predator's attention, dissociation, which incorporates a sense of unreality and detachment, may be the defence of last resort (Resick, 2001).

After initial periods of alarm, repair and early recovery involve mobilization to respond effectively and appropriately to the catastrophe. During this stage, anxiety, fear, denial, anger, withdrawal and/or psychomotor retardation may also be more evident (Forster, 1992). A study of rape victims showed that responses of anger, humiliation, depression, exhaustion, guilt, restlessness, ruminations and withdrawal were more common two to three hours after the assault than during the assault (Veronen, Kilpatrick, & Resick, 1979). It is probable that once the danger is over this early recovery period allows for increased thoughts and awareness regarding the event, thus evoking a wider range of emotions and associated symptoms, such as guilt and depression. Depending on the

circumstances, the early recovery period may continue for hours or days, until signs of the adaptation phase become evident (Forster, 1992).

The adaptation phase typically takes longer and occurs well after the catastrophe. Because trauma is shocking and difficult to accept, traumatic events remain unprocessed as non-verbal memory fragments involving sights, smells, sounds, words and emotions. Neurological research lends support to the idea that emotional memories and sensory impressions based on fragments of information can be generated by parts of the brain (i.e., the amygdala and related brain structures) without conscious evaluation of information (van der Kolk, 1996a). The fragmented memories relating to the distressing event/s impinge on consciousness triggering the ongoing reexperiencing of the trauma memory (Forster, 1992). This is different from the normal recall or rehearsal of memories that aid recollection. A major characteristic of reexperiencing is the intrusiveness of trauma memories as they persistently impose on consciousness accompanied with vivid pain, emotions and sensory impressions. The memories are experienced as if the event were occurring once again (Appelbaum, Uyehara, & Elin, 1997).

Reexperiencing is considered to be an adaptive mechanism, functioning to alleviate trauma-related emotions while enhancing tolerance for the content of memories (Horowitz, 1979). In fact, reexperiencing past events may be a natural part of dealing with any emotional material. Philippot and Rime (1998) found that individuals not only recurrently and spontaneously think about traumatic experiences, but that mental rumination is strongly evident after non-traumatic experiences. Philippot and Rime postulate a continuum in which the perceived emotional intensity of an event is associated with the frequency, duration and intensity of a person's mental ruminations. Perhaps it is the intense level of emotion felt during a traumatic event that explains why most trauma survivors will experience at least some degree of preoccupation with involuntary intrusive memories (van der Kolk & McFarlane, 1996). GAS theory would regard traumatic memories as a source of ongoing stress, explaining that the body continues to engage in defensive countermeasures in response to high levels of

physiological arousal. During this time, the body goes into overdrive and energy resources start to become depleted (Selye, 1946).

During the second phase of PPA, avoidant symptoms including emotional numbing, denial and behavioural avoidance of traumatic-reminders, become apparent. Avoidant symptoms, some of which are consciously carried out, and others which are involuntary, prevent survivors from becoming overwhelmed with traumatic reexperiencing (Forster, 1992). Horowitz (1979) describes this period as the 'working through' phase in which traumatic material is processed and integrated in a slow and gradual manner as avoidant and intrusive symptoms alternate to prevent emotional or mental exhaustion. As traumatic material is accepted and processed, it converts from disorganized non-verbal emotional and sensory fragments to an organized episodic narrative. Once synthesized into episodic memory, involuntary recollection of the trauma discontinues and the person returns to psychological states similar to those experienced before the trauma (Horowitz, 1979). Forster (1992) labels the subsiding of intrusive and avoidant symptoms as the final recovery phase in adjustment to trauma. Application of the GAS model of chronic stress at this stage affirms that because the ongoing stress of traumatic reexperiencing and hyperarousal is alleviated, the body's defensive reactions are immobilised and are likely to return to a normal balanced state.

2.2 Chronic Responses to Trauma

In general, most adults are able to cope with the initial phases of trauma adjustment without developing long-term psychological problems or major impairments in day to day functioning (van der Kolk & McFarlane, 1996). Some, however, are unable to recover sufficiently during the adaptation period and become chronically affected by a range of psychological disorders. When posttraumatic ailments persist, or become more intense over time, symptoms are no longer considered adaptive (Resick, 2001). The chronic stress of traumatic reexperiencing and anxiety continues to consume more energy resources than the body can provide. With less resistance for emotional stress and

physical illness, exhaustion may occur. Since the body can no longer maintain normal functioning, stress-related illnesses (e.g., strokes, cancer, digestive problems) may begin to manifest (Selye, 1946). Trauma victims may experience depression, adjustment disorders, substance abuse disorders, somatic ailments, functional impairment and a range of anxiety disorders including panic disorder, generalized anxiety disorder, obsessive compulsive disorder, specific phobia, and, of course, PTSD (Fairbank, Ebert, & Caddell, 2001).

Although assessment of the above potentially chronic psychological responses to trauma would advance knowledge of traumatic-stress during later life, the limited scope of the current project restricts assessment to the most apparent symptoms of 'traumatisation'. The study of PTSD is a key focus in the current inquiry into aging and trauma-related ailments. A major focus on PTSD is justified by the idea that the fundamental intrusive-avoidant symptoms found in PTSD are simply extended reactions of the universal course of post-trauma psychological adjustment (Forster, 1992) described above. Furthermore, PTSD as outlined by DSM-IV (APA, 1994) (see Table 1) is the disturbance most commonly noted after a traumatic experience (Rothbaum & Foa, 1996). Unlike the normal post-trauma adjustment process in which intrusive and avoidant symptoms gradually subside as traumatic memories are integrated into existing cognitive frame-works (Forster, 1992), PTSD symptoms show no sign of abating over time. Instead, traumatic memories and related feelings of fear, horror and/or helplessness remain separated from normal memory systems. As a result, the memories continue to impinge on consciousness in images, feelings, behaviours and physiological states feeding into a cycle of intrusion-avoidance-anxiety that together represent the clinical syndrome of PTSD (van der Kolk & McFarlane, 1996).

The DSM-IV (APA, 1994) states that the requisite for application of a PTSD diagnosis involves identification of one reexperiencing symptom, three avoidance symptoms and two arousal symptoms. In addition to acknowledging the PTSD syndrome as outlined by DSM-IV, the current investigation recognizes a subsyndromal or partial form of PTSD. Subthreshold PTSD has been identified by researchers as incorporating a cluster of

PTSD symptoms that produce significant psychological distress but are too weak or insufficient in quantity to meet full PTSD diagnostic criteria (e.g., Stein, Walker, Hazen, & Ford, 1997). A classification of subthreshold PTSD in the present study was made when at least one symptom in each of the three PTSD symptom clusters (i.e., reexperiencing, avoidance and arousal) is evident. This classification system has been used successfully in a number of studies, including research with older samples (e.g., Summers & Hyer, 1994). Although individuals with subthreshold PTSD are less impaired than those with the full set of symptoms, they still exhibit clinically significant levels of distress and psychological impairment in relation to their symptoms (Stein et al., 1997). The measurement and analysis of subthreshold PTSD in the current undertaking was considered an additional method of identifying trauma-related distress within the older sample that may otherwise remain unrecognised.

2.3 Prevalence of PTSD Among the Aged

The largest body of evidence on the prevalence of PTSD during later life comes from male veterans of WWII, prisoners of war (POW) and Holocaust victims (Cook & Niederehe, 2007). Among such groups, PTSD is highly prevalent and has been revealed as a potentially chronic disorder that may persist, with variations in course, for over 50 years (Ruskin & Talbott, 1996a). From a sample of older POW survivors from World War II, for example, 70% fulfilled diagnostic criteria for PTSD, 40 years on (Sutker, Allain, & Winstead, 1993). Other research of older POW victims has revealed current PTSD prevalence rates of between 29% and 50% (e.g., Aarts, Op den Velde, Falger, et al., 1996; Engdahl, Speed, Eberly, & Schwartz, 1991; Kluznik, Speed, Valkenburg, & Magraw, 1986) and PTSD prevalence rates of 46% in a sample of older Holocaust survivors (Robinson, Rapaport, Durst, & Rapaport, 1990).

Ironically, although there exists an abundance of information on the frequency of PTSD in male survivors of past chronic trauma, inquiries into the incidence and prevalence of PTSD in epidemiological studies using representative samples of older adults have not

been carried out (Cook & Niederehe, 2007). Typically, epidemiological studies determining the prevalence of mental disorders among older adults neglect to investigate trauma-related syndromes such as PTSD. For example, Tien (1991) concluded from an epidemiological study of 15,528 community-dwelling adults that anxiety disorders appear to have a lower prevalence with aging. However, PTSD, which is classified as an anxiety disorder in the DSM-IV (APA, 1994), was not even acknowledged. Reviews (e.g., Holroyd, 2002; Stuart-Hamilton, 2000) concerning the prevalence and contributory factors of mental illnesses during later-life often acknowledge depression and other anxiety disorders such as phobias, generalized anxiety, obsessive-compulsive disorder, panic disorder and agoraphobia, but fail to recognize PTSD as an affliction that is worthy of investigating among older adults.

Nevertheless, the first population-based study examining PTSD in older adults has been conducted (van Zelst, de Beurs, Beekman, Deeg, & van Dyck, 2003). The researchers found that while prevalence for six-month PTSD was only 0.9%, the prevalence rates for six-month subthreshold PTSD in older people was 13.1%. Hence, although very few of the general aged population may currently meet full PTSD diagnostic criteria, a large number may still be disturbed by varied symptoms of PTSD. These symptoms of PTSD are differentiated from symptoms of other anxiety disorders in a number of ways. Firstly, there is at least one instigating external event around which symptoms manifest. Events may have been experienced in the distant or recent past, but are linked to extreme arousal and present in the mind as disorganized fragments of strong sensory and emotional impressions (Horowitz, 1979). Secondly, although certain PTSD symptoms may be found in other anxiety disorders (e.g., arousal in generalized anxiety disorder; fear and avoidance in specific phobias; intrusive cognitions in obsessive compulsive disorder), they manifest together as a syndrome in PTSD (Foa & Rothbaum, 2001). Thirdly, because flashbacks, nightmares and emotional numbing are relatively unique to PTSD as an anxiety disorder (see Foa & Rothbaum, 2001) the reporting of any of these symptoms immediately implies the outcome of PTSD. Some studies indicate that older age groups may have the lowest risk for developing PTSD (Davidson et al., 1991; Kessler et al., 1995; Norris, 1992). However, use of categorical rather than continuous

measures of PTSD, in addition to the disregard of subthreshold PTSD levels in older age groups, may have contributed to an underestimation in the number of older adults who currently suffer from PTSD-related problems.

Researchers of studies on male survivors of past war trauma often observe that participants not meeting full PTSD diagnostic criteria still manifest clinically significant levels of symptom distress. For example, research involving older Dutch resistance veterans (Hovens, Falger, Op den Velde, et al., 1992) and Far East POWs (Neal, Hill, Hughes, Middleton, & Busuttil, 1995) indicated that only 4% and 10% of each sample, respectively, reported no PTSD symptoms. Another study indicated that although most participants in a large community sample of older survivors of WWII bombardments, persecution, resistance and combat did not meet full criteria for a PTSD diagnosis, the majority had subthreshold PTSD or other adverse, chronic after-effects (Bramsen & van der Ploeg, 1999).

It is probable, therefore, that many older adults currently experience significant levels of psychological distress that remain clinically unrecognised and untreated. In the context of PTSD as a disorder that can pursue different courses over time, sometimes decades after the original trauma (Solomon & Ginzburg, 1998; Hilton, 1997), it is important to realize that those with subthreshold levels of PTSD may simply be in remission from full-blown PTSD, and therefore susceptible to relapsing at any stage during the aging process.

A major aim of the current study was to determine the degree to which a large representative sample of NZ's older adults (60+ years) were affected by PTSD symptoms. In light of the restricted knowledge regarding trauma-related symptoms among the aged, determining whether subthreshold levels of PTSD causes subsequent vulnerability to full PTSD is valuable for identifying those requiring early intervention in efforts to curb later psychological decline.

2.4 Other Trauma-Related Symptoms During Later Life

Any review pertaining to trauma-related symptoms should not overlook psychological problems other than PTSD. Depression, dissociation and trauma-based anxiety are the symptom-types measured in addition to PTSD in the present study. Although the findings are presented succinctly because of the restricted scope of the project, their inclusion demonstrates the importance of acknowledging that responses to trauma are of a heterogeneous nature and can manifest in various ways other than as PTSD.

2.4.1 Depression

Research supports the assessment of depression in older trauma victims. Cook's (2002) review led to the conclusion that the scope of both depressive and anxious symptomatology in older adults after traumatic exposure is too extensive to be ignored. The long-term depressive effects of trauma have even been revealed in studies of older people with histories of ongoing trauma, including older female victims of earlier interpersonal abuse (Higgins & Follette, 2002) and older war veterans (Kulka, Schlenger, Fairbank, et al., 1990). Moreover, older victims of recent trauma report higher levels of depressive symptoms (e.g., Kidson, Douglas, & Holwill, 1993; Livingston et al., 1992; McNaughton, Smith, Patterson, & Grant, 1990) and lower levels of perceived quality of life than younger victims (Melick & Logue, 1985). In comparison to younger victims, stronger depressive responses were found in older Israelis reacting to the Israel-Lebanon war (Hobfoll, Lomranz, Eval, Bridges, & Tzemach, 1989). Older survivors of the Lockerbie air disaster with PTSD also displayed higher levels of depression when compared to younger survivors with PTSD (Livingston et al., 1992). Both PTSD and depression were related to older age in two separate analyses in a study of 586 earthquake victims in Turkey (Salcioglu, Basoglu, & Livanou, 2003). The association between PTSD and depression in the above studies supports research that indicates that depression may be comorbid with (Foa & Kozak, 1991), or interact with, PTSD (Hyer, Stanger, & Boudewyns, 1999; Lee, Vaillant, Torrey, & Elder, 1995) to cause significant distress, particularly during later life.

Although depression frequently co-occurs with PTSD at any age (Foa & Kozak, 1991), high levels of co-existing depressive symptoms may be more frequent in older sufferers of PTSD. Older people experiencing any form of anxiety disorder may be more inclined to experience depression, than younger, or middle-aged groups (Beck, Novy, Diefenbach, et al., 2003). It is expected, therefore, that the current study will reveal robust relationships between depression and traumatic events within an older sample.

2.4.2 Dissociation

Dissociation is defined as an abrupt, gradual, temporary or persistent disturbance in the naturally integrated functions of consciousness, perception, memory or identity (APA, 1994). Although this definition contains no reference to trauma, many psychologists consider dissociation to be an adaptive mechanism, facilitated by the need to disconnect and ultimately protect the self from emotionally overwhelming information (McNally, 2003). As a response to, and escape from, extreme and overpowering devastation, the process of dissociation is therefore considered by many therapists to be a naturally occurring psychological defence (McNally, 2003).

Research regarding the extent of dissociative symptoms within aged populations is virtually non-existent (Hyer & Sohnle, 2001). Older war veterans and Holocaust survivors often report substantial levels of dissociation, particularly when meeting PTSD criteria (e.g., Kaufman, Kimble, Kaloupek, et al., 2002; Yehuda, Elkin, Binder-Brynes, et al., 1996). In general, however, dissociation appears to become less common with increasing age (Torem, Hermanowski, & Curdue, 1992). Because dissociation affects cognition in areas that decline during aging itself, such as perception, memory and identity (Stuart-Hamilton, 2000), research into the prevalence of dissociative symptoms during later life seems important. The present study determined the extent to which trauma and dissociation were related and whether dissociation appears to be a significant problem in older adults in general.

2.4.3 Anxiety

Anxiety incorporates a multifaceted array of feelings such as apprehension, fear and worry, and is typically accompanied by physiological reactions involving pulmonary, cardiac and other physical sensations. As an adaptive response to threat, anxiety warns people of valid threats to safety and provides the physiological readiness for necessary action. While acute anxiety can be considered adaptive in nature, chronic anxiety that is inappropriately intense and interferes with daily and social functioning is considered pathological (Kaplan & Sadock, 1998). Such anxiety may form the basis of a number of diagnosable anxiety disorders including panic disorder, agoraphobia, social and specific phobia, generalized anxiety disorder, social phobia, obsessive-compulsive disorder and PTSD (APA, 1994).

Cook's (2002) literature of traumatic exposure during later life showed that the extent of anxiety symptoms manifesting in older trauma victims is too high to be ignored. Indeed, anxiety is one of the most frequent mental conditions observed among the aged (Rabins, 1992); over a quarter of all people aged 65 years or older disclose symptoms representing anxiety (Beekman, Bremmer, Deeg, et al., 1998; de Beurs, Beekman, Deeg, Van Dyck, & Van Tilburg, 2000; Forsell & Henderson, 1998). Anxiety may be a primary complaint or comorbid with other psychiatric illnesses, such as depression and psychosis (Kaplan & Sadock, 1998). More than any other age group, older adults are more likely to experience comorbid depression along with anxiety (Beck et al., 2003). Less intense anxiety symptoms may present in adjustment disorders which often occur in reaction to specific late-life events and are milder than full-blown affective or anxiety disorders (Zarit & Zarit, 1998).

Because anxiety is an automatic response to threat, it makes sense that trauma-victims of all ages are at an increased risk of anxiety disorders and report more symptoms of anxiety than those who have not experienced trauma (e.g., Vrana & Lauterbach, 1994). Kidson and colleagues (1993) studied a sample of older WWII veterans and found that participants meeting full PTSD criteria had a significantly higher probability of meeting

requirements for additional anxiety disorders. A study of older women also revealed that a history of multiple traumatic encounters was associated with high levels of anxiety in addition to other trauma-related symptoms (Higgins & Follette, 2002). As a universal response to threat, anxiety is likely to be a typical outcome of traumatisation during later life, and is, therefore, a necessary pathological response to study within older populations.

2.5 Chapter Summary

Acute responses to trauma typically follow a process of adaptation which involves a gradual reduction of anxiety as trauma memories are integrated into normal memory structures over time. When integration does not occur, however, psychopathological problems may manifest.

PTSD, as the most common psychopathological response to a traumatic event, formed the basis of the current investigation into traumatic-stress and aging. While prevalence of PTSD in older adults is documented as being relatively low, subthreshold levels of PTSD may be more common, and, therefore, was also investigated in the present study. A brief analysis of depression, dissociation and anxiety in relation to cumulative lifetime trauma and recent traumatic events was also covered. The strength of associations between symptom-types and trauma variables assisted with identifying those pathological responses that required further investigation for advancing knowledge about traumatic-stress in older people.

As discussed in the next chapter, physical health and functioning is an integral area of concern as people age. In addition to psychological assessment, therefore, physical well-being was also measured and assessed in relation to trauma within the present investigation.

Chapter Three

THE PHYSICAL IMPACT OF TRAUMA

A great deal of research investigating the relationship between stress and physical health has emphasised the potentially adverse physical health consequences of traumatic exposure (see Schnurr & Green, 2004). Although illness and disability are not synonymous with old age, the number of chronic illnesses steadily increases, with at least one chronic illness experienced by 65 years and multiple illnesses typically evident by 80 years (Johnson, 2002). Functional disability and limitation caused by chronic illness, including the inability to carry out personal care activities, is experienced by about 50% of older adults (Eliopoulos, 1997). These escalating health problems, incorporating numerous chronic ailments and functional disability, may cause older adults to be particularly susceptible to increased physical decline as a result of traumatic stress. As well as exacerbation of current medical conditions the elicitation of somatic symptoms resulting from psychological distress also requires acknowledgement. Research suggests that somatic symptoms may be particularly widespread during later life in traumatized individuals (e.g., Lipton & Schaffer, 1986; Nichols & Czirr, 1990), and the implications of these findings are discussed in this chapter. The literature regarding the relationship between traumatic exposure and physical health among older adults is summarized, as well as evidence suggesting that trauma-related psychological symptoms may mediate the relationship between traumatic exposure and physical well-being.

3.1 Defining Physical Health

Physical health, or physical well-being, has been defined and explicated in a variety of ways within the literature. Typically regarded as a multidimensional construct, physical health is often conceptualised as a generalized structure involving a number of different components. Liang (1986) delineates physical health into five aspects: chronic illness, sick days, activities of daily living (ADL), instrumental activities of daily living (IADL)

and subjective health ratings. Lawton, Kleban, and DiCarlo (1984) partition the health construct into three facets: life threat, pain/discomfort and functional ability. Wilson and Cleary (1995) define physical health as a multifaceted concept, which is expressed on a continuum of increasing complexity, starting with biological and physiological variables, and progressing to symptoms, functional status, health perceptions and, finally, health-related quality of life.

While the above approaches to physical health treat components as functioning independently, other approaches portray components as influencing each other interdependently. Johnson and Wolinsky (1993) define 'health status' as encompassing disease, disability, ADL limitations and perceived health. Disease, disability and functional limitation are postulated to influence perceived health, both directly and indirectly, through influences on each other. Research supports this multifaceted model of physical health. Perceived health appears to be influenced, both directly and indirectly, by knowledge of underlying disease, recognition of physical disabilities and awareness of functional limitation. Research findings indicate that disease often exerts its impact on perceived health indirectly, via the other dimensions of health (e.g., disability and functional limitation) (Fillenbaum, 1979; Liang, 1986; Liang, Bennett, Whitelaw, & Maeda, 1991).

Assessment of perceived health is, therefore, a suitable measure of general physical well-being within research and has been frequently used as an alternative to other health status measures (Johnson & Wolinsky, 1993). Perceived health consistently predicts current objective health indicators measured from external sources, including the use of health services (Wolinsky & Johnson, 1992), the number of recent physician visits, medications, diagnoses, disability and impairment (Linn & Linn, 1980). Self-ratings of physical health were predictive of seven-year survival in a group of elderly participants (Mossey & Shapiro, 1982).

The current project assessed levels of chronic conditions, functional disability and a self-rated measure of perceived health. Thorough scrutiny of all three measures of health, was beyond the scope of the project. Use of the self-rated health measure provides an appropriate option when time and cost permit use of only one indicator, and, as in this

case, when physical health is not the only focus of the research (Lawton & Lawrence, 1994). Self-rated health was used in the present research to represent general health and well-being within the sample.

3.2 Traumatic Exposure and Physical Health in Aging Populations

The association between physical well-being and both lifetime and recent trauma has been well-documented across the life-span (e.g., Friedman & Schnurr, 1995; Schnurr & Jankowski, 1999). Individuals exposed to traumatic stressors report adverse physical health outcomes including low perceived health, numerous self-reported medical problems, increased morbidity and mortality, and high service utilization (Friedman & Schnurr, 1995; Schnurr & Jankowski, 1999). Escalating physical health needs during later life (Johnson, 2002) indicate that older people may be particularly susceptible to adverse health effects resulting from traumatic exposure.

3.2.1 Long-Term Physical Health Consequences of Trauma

Older people with trauma-histories are especially vulnerable to health problems as they age and as the risk of physical illness increases (McFarlane & Yehuda, 1996). In comparison to older people who report no trauma over the lifetime, national samples of older veterans report lower levels of self-rated health and more multiple health conditions and physical ailments (Green & Kimerling, 2004). Compared to older adults without trauma histories, older Holocaust survivors and POW victims have an increased probability of succumbing to illness during the later years (Solomon & Ginzburg, 1998). Holocaust survivors also report worse physical health and higher use of medication when compared with non-exposed immigrants (Joffe, Broadaty, Luscombe, & Ehrlich, 2003). Furthermore, results from a longitudinal study on the impact of combat showed that 56% of the 72 male participants who had experienced heavy combat as young adults were dead or chronically ill by age 65 (Lee et al., 1995).

Somatoform disorders, characterized by physical ailments that can not be fully explained by biological causes (DSM-IV) are also common in older trauma victims who tend to

manifest psychological distress within the body (Shapiro, Skinner, Kessler, et al., 1984). Research suggests that somatic symptoms may be especially widespread during later-life in traumatized individuals (e.g., Lipton & Schaffer, 1986; Nichols & Czirr, 1990). For example, somatic symptoms are particularly prominent among older male veterans (Miller, Goreczny, & Perconte, 1992) and even more so in older veterans with PTSD (Hankin, Abueg, Gallagher-Thompson, & Laws, 1996). The manifestation of somatic symptoms as a result of emotional distress may explain why older adults are more likely to be predominantly assessed by primary care professionals as opposed to mental health specialists (Goldstrom, Burns, Kessler, et al., 1987; Phillips & Murrell, 1994). Furthermore, misinterpretation of somatic symptoms by health professionals explains why older victims of trauma are often misdiagnosed as having medical rather than psychological problems (Lyons & McClendon, 1990).

A criticism of research that compares the physical health of people with and without chronic histories of victimisation and extreme stress is that the extent that physical health problems may have derived from the actual traumatic events themselves is unknown. POW and Holocaust victims may have been exposed to a number of factors such as inadequate medical care, exposure to toxins and substandard nutrition that contributed to poor physical health. Indeed, the physical health consequences of lifetime trauma exposure in populations that do not involve ex-veterans, POW survivors or Holocaust survivors are understudied in older populations (Cook & Niederehe, 2007). There are a few studies, however, and these again point to a strong trauma-health association. A US epidemiological study revealed that lifetime trauma exposure was associated with reports of poor self-rated health and more medical conditions even after controlling for demographics, psychiatric history and other stressful life events (Ullman & Siegel, 1996). Focusing specifically on older adults, a recent nationwide survey in the US found that lifetime trauma exposure was associated with poor physical health in general, with trauma between 18 and 64 years exerting the greatest effects (Krause, Shaw, & Cainey, 2004). Importantly, however, the direct effects of specific health-related events possibly listed in trauma inventories (e.g., life-threatening illness) were not controlled for in these studies, possibly inflating the trauma-health associations.

More specifically, research has indicated that childhood trauma, such as physical abuse by a parent, is related to diminished physical health during aging (Shaw & Krause, 2002). A large cross-sectional study showed that thyroid disease in older men and breast cancer and arthritis in older women were linked to self-reported sexual assault history. History of exposure to interpersonal violence has also been linked to more self-reported physical ailments and higher use of medications in older women when compared to non-exposed women (Higgins & Follette, 2002). In a representative NZ sample, exposure to family violence and secondary trauma (trauma directly experienced by a loved one) was associated with higher levels of physical symptoms across all ages (Flett et al., 2002).

3.2.2 Immediate Physical Health Consequences of Trauma

Investigations into the immediate physical health consequences of trauma are limited, particularly in older populations. Being diagnosed with a chronic life-threatening disease, which is a frequently encountered late-life trauma, has been associated with the subsequent manifestation of additional health problems post-diagnosis (Markides & Cooper, 1989). Nevertheless, a study such as this lends questionable support to the idea that psychological stress is the only source of additional health problems. As the body's systems are interlinked, even health problems that appear unrelated to a major disease may still have an etiological basis in a life-threatening illness.

Another typical late-life stressor, bereavement, has been consistently linked with decreased physical health. For example, when compared to control groups of the same age, recently bereaved older adults report more frequent worsening or development of illnesses, higher use of new medications, poorer self-rated health, increased levels of impaired functioning and more somatic ailments (Thompson et al., 1984). Somatic symptoms most frequently observed in recently bereaved older adults, as compared to younger bereaved adults, are gastrointestinal problems, sleep disorders and unexplained pain (Stern, Williams, & Prados, 1951). Older bereaved individuals, particularly men, are at an increased risk of mortality (Stroebe, Stroebe, & Hansson, 1993), and becoming widowed is associated with significant declines in both perceived health and independent functioning (Wan, 1982).

The above review, as well as recent reviews of the literature on physical health (Schnurr & Green, 2004) and somatic symptoms (Engel, 2004), indicate that exposure to traumatic events is related to poor physical health. A likely interpretation of this relationship is that traumatic exposure affects physical health through the mediating pathway of psychological disturbance, namely, PTSD.

3.3 PTSD and Physical Health

Whether referring to medically proven physical conditions or somatic symptoms that have no medical basis, research indicates that psychiatric distress is the primary pathway through which trauma exposure leads to physical health problems. The leading type of distress most consistently blamed for eliciting physical health problems in trauma victims is PTSD. There is solid empirical evidence that links PTSD with poor health in veteran (e.g., Barrett, Doebbeling, Schwartz et al., 2002; Kulka et al., 1990; Neria & Koenen, 2003; Schnurr, Friedman, Sengupta, & Jankowski, & Holmes, 2000) and non-veteran populations (e.g., Kessler et al., 1995; Zatzick, Jurkovich, Gentillelo, Wisner, & Rivara, 2002). Such relationships are evident whether assessing health via self-rated functioning, perceived health status, risk for chronic disorders, utilization of health services or speed of disease progression. An association between PTSD and mortality rates in male veterans has also been noted (e.g., Boscarino, 2006; Drescher, Rosen, Burling, & Foy, 2003; Kasprow & Rosenheck, 2000).

Evidence suggesting that PTSD mediates the relationship between traumatic exposure and physical health has been revealed among a wide range of populations, including older adults (Schnurr, Green, & Kaltman, 2007). Schnurr and Spiro (1999), for example, found that PTSD mediated 90% of the effect of combat exposure on physical health in older male veterans. In another study, war veterans with chronic PTSD were matched to war veterans without PTSD. The PTSD group showed elevated rates of cardiovascular, neurological, gastrointestinal, audiological and pain symptoms (Shalev, Bleich, & Ursano, 1990). An association between PTSD and health in trauma victims were also found in a study of NZ war veterans. In contrast to their non-PTSD counterparts, veterans with PTSD had three times as many contacts with health care providers in the

past year (Vincent, Long, & Chamberlain, 1991). Again, these results indicate that PTSD plays a major role in the relationship between trauma and physical disturbance during later-life.

3.3.1 How PTSD Affects Physical Health

There are multiple ways in which PTSD may be related to physical health. Biologically based reactions of PTSD, such as anxiety, can directly affect the body, resulting in somatic symptoms (Engel, 2004). The frequent manifestation of emotional problems somatically in older people may be due to the tendency to use avoidance and denial as coping strategies in response to anxiety-generating material (Hyer & Sohnle, 2001). Failure to process emotional events fully due to avoidance and emotional numbing typically leads to increased physiological hyperarousal and subsequent manifestation of psychosomatic problems (Litz, 1992). Supporting the anxiety-somatization connection is research showing that the pharmacological treatment of anxiety during later life is associated with a reduction in somatic symptoms (Lenze, Karp, Mulsant, et al., 2005).

Attentional mechanisms may also contribute to the PTSD-health association. The tendency to report somatic symptoms following trauma may be a technique for diverting focus from traumatic memories to the body, a mislabelling of the autonomic and emotional consequences of memory suppression, or a means of eliciting help and comfort from others (Pennebaker & Watson, 1993). Physical ailments may result from classical conditioning in which anxiety triggers a focus on somatic symptoms, such as rapid heartbeat, sweating and breathing difficulties (Resnick, Acierno, & Kilpatrick, 1997). PTSD sufferers may also be more pessimistic or catastrophic in their cognitive appraisals of physical symptoms, increasing the likelihood that medical help will be sought (Engel, 2004).

Poor health behaviours may also contribute to the relationship between PTSD and physical well-being. Substance abuse and failure to engage in healthy behaviours such as regular exercise, diet and safe sex are poor health practices that fall under the heading of high risk behaviours (Schnurr & Green, 2004). These poor health behaviours are associated with both trauma exposure and PTSD (e.g., Felitti, Anda, Norenberg, et al.,

1998; Schnurr & Spiro, 1999; Walker, Newman, & Koss, 1999). It is easy to understand how even small trauma-related declines of independent functioning in aging populations, particularly in those who already have moderate levels of disability, can substantially impact on good-health practices during later life.

3.4 Chapter Summary

To summarize, trauma exposure has been consistently linked with adverse physical health outcomes. Due to increased risk of chronic illness and disability during aging, older adults may be particularly susceptible to adverse physical health outcomes from traumatic stress and suffer additional illnesses or symptoms, psychosomatic ailments, exacerbation of current medical conditions and increased functional disability. Research indicates that PTSD acts as the principle mediating variable in the trauma-health relationship (e.g., Barrett et al., 2002; Kulka et al., 1990; Neria & Koenen, 2003; Schnurr et al., 2000). Biological, attentional and behavioural mechanisms contribute to explanations regarding why older adults with PTSD frequently present to health professionals with medical, as opposed to psychological, complaints (Goldstrom et al., 1987; Phillips & Murrell, 1994).

The present research will assess the relationship between trauma and physical health during later life and the role that PTSD plays in this relationship. Such research should enlighten primary care professionals in NZ regarding the extent that older adults presenting with physical health problems are also suffering from trauma-related pathology. Screening such people for traumatic exposure alone, however, may not be enough to determine if physical health problems have a trauma-based etiology. The next chapter reviews theories of PTSD in which additional variables are identified that aid in recognizing 'traumatisation' in older people.

Chapter Four

THEORETICAL BASIS OF TRAUMATIC-STRESS

Over the years a variety of theories have been put forward to explain how and why the complex array of symptoms associated with PTSD are evoked and maintained. Behavioural learning theories incorporating classical and operant conditioning models, and cognitive theories involving information processing and social-cognitive models, have made major contributions in explaining posttraumatic stress responses. Many therapeutic programs proven effective in treating PTSD are founded upon a cognitive-behavioural framework (Foa & Meadows, 1998).

This chapter reviews existing behavioural and cognitive theories of PTSD and introduces Trauma-Schema Theory. As a new theoretical framework of traumatisation, Trauma-Schema Theory can be applied to all traumatic stress reactions. Trauma-Schema Theory integrates parts of existing theories of traumatic-stress while incorporating the fundamental idea that traumatic beliefs are the crux of PTSD symptomatology. These traumatic beliefs are proposed to confirm fear-inducing cognitive-emotional schemata relating to the self as severely powerless, unsafe and vulnerable, working against the natural preservation of beliefs that validate the self as safe and in control.

Trauma-Schema Theory elucidates how and why posttraumatic-stress responses occur in the general population. The theory also provides explanations for situations specific to traumatic-stress during later life, such as delayed PTSD reactions in older people and the triggering of posttraumatic-stress symptoms in response to late-life stressors.

4.1 Theories of PTSD

4.1.1 Behavioural Theories of PTSD

The first model to account for posttraumatic stress symptoms was Mowrer's (1947) two-factor learning theory of classical and operant conditioning. Within this model, classical conditioning is proposed to be responsible for anxiety and reexperiencing which is triggered by internal or external stimuli that symbolize aspects of the trauma memory. Under the classical conditioning model persistent exposure to trauma-related triggers that are free of associated negative consequences is expected to extinguish the link between stimuli and fear responses. However, simultaneous occurrence of avoidant symptoms, considered to be under operant control, obstructs the full fear response and prevents opportunities for the stimuli-fear association to be weakened. Instead, avoidant strategies become learned responses to both the reexperiencing of trauma and conditioned anxiety, and, therefore, become positively reinforced by their capacity to alleviate emotional distress. Repeated exposure to conditioned stimuli in the absence of avoidance strategies is proposed to alleviate PTSD symptomatology and distress. Exposure therapy for PTSD encourages cognitive exposure to traumatic memories without escaping through avoidance strategies. There is strong empirical support for the efficacious use of exposure therapy with trauma victims (Foa & Meadows, 1998).

Behavioural learning theories do assist with clarifying how fear and anxiety are triggered and maintained. However, they do not account for some specific features of PTSD, such as flashbacks; nor do they accurately differentiate between PTSD and other anxiety-related disorders (Joseph et al., 1997).

4.1.2 Cognitive Theories of PTSD

Lang (1977) and Horowitz (1979) helped to extend behavioural explanations of PTSD by incorporating information about cognitive structures and processes into theories of anxiety. Lang's (1977) bio-informational theory of fear directs attention to the meaning elements associated with stimuli and responses to fearful situations. Accordingly, anxiety originates from the development of a pathological fear-structure involving three

elements: 1) representations of trauma-related stimuli, 2) information about cognitive, behavioural and physiological responses, and 3) meanings, typically involving threat or danger, that link these stimulus and response elements (Foa & Kozak, 1986). Incoming stimuli that match elements represented in the fear-structure are considered to evoke the anxiety and reexperiencing symptoms of PTSD. The more matching cues and elements, the more a fear structure is evoked. Research shows, for example, that focusing on fear-associated stimuli evokes fear, but additional attendance to one's own physiological, cognitive and behavioural responses activates the fear-structure more fully, thereby strengthening fear responses (Lang, Kozak, Miller, Levin, & McLean, 1980). Therapeutic activation of the individual's fear-structure and modification of each fear-inducing element is expected to alleviate automatic stimulus-response associations (Foa & Kozak, 1986).

According to Horowitz's (1978) information processing theory, posttraumatic symptoms occur when traumatic events elicit information that is incompatible with existing cognitive schemata. Cognitive schemata are mental frameworks that encompass the brain's most abstract generalized knowledge structures, guiding and directing incoming knowledge and information (Janoff-Bulman, 1992). When a traumatic event is not compatible with existing cognitive schemata, revision of existing beliefs and knowledge is required to integrate the event successfully. To prevent exhaustion, which may impede such revision, inhibitive processes (i.e., avoidance and dissociation) and facilitative processes (i.e., intrusive reexperiencing) alternate until the traumatic memories are assimilated (Horowitz, 1978). When traumatic memories are eventually affirmed and integrated into existing schemata, much psychological distress is alleviated (van der Kolk & McFarlane, 1996). Traumatic memories that are not accepted and synthesized over time, however, become dissociated from normal memory systems and existing schemata. Because the memories are not 'stored away', they stimulate chronic replaying of the trauma in images, emotions, behaviours and physiological states, thereby establishing the pattern of reexperiencing, avoidance and physiological arousal typically found in PTSD sufferers (van der Kolk & McFarlane, 1996). Although Horowitz's theory has provided a worthy heuristic to explain acute posttraumatic adjustment, there is little known about the theory's application to chronic forms of PTSD in which the sufferer does not adjust successfully to the trauma (Gray, Maguen, & Litz, 2007). Evidence is still required to

support the idea that emotional numbing, avoidance and denial occur as a general periodic response to intrusions (e.g., Joseph et al., 1997). With chronic PTSD these symptoms are also suspected to play an ongoing role in preventing intrusive and hyperarousal symptoms from fully manifesting into consciousness.

Multirepresentational models of PTSD are also based on information-processing. Yet, these models are more comprehensive and can account for PTSD symptoms that manifest chronically. The schematic, propositional, analogue, and associative representational systems (SPAARS) model of general emotional experience accounts for a range of psychopathology, including PTSD (Power & Dalgleish, 1997).

According to the SPAARS model, events (i.e., episodic information) and associated properties of experience (i.e., semantic information) are represented in four general modes of mental representation. At the analogical level, information is stored nonverbally (i.e., visual, olfactory, auditory, gustatory, body-state and proprioceptive). At the propositional level, information is stored as thoughts and beliefs that can be expressed in language. The higher order schematic level encodes abstract, generic information that captures themes by processing intuitive and nonverbal information, in addition to explicit, verbal meanings. When a traumatic event occurs, the information is encoded at the various levels and the interplay between the three representational systems accounts for appraisal-driven generation of threat-related fear.

The SPAARS model defines two ways in which emotions are generated. The associative system representations help to produce the automatic, non-appraisal driven generation of emotion. In contrast, the interplay between the analogue, propositional and schematic levels drive the appraisal-driven generation of emotion. When a traumatic event occurs, the interplay between all three levels elicit threat-related appraisals that generate fear. Appraisal of threat occurs because critical goals such as personal survival and, more fundamentally, the maintenance of one's existing configuration of schematic models of how the world 'should be' are jeopardized. Such appraisals, which threaten the self and reality, produce the emotion of fear. Being highly discrepant to pre-existing schemata of the world, the information remains unintegrated. This generates ongoing reappraisals of the schema-incompatible data as the mind attempts to integrate the information, thereby

leading to the constellation of intrusion phenomena found in PTSD.

Not only do the reappraisals create a continuous existential state of 'being in danger' but cognitive processing bias occurs for information related to trauma. Environmental cues that remind of the trauma are likely to be selectively processed and will themselves activate trauma-related information in memory. Being encoded only superficially, the links between all aspects of the trauma memory are strong, so that external cues that activate one part of the trauma can result in activating the entire traumatic memory more easily, resulting in intrusive symptoms such as flashbacks and nightmares. The avoidance symptoms of PTSD manifest from attempts to both stop and prevent intrusive remembering and threat-related appraisals that generate fear and hyperarousal. It is suspected that emotional numbing occurs to inhibit the processing of fear that is persistently activated.

The SPAARS model of PTSD provides a useful heuristic for how PTSD symptoms are generated and portrays how avoidance delays the integration of trauma into pre-existing schemata resulting in chronic forms of PTSD. One area that the model neglects to mention, however, is specification of what occurs when the same threat-related appraisals occur repeatedly. The model treats the ongoing experiences of threat-related appraisals in PTSD as if they are unrelated and separately organized reactive occurrences. However, according to cognitive psychology, appraisals stem from cognitive frame-works or schemata that assist with the organization and interpretation of information (Janoff-Bulman, 1992).

The author proposes that traumatic events and associated intrusive memories repeatedly activate specific fear inducing cognitive-emotional schemata that confirm the self as severely powerless, unsafe and vulnerable. As subsequently discussed in this chapter, cognitive-processing biases and threat-related appraisals that are typical of PTSD are suspected to stem from these trauma schemata, existing alongside and competing with fundamental schemata of how the world 'should be'.

Despite this small shortcoming, the idea that reexperiencing and arousal symptoms of PTSD are based on the brain's difficulties with processing highly distressing and emotive

information has provided a useful heuristic for the application of cognitive-behavioural therapies in treating PTSD (e.g., prolonged exposure therapy; Foa & Kozak, 1986). Information-processing theories are compatible with emotional processing theories of PTSD.

4.1.3 Emotional Processing Theories of PTSD

Rachman's (1980) framework for understanding posttraumatic stress reactions describes intrusive reexperiencing and physiological arousal as a consequence of inadequate emotional processing. In order to prevent trauma-related cues from evoking intense emotional responses, past emotional reactions must be absorbed. Lack of emotional processing is related to factors such as uncontrollable dangerous stimuli, fatigue and neurotic personality. Factors that encourage emotional processing consist of predictable, controllable stimuli, a high sense of self-efficacy and a relaxed state.

Although Rachman's theory describes the characteristics associated with events that impede emotional processing and may, therefore, elicit PTSD symptomatology, it does not explain why symptoms specific to PTSD occur (Joseph et al., 1997). Foa and Kozak (1986) provide an emotional processing theory of PTSD that is more elaborate and better supported by research on trauma survivors.

Foa and Kozak (1986) applied and expanded Lang's (1977) bio-informational theory of fear to produce an emotional processing theory of PTSD in which deficient processing of fear responses generate symptoms. Additional attention was given to normal versus pathological fear-structures, and to discriminating elements of fear-structures for various anxiety disorders. In PTSD attempts to avoid any activation of the trauma-related fear-structure, either internally or externally, are proposed to cause avoidance and numbing. Based on this theory, Foa and Kozak state that emotional processing of fear requires two steps. Firstly, the fear-structure needs to be activated. Secondly, new cognitive and emotional material that is incompatible with existing fear-structure elements requires presentation so that new memories can be readily developed and integrated. Perspectives that focus more specifically on the 'meaning' elements of the fear-structure encompass social-cognitive theories of PTSD and are discussed in the following section.

4.1.4 Social-Cognitive Perspectives of PTSD

Traumatic memories that are dissociated from normal memory systems are thought to be stored as fragmented sensory elements at perceptual levels of information processing (e.g., visual images, somatic sensations), accompanied by intense levels of negative affect (van der Kolk, 1996b). The absence of associated linguistic or semantic components means that dissociated memories are without accompanying narratives, causing an inability for victims to talk coherently about the trauma. Over time, as victims acquire a deeper awareness of the trauma, the construction of a coherent narrative that gives meaning to traumatic experiences is established (van der Kolk, 1996a). Based on this information it seems that the initial lack of memory synthesisation and inability to formulate a clear, logical narrative of the trauma, is caused by a failure to accept or process the fundamental meanings associated with the traumatic experience: an idea compatible with social-cognitive theories of trauma.

Janoff-Bulman's (1992) social-cognitive Just World Theory of PTSD asserts that the inability to integrate information is caused by perceived trauma-associated meanings that shatter core positive beliefs about the victims' self-worth, and about the world as meaningful and benevolent. According to Just World Theory, the more incongruent the traumatic information is with existing beliefs about the self and the world, the greater distress and subsequent trauma-related symptoms experienced. Although research findings reveal that trauma victims possess high levels of shattered 'just-world' assumptions when compared to non-victims (Janoff-Bulman, 1992), some inconsistencies do exist with Just World Theory. Researchers have noted that individuals with the worst trauma-symptoms (e.g., meeting full PTSD diagnostic criteria) are often individuals with prior trauma-histories whose assumptions were already shattered before the trauma (e.g., Nishith, Mechanic, & Resick, 2000). If schema-congruent rather than schema-incongruent information is related to high levels of posttraumatic symptoms, then the proposition that PTSD symptoms relate to the extent of 'shattered' beliefs cannot be supported (Resick, 2001). Another general limitation of Just World Theory involves the strong focus on the impact of trauma on beliefs, and the neglect of clinical issues surrounding factors involved in the development of specific PTSD symptoms (Cahill & Foa, 2007). For example, the theory does not account for differences among individuals

in posttraumatic-stress reactions. Some, but not all trauma survivors develop PTSD, and different traumas vary in their likelihood of producing PTSD (Kessler et al., 1995).

The following section introduces Trauma-Schema Theory, a theory that over-comes the theoretical inconsistencies and limitations referred to above. How *trauma-schemata* fit in with existing theories on traumatic-stress to form the crux of a theoretical framework on PTSD is also discussed.

4.2 Trauma-Schema Theory

4.2.1 Trauma-Schema Theory and PTSD

In line with information processing, emotional processing and social-cognitive theories of PTSD, it is conceivable that the perceived fundamental meanings elicited by trauma evoke severe emotional distress alongside an inability to process and integrate the material successfully. However, in opposition to the key ideas of the social-cognitive Just-World Theory of PTSD (Janoff-Bulman, 1992), it is argued that traumatic events do not 'shatter' or refute positive world assumptions held by the victim. Instead, traumatic events are theorized to reinforce and strengthen fear-inducing beliefs that humans are unsafe, vulnerable and powerless in preventing severe threat from occurring to the self. In the context of Trauma-Schema Theory, such beliefs stem from *trauma-schemata*: cognitive-emotional knowledge structures that guide both incoming data (Janoff-Bulman, 1993) and the experience and expression of emotions (Jenkins, Oatley, & Stein, 1998). Schemata are defined as stable, generic belief structures that are developed over time to assist with the processing and categorization of information (Riso & McBride, 2007). Although schemata are dimensional rather than categorical, the term is often used in the literature interchangeably with 'core beliefs', with little or no distinction between the two (Riso & McBride, 2007).

The development of trauma-schemata are thought to begin in childhood as a consequence of early trauma, including insecure attachment with primary caregivers. Although the period of childhood is critical in trauma-schema development, experiences

during any stage of life that trigger an overwhelming sense of threat, vulnerability and powerlessness can initiate their establishment. People confront information every day that emphasize their powerlessness and vulnerability against uncontrollable sources of threat and danger, but most maintain an illusion of safety that prevents anxiety and assists with daily functioning (Janoff-Bulman, 1992). When trauma-schemata are continuously reinforced, however, they take on a life of their own, overpowering schemata that reinforce one's general sense of safety in the world. When this happens, traumatisation occurs.

The idea of trauma-schemata as fundamental to traumatisation can be incorporated into a generalized framework with other theories of PTSD to elucidate how acute, chronic or delayed traumatic-stress reactions occur. As discussed in Chapter One, most agree that the defining characteristic of a 'traumatic' event is incorporated in its perceived meaning. In Trauma-Schema Theory, it is active trauma-schemata that are proposed to generate beliefs and perceptions that are founded in traumatic meaning. The triggering of trauma-schemata enforces an overwhelming sense of vulnerability and powerlessness, making the event too shocking to accept and process normally. Consequently, memories of the trauma are compartmentalized away from regular memory systems, into a dissociated memory store, an idea endorsed by Information Processing Theory (van der Kolk & McFarlane, 1996). Remaining unprocessed, the traumatic memories are stored as raw, fragmented components of sensory and emotional experiences. When the traumatic memory fragments are activated by internal and external cues, they trigger trauma-schemata into full consciousness. The activation of aspects of the trauma memory forms the basis of the reexperiencing symptoms of PTSD. Responses of anxiety and fear become conditioned to the previously neutral fear-eliciting stimuli, as supported by classical-learning theory (Mowrer, 1947). Subsequent employment of behavioural, emotional and psychological avoidance, as a way to prevent or alleviate anxiety and traumatic reexperiencing, become reinforced through operant conditioning.

As conditioned fear responses become more entrenched, the pathological fear-structure, as proposed by Foa and Kozak (1986), is reinforced and strengthened. The meanings that link both representations of trauma-related stimuli and information about fear responses within the fear structure come from trauma-schemata. The activated trauma-

schemata create heightened sensitivity of the fear-structure by affecting the subsequent processing of information through the selective attendance of data that are perceived as highly threatening. This heightened sensitivity of the fear-structure maintains anxiety and arousal while encouraging avoidance and impeding the cognitive processing of the traumatic memory.

The traumatic memories, therefore, remain dissociated from normal memory, but continue to replay in images, feelings, behaviours and physiological states, generating the cycle of reexperiencing, avoidance and hyperarousal typically associated with PTSD. Cognitive-behavioural treatments of PTSD aim to reduce symptoms by facilitating the processing of the raw, incoherent and dissociated memory fragments through activating the fear memory and providing opportunities for the integration of corrective information (Rothbaum & Foa, 1996). Exposure procedures that activate the pathological fear-structure through repeated reliving of trauma memories not only assist narrative formation, but also result in habituation over time, so that intense fear responses cease (Foa & Kozak, 1986). Other changes within the fear-structure, along with habituation of fear, lends support to the idea that fear activation during treatment promotes successful outcomes (Brom, Kleber, & Defares, 1989; Foa, Riggs, Massie, & Yarczower, 1993). For example, research suggests that the meaning element of the fear-structure is also corrected, because the emotional processing and storage of the traumatic event into normal memory permits re-evaluation of attached meaning representations (Foa & Riggs, 1993). The associated meanings of danger and threat can be distinguished as distinct from the traumatic experiences, rather than a portrayal of the world as a whole (Foa & Riggs, 1993).

Trauma-Schema Theory proposes that when an individual can make a realistic distinction between danger and safety, trauma-schemata that once permeated conscious awareness are overridden by safety-schemata which embrace a general sense of control, safety and invulnerability. As this occurs, trauma-schemata become less influential, or even dormant, promoting recovery from PTSD symptoms. However, dormancy is not equivalent to non-existence. It is proposed that trauma-schemata are susceptible to being reactivated throughout life by other distressing experiences, particularly events and situations that match their emotional and informational contents. So, although

predominantly inactive and underdeveloped in the average person, over the lifetime trauma-schemata oscillate between being the dominant framework for interpreting and processing information to being a dormant cognitive structure that has little influence. Individuals are assumed to vary in their subsequent risk for traumatisation based on how sensitive their trauma-schemata are. This depends on the varied constellation of risk factors evident for each individual, including the resolution of past trauma. The risk factors discussed next are thought to cause highly sensitive trauma-schemata by lowering their threshold for subsequent activation.

4.2.2 Risk Factors for PTSD and Trauma-Schemata

An important question challenging the conceptual origins of PTSD as manifesting directly from traumatic events is why PTSD only develops in some survivors of trauma (McFarlane & Yehuda, 1996). Trauma-Schema Theory assists with this explanation by linking together the diverse range of pre-trauma, peri-trauma and post-trauma risk factors identified as increasing the likelihood of PTSD. Pre-trauma risk factors, evident prior to trauma, include variables such as a history of trauma (Zaidi & Foy, 1994), adverse family environment (Davidson, Hughes, Blazer, & George, 1991) and a personal history of psychiatric problems (Breslau & Davis, 1987; Helzer et al., 1987). Peri-trauma risk factors, apparent during the trauma, include variables such as serious injury during trauma (Kilpatrick, Saunders, Amick-McMullan, et al., 1989), and 'mental defeat', or giving up all autonomy, will power and sense of identity while accepting or willing death (Ehlers, Clark, Dunmore, et al., 1998). Post-trauma risk factors, evident after the traumatic event, include variables such as inadequate social support (Davidson et al., 1991), internal, global and stable attributional style and self-blame (McCormick, Taber, & Kruedelbach, 1989; Resick & Schnicke, 1992). Although far from exhaustive, the above list presents an example of the types of variables that research has found associated with posttraumatic-stress.

Nevertheless, Kraemer, Kazdin, Offord, and colleagues (1997) argue that most risk factors cannot be appropriately categorized as such because they are identified in studies with cross-sectional designs. Furthermore, if temporal procedure can be demonstrated, as with longitudinal studies, the true causal mechanism underlying the association still

requires deciphering. However, Trauma-Schema Theory attempts to explain the causal mechanisms that link 'risk' and 'protective' factors with PTSD symptomatology, by presenting trauma-schemata as the key mediating factor.

Trauma-Schema Theory proposes that all risk factor variables associated with PTSD have one thing in common: each assists with the development, reinforcement and triggering of trauma-schemata into consciousness. Active trauma-schemata subsequently maintain fear-inducing beliefs that threaten one's core sense of safety, control and invulnerability. With the introduction of schema theory in cognitive psychology, Bartlett (1958) proposed that all new information and even later memories of events is affected and distorted by cognitive schemata. Trauma-Schema Theory maintains that the activation of trauma-schemata established from prior trauma causes information processing distortions, including the selective processing of data considered to threaten one's overall sense of safety and control.

Research on vulnerability and resilience to posttraumatic illness often highlight the significance of previous experience, traumatic context and posttraumatic environment on psychological responses to trauma (see Resick, 2001); and some research claims that virtually any experience can create a traumatic impact given the appropriate context and necessary priming experience (Speckhard, 1997). Trauma-Schema Theory explains that whether a person is resilient or vulnerable to traumatic stress after trauma, is due to the nature of core safety beliefs and emotions surrounding the combination of risk or protective factors experienced. While some factors may disconfirm traumatic beliefs and protect against the firm establishment or activation of trauma-schemata (e.g., stable family upbringing, adequate social support), other factors may help to generate and reinforce traumatic beliefs (e.g., previous psychiatric history, isolation, further trauma or stress). In the present research, late-life stressors are predicted to be a major risk factor for traumatic stress in older people. As discussed next, Trauma-Schema Theory provides explanations for how and why PTSD symptoms may be elicited during the aging process.

4.2.3 Trauma-Schema Theory and Aging

Trauma-schema theory incorporates two fundamental aspects of posttraumatic dysfunction. The first involves the elicitation of trauma-schemata: core belief structures that affect information processing and generate perceptions of danger, vulnerability and powerlessness. The establishment of trauma-schemata are associated with dissociated, unprocessed traumatic memories containing fragmented sensory and emotional information that is readily triggered into consciousness. Active trauma-schemata are hypothesized to generate the intrusive-avoidant-anxiety symptoms of PTSD by re-triggering past trauma into awareness and causing ongoing threat-related appraisals of new information. As immediate stimuli is interpreted as threatening, the disorder is perpetuated and maintained by the generation of threat and fear towards present-day information.

The second aspect of posttraumatic dysfunction in Trauma-Schema Theory involves the temporary loss in self-coherence and continuity of the sense-of-self that occurs when trauma-schemata are operating. The activation of trauma-schemata creates a temporary loss in self-coherence as the overwhelming perceptions of threat and emotions of fear disrupt the continuity of life from one day to the next. The break is caused by a disruption in the every-day processing of information, which changes to the selective processing of any features of incoming data that are perceived as highly threatening and fear inducing. This switch to 'survival mode' in response to active trauma-schemata is considered to be responsible for a lack of identity continuity, as life-episodes remain disorganized in relation to the self. A narrated, continuous life-story represents the core person and is self-representational and self-defining (Hyer & Sohnle, 2001). A disorganized narrative, due to the past and present activation of trauma-schemata, is alleged to trigger posttraumatic symptoms relating to negative perceptions of the self such as low self-esteem and depression.

These major themes of Trauma-Schema Theory seem particularly relevant to older people. Due to negative attitudes and stigma associated with acknowledging and seeking help for psychiatric problems, today's older adults have a history of under-using mental health services (Cook & Niederehe, 2007). Many older adults, therefore, may

4.3 Objectives of the Present Study

The objectives of the present study were generated to understand more about the manifestation of PTSD and physical health problems during later life in relation to lifetime trauma history and past-year stressful and traumatic events.

Time 1 (T1) data taken from the cross-sectional data group (N = 1489) provided a snapshot overview of the accumulative effects of lifetime trauma on PTSD and how recent late-life stressors impact on this relationship. Assessment of traumatic beliefs as mediating the relationship between event variables (lifetime trauma and recent stressors) and PTSD symptoms tested the ideas behind Trauma-Schema Theory as a viable framework of PTSD during later life. The relationship between current physical health and accumulative lifetime trauma was also assessed, in addition to the potential influences of recent stressors and current PTSD symptoms on physical health.

Data from the longitudinal data group (N = 1050) at Time 2 (T2) were also analysed to determine temporal changes in PTSD symptoms over one year in relation to recent traumatic and stressful events. Assessing if traumatic beliefs predicted increased PTSD symptoms over one year tested some of the main ideas of Trauma-Schema Theory. Physical health data were also assessed from T1 to T2 in relation to PTSD symptom levels and recent events (i.e., traumas or stressors) to ascertain the importance of incorporating physical health into a trauma-model for older people. The objectives were as follows:

Objective 1: To describe the quantity and nature of lifetime traumatic events and past-year traumatic events reported by the sample of older adults, including socio-demographic differences in the types of traumas experienced.

Objective 2: To describe the quantity and nature of late-life past year stressors reported by the older sample, including socio-demographic differences in the types of recent stressors experienced.

Objective 3: To identify the types of symptoms (from the measures of depression, PTSD, dissociation and anxiety) that are best fitted to represent 'trauma-related symptoms' during later life.

Objective 4: To determine the number who meet full- and subclinical-PTSD diagnostic criteria within the study's samples and to ascertain how PTSD presents during later life as a clinical disorder.

Objective 5: To determine the current- and pre-diagnostic variables that predict PTSD as a clinical disorder during later life.

Objective 6: To test some general predictions about Trauma-Schema Theory with multiple regression analyses. Predictions account for the extent that lifetime trauma, recent trauma, past-year stressors and traumatic beliefs impact on PTSD symptoms during later life.

Objective 7: To determine the cumulative effects of lifetime trauma, and the immediate impact of recent trauma, on physical health status during later life.

4.4 Chapter Summary

Chapter Four outlined existing theories of PTSD and introduced Trauma-Schema Theory, an integrated framework of traumatic-stress that builds on cognitive and behavioural theories of PTSD. Trauma-Schema Theory maintains that trauma-schemata are fundamental to the elicitation and maintenance of PTSD symptomatology.

By using the trauma-schema concept to link together the myriad of variables associated with both vulnerability and resiliency to PTSD, Trauma-Schema Theory helps to explain why there is so much variability in posttraumatic responses among people. The theory seems particularly relevant to older people who not only encounter a range of distressing age-related stressors, but may also possess unresolved traumatic memories that guide psychological stress reactions. Posttraumatic illness during later life is proposed to

depend on the strength of trauma-schemata brought into later adulthood and the number of associated variables that encourage their reinforcement. Trauma-Schema Theory also helps with explaining delayed PTSD, the waxing and waning of PTSD symptoms in chronic PTSD sufferers, and posttraumatic-stress in reaction to normative late-life events.

Seven objectives of the present research were outlined. A primary aim was to ascertain whether Trauma-Schema Theory is a potentially viable theoretical model that can help to explain the variance of traumatic-stress responses in older adults. Other aims include determining how PTSD presents during later life, the cumulative effects of lifetime trauma on psychological and physical health and the extent that recent trauma and past-year stressors impact on psychological and physical well-being. Methodology for the present study is detailed next in Chapter Five.

Chapter Five

METHOD

This chapter describes the methods used to achieve the objectives of the present study. Data were obtained from self-report questionnaires completed by individuals aged 60 years or older living within the community and in residential homes. Both cross-sectional and longitudinal designs were used. Baseline data gained from Time 1 (T1) provided measures of current psychological and physical well-being, current trauma-related beliefs and perceptions, trauma history and recent traumatic and stressful experiences. T1 data were used for cross-sectional analyses of the above variables and to gather baseline data of psychological and physical well-being for longitudinal investigations. One year later at Time 2 (T2), individuals from the original sample were asked to complete a second questionnaire and reassessed on the same measures of psychological and physical well-being, current trauma-related perceptions and past-year traumatic and stressful experiences. The impact of recent traumatic events and stressful experiences on trauma-related perceptions, psychological symptomatology and physical well-being were determined through analyses of data from both times. Following are descriptions of the research design, data collection procedures, participant recruitment, questionnaires and measures used for the study. Ethical issues concerning the rights of participants in relation to the investigative procedures are also discussed.

5.1 Research Design

Most investigations into the impact of stress and trauma during later life employ a cross-sectional design. The chief limitation of cross-sectional studies, however, is that the information gathered falls short of sufficiently conveying the impact of experiences over time. A single snapshot in time does not accurately depict the continuous temporal story (Summers & Hyer, 1994).

Furthermore, while adverse responses are often associated with negative life events, resiliency may be evident and posttraumatic growth may even occur (Calhoun & Tedeschi, 2000; Carlier & Gersons, 2000). While studies often focus on the negative effects of trauma, they typically neglect to capture potential resilience during later life and factors associated with such hardiness. A longitudinal design allows baseline data from a group of older adults to be compared to information obtained from the same group after one year of experiences. Without baseline measures of physical and mental health, post-event measures may inaccurately portray the effects of late-life events, by either amplifying or underestimating their influences. Evaluating variations in psychological and physical health across time in relation to adverse late-life events provides a reasonable indication of the immediate impact of such events on well-being.

Consequently, a cross-sectional/longitudinal design was chosen for the current study. The information gathered at T1 was assessed with cross-sectional data analyses. The decision to perform cross-sectional data analyses on T1 data was based on time-management. As a longitudinal study, the time that lapsed from T1 to T2 was utilized with the statistical assessment of the T1 data-set. The information gathered at T2 was analysed in relation to T1 data to investigate the short-term impact of life-events on PTSD, trauma-related beliefs and physical health.

5.2 Pilot Study

Questionnaires were chosen as the most cost-effective and time-efficient option for gathering data for this nationwide study. A pilot study involving 15 participants was conducted to gain feedback about the questionnaire. The pilot study ensured that instructions and questions were comprehensible, easy to follow, non-offensive and appeared appropriate to the research goals. Another aim of the pilot study was to determine if the array of stressors listed in the stressor inventory was appropriate and sufficiently covered the range of events encountered during later life. Finally, participants stated how long it took to complete the questionnaire and were asked to note problems or comment on anything else in relation to the questionnaire.

5.3 Participants

There were 1489 participants at T1 and 1050 participants at T2. All respondents were members of the community or residents of retirement homes who volunteered to partake in the study by responding to one of the forms of advertising used. Participants were required to be at least 60 years of age and capable of understanding and answering questions about themselves and their life-history. Physical incapacity that limited reading or writing ability (e.g., visual impairment, restricted co-ordination, or limited movement) did not mean automatic exclusion. The Information Sheet (see Appendix A-1) encouraged participants to ask a physically capable person to assist with completing the questionnaire. The majority of participants lived in Christchurch, Palmerston North and Auckland because the bulk of advertising in community newspapers was distributed in these city centres. T1 participants ranged in age from 60-96 years and had a mean age of 71.9 years (SD = 7.55). Just over two-thirds of the sample were female (N =1027) and just under one-third was male (N = 330). T2 participants ranged in age from 60-94 years and had a mean age of 72.5 years (SD = 7.21). Again, the T2 sample consisted of just over twice as many females (N = 720) as males (N = 330).

5.4 Questionnaires

Questionnaire One (Q1; see Appendix A-2) was distributed at T1 and obtained data for cross-sectional analyses and baseline data for longitudinal investigation. Q1 requested socio-demographic details on age, gender, marital-status, ethnicity and educational qualifications. Lifetime trauma was evaluated with the Trauma Exposure Inventory (TEI) which combined items from two existing measures: the Traumatic Events Questionnaire (Vrana & Lauterbach, 1994) and the Trauma Checklist (Krause et al., 2004). Recent past-year stressors were assessed with the Recent Stressors Questionnaire (RSQ). The RSQ lists common events experienced during later life and was adopted from a number of inventories, in addition to suggestions by participants who took part in the pilot study. Trauma-related symptomatology was assessed with the PTSD Checklist Civilian (PCL-C) (Weathers, Litz, Herman, Huska, & Keane, 1993), the Geriatric Depression Scale - Short Form (GDS - SF; Sheikh & Yesavage, 1986), the

Curious Experiences Survey - Short Form (CES - SF; Goldberg, 1999) and the Stanford Acute Stress Reaction Questionnaire - Anxiety Scale (Cardeña, Koopman, Classen, Waelde, & Spiegel, 2000). Physical health was assessed with a self-rated physical health question (Idler & Kasl, 1991). Functional ability was measured with Wolinsky and Johnson's (1991) 21-item Activities of Daily Living (ADL) Scale, made up from items of two existing scales: Katz, Ford, Moskowitz, Jackson, and Jaffe's (1963) ADL scale and Nagi's (1976) disability scale. Chronic physical conditions were measured with a checklist. This was an amended version of Belloc, Breslow, and Hochstim's (1971) inventory used in Flett and colleagues' (2002) community survey of trauma. Trauma-related beliefs incorporated assessment of posttraumatic vulnerability perceptions assessed with the Schillace Post-Traumatic Vulnerability Scale (Schillace, 1994) and assessment of control beliefs with Pearlin's Mastery Scale (Pearlin, Lieberman, Menaghan, & Mullan, 1981). The measures were placed in order from least to most emotionally demanding with demographics, physical health and functional assessments first; and trauma-related beliefs, recent stressors and trauma history last.

Attached to Q1 was an Information Sheet (see Appendix A-1) containing details of the study and contact details for the researcher. Also affixed was a form for participants to request a copy of the results and give consent for the next questionnaire to be sent in 12-months time (see Appendix A-3). Due to the sensitive nature of some questions about past trauma, a List of Services (see Appendix A-4) which contained names and numbers of places to contact in case participants required emotional support or psychological help was included.

Twelve months after distribution of Q1, participants were sent a cover letter reminding participants about the research (see Appendix B-1), an Information Sheet (see Appendix B-2) and a copy of Questionnaire Two (Q2: see Appendix B-3). The items in Q2 were similar to those in Q1, except that measures of trauma were only of events transpiring within the previous year. The same List of Services (see Appendix A-4) was attached. Participants had the opportunity to request a copy of results for the longitudinal data and give consent for being sent another questionnaire, if the study was to continue beyond the present thesis (see Appendix B-4).

5.4.1 Measurement of Traumatic and Stressful Events

The Traumatic Events Inventory (TEI)

The researcher established the TEI for the purposes of the study to investigate lifetime trauma exposure. The TEI is a 24-item checklist combining items from the Traumatic Events Questionnaire (Vrana & Lauterbach, 1994) and items from a measure of traumatic exposure used in a study by Krause and colleagues (2004) which concerned the impact of trauma on the health of older adults.

Past traumatic exposure can be indexed in two ways. All positive responses to trauma can be summed to obtain an aggregate measure of traumatic events. Alternatively, all responses referring to degree of injury, life threat and distress for each event can be summed to obtain a gauge of trauma severity. Both of these methods of indexing exposure to events have received criticism. Aggregate measures have been criticized as not fully encapsulating all aspects of the traumatic experience (Vrana & Lauterbach, 1994). Measures that scale the distress factor of traumatic events have been labelled as uninformative, described as adding nothing valuable to the outcome of research efforts (Shrout, 1981; Stephens, 1996). Since the use of weights that index the severity of events are controversial (Zautra, Affleck, & Tennen, 1994), follow-on items for each event referring to extent of injury, life-threat and distress, as used in Vrana and Lauterbach's (1994) research, were removed for the present study. Follow-on items referring to the *number of times* and the *age/s* that each event was encountered were maintained.

The TEI assessed the following lifetime traumatic events: Death of a spouse or child; divorce; combat; severe accident or fire; major natural disaster; childhood sexual- and physical-abuse; cast away from family during childhood; parental abuse of alcohol or drugs; loss of a parent or caregiver as a child; physically and emotionally abusive relationships during adulthood; traumatic sexual experiences as an adult; violent crime; viewing the serious injury, mutilation or violent death of another person; life-threatening illness of self, child and spouse; and the near-fatal accident or injury of one's self, child and spouse. In addition was a request for specification of other traumatic events experienced that were not listed. Respondents circled *YES* or *NO* in relation to having

personally encountered each event and noted the frequency and age/s of occurrence.

Trauma scores were calculated using various methods to account for aspects of the trauma experience. The number of events experienced during life was summed to provide a simple score for lifetime trauma exposure (LIFE.TRMA). To weight the contribution of an event experienced more than once, the number of times the same event occurred was accounted for and those scores were added to provide a score for lifetime multiple trauma (LIFE.MTRMA). The LIFE.MTRMA variable included calculation of any events experienced more than once in addition to prolonged trauma from childhood ongoing sexual and physical abuse, parental abuse of alcohol and drugs and involvement in emotionally or physically abusive relationships during adulthood. A lifetime abusive trauma variable (LIFE.ABUSE) was also calculated. Exposure to childhood sexual and physical abuse, and adulthood sexual, physical and emotional abuse was summed.

Trauma scores for five developmental age groups were determined: 11 years or younger, 12-17 years, 18-30 years, 31-60 years and 61 years or older. Age-specific trauma scores were established by summing the total number of traumatic events reported during each age-period. The developmental groups were chosen to replicate those studied by Krause and colleagues (2004) who justified each developmental stage through theory and research. The only difference was that the early childhood group of 0-11 years combined two of the groups classified in Krause and colleagues' study (i.e., preschool years, early childhood years). For the present study it was deemed unnecessary to split childhood into two groups since memories before five years of age may be vague. The emergence of puberty and final years of residing in the parents' home embraces ages 12-17, while young adulthood with increasing responsibilities involving career and family incorporates ages 18-30. A rationale for the cut-off point at 30 years is that by this age most personality development ceases (McCrae & Costa, 2003); thus, trauma should be easier to observe before the establishment of the adult character (Krause et al., 2004). Also, research has indicated that lifetime memories experienced between 18 and 30 years are remembered more clearly, and are considered more important, than memories during other times (Rubin, Rahhal, & Poon, 1998).

The number of traumatic events experienced over the past year was ascertained at T2 and summed to provide a recent trauma score (REC.TRMA T2). The multiple trauma variable (REC.MTRMA T2) included any event that was encountered more than once in the year and ongoing traumas such as physically and emotionally abusive relationships. Recent abusive trauma (REC.ABUSE T2) was calculated by summing each report of physical, sexual and emotional abuse during the past year.

Five additional questions referring to traumatic experiences were included. The first determined perceptions of the worst trauma experienced: *What was your worst traumatic experience?* The other four questions referred to personal disclosure of traumatic experiences to friends, family and health professionals.

Validity and reliability of the TEI used in the current study has not been established. However, Vrana and Lauterbach's (1994) Traumatic Events Questionnaire (TEQ), which is incorporated into the TEI, has shown promising validity. A study of 440 college students revealed that participants who reported at least one traumatic event experienced significantly more depression, anxiety and PTSD when compared to those who reported no trauma exposure (Vrana & Lauterbach, 1994). The same study demonstrated that the number of traumatic events reported in the TEQ predicted severity of depression, anxiety and PTSD. Reliability of the TEQ was not established.

Trauma Disclosure

Four questions at the end of the TEI refer to the degree that participants have talked about and reflected on experienced trauma. At T1 the disclosure questions referred to lifetime trauma. At T2 the disclosure questions referred to recent past-year trauma. Respondents answered each item on a 4-point scale. Each item was summed to ascertain a total trauma disclosure score (TRMA.DISC T1/T2). Scores ranged from 0 to 12.

The Recent Stressors Questionnaire (RSQ)

The RSQ is a 14-item tool developed for the purposes of the present study to measure stressful events commonly experienced during later life. Development of the questionnaire involved reviewing a number of life-event inventories both general and specific to later life and incorporating the most commonly reported domains. These

were the Daily Life Events and Difficulties Schedule (Brown & Harris, 1978); Louisville Older Persons Scale (Norris & Stanley, 1984); PERI Life Events Scale (Dohrenwend, Krasnoff, & Askenasy, 1978), Recent Life Changes Questionnaire (Rahe, 1975), Research Inventory of Major and Small Events for Older Adults (Zautra et al., 1994), and the UCSF Life Events Questionnaire (Sarason, Johnson, & Siegel, 1978; Norbeck, 1984).

Items in the RSQ contain the following stressors: eye-sight and/or hearing problems, serious physical health problems, hospitalisation, problems with independent functioning, problems with marriage or de facto relationships, conflict with close family members or friends, changes in residence, retirement of self or partner, close family member or friend with serious health problems, death of a loved one, unresolved grief from a death occurring over a year ago, drastic changes in physical appearance, financial difficulties, serious concern for the physical or psychological welfare of children or grandchildren and care-giving stress. The measure concludes with a residual category, which asked for details of any other additional past-year stressors.

For each participant every reported stressor was summed to provide a recent stressor score for T1 and T2 (REC.STRSSR T1/T2). Each event was also scored on the degree of distress it caused (DISTRSS T1/T2). Use of subjective assessments when measuring stressful events is controversial (Zautra et al., 1994). However, different stressors may create varying levels of emotional upheaval in each participant and some may not be perceived as stressful at all. Although stressors are defined as problems, hardships and changes that adversely affect well-being (Pearlin & Skaff, 1995), older adults may welcome some late-life experiences (e.g., retirement). The RSQ, therefore, incorporated a subjective measure regarding the degree of distress experienced for each stressor listed. For each item, respondents circled *YES* or *NO* if they had experienced the stressor in the past year and marked one of four statements regarding associated distress: *No Distress, A Little Distress, Some Distress* and *Lots of Distress.*

Recent Stressor Disclosure

Four questions at the end of the RSQ refer to the degree that participants have talked about and reflected on recent stressors experienced in the most recent 12-month period. Respondents answered each item on a 4-point scale. Items were summed to ascertain a total stressor disclosure score (STRSS DISC T1/T2). Scores ranged from 0 to 12.

5.4.2 Measurement of Psychological Symptoms

The PTSD Checklist Civilian (PCL-C)

PTSD symptoms were measured with the PCL-C. The PCL-C was chosen because of efficiency of administration with a mean completion time of five minutes (Ruggiero, Ben, Scotti, & Rabalais, 2003), as well as having promising estimates of diagnostic sensitivity and specificity for PTSD (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Forbes, Creamer, & Biddle, 2001; Weathers et al., 1993). The PCL-C also measures PTSD symptoms with reference to any past trauma, rather than a specific recently encountered trauma. This was fitting in light of the research goals, which involved determining the impact of trauma that may have been encountered many years ago.

The PCL-C is a 17-item scale that measures reexperiencing, avoidance and hyperarousal symptoms of PTSD. Participants rate statements on a 5-point scale (1 = *not at all*; 5 = *often*) referring to the frequency that each symptom has been experienced during the last month. For additional information about situations that may trigger or exacerbate posttraumatic symptoms during later life, an item was added: *Is there a recent event/situation that may have triggered the above problems?*

PTSD scores were calculated both continuously and dichotomously. Total continuous scores ranged from 17 to 85 (PTSD T1/T2) with higher totals signifying more severe PTSD symptomatology. Continuous scoring was also used to determine symptom clusters of reexperiencing (REEXP T1/T2), avoidance (AVOID T1/T2) and hyperarousal (HYPER T1/T2). Because items in the PCL-C parallel diagnostic criteria

B, C and D for PTSD as outlined in the DSM-IV (APA, 1994)[1], dichotomous scoring was used to determine the presence or absence of symptoms and to decipher if criteria for PTSD were met. The scoring method used was based on research by Blanchard and colleagues (1996) showing that diagnostic efficiency is optimal when some symptoms are counted as present with a minimum score of four (i.e., items 1, 2, 9, 10, 12 and 15), and the rest of the items are judged as present with a minimum score of three. A PTSD diagnosis (PTSD.DIAG T1/T2) was given when at least one re-experiencing, three avoidance and two hyperarousal symptoms were counted as present. Stein and colleagues (1997) found that participants who met subclinical PTSD criteria via a DSM-IV PTSD checklist, exhibited clinically meaningful levels of functional impairment in association with their symptoms. This research validates the decision to include a measurement of subthreshold PTSD in the present study. Although increasingly included in PTSD literature, definitions for subthreshold PTSD have been inconsistent. The number of symptoms and extent of impairment are considered the main criteria for defining a subthreshold anxiety disorder (Angst, 1997). Deemed as much stricter guidelines than some (Summers & Hyer, 1994), subthreshold PTSD (PTSD.SUB T1/T2) was classified in the present study when respondents had at least one symptom in each of the three PTSD symptom clusters (reexperiencing, avoidance and hyperarousal). It is important to note, however, that Criterion A (the traumatic stressor criterion) was not included because the cumulative impact of lifetime trauma, in addition to the effects of recent stressors, were also considered to be stressful. This classification system has been used successfully in a number of studies using various other measures (e.g., Stein et al., 1997; Vila, Porche, & Mouren-Simeoni, 1999).

Psychometric properties of the PCL are excellent. The PCL reflects high internal consistency with studies of Vietnam and Persian Gulf veterans, vehicle accident victims and survivors of sexual assault (r = .94 - .97) (Blanchard et al., 1996; Weathers et al., 1993). Test-retest reliability for Vietnam veterans over two to three days was .96 (Weathers et al., 1993), and for college students .88 over one week and .68 over two weeks (Ruggiero et al., 2003). In the present study, Cronbach's Alpha was .90 for the

[1] DSM-IV criteria for PTSD are outlined in Table 1, Chapter One.

PCL-C scale and .86, .80 and .70, respectively, for the reexperiencing, avoidance and hyperarousal subscales.

The PCL displays excellent validity. High correlations were calculated between the PCL and the Clinician Administered PTSD Scale (CAPS) in a study involving vehicle accident victims and survivors of sexual assault (r = .93) (Blanchard et al., 1996). Forbes and colleagues (2001) revealed lower, yet significant, correlations between the PCL and CAPS than Blanchard and colleagues (1996). However, high diagnostic accuracy was shown. Significant correlations of the PCL with two well-established measures of PTSD (i.e., Impact of Events Scale and the Mississippi Scale for PTSD Civilian version) were determined in a study of 392 college students (r = .75) (Ruggiero et al., 2003). The military version of the PCL (PCL-M) was significantly correlated with other measures of PTSD (r = .77 - .93) and a measure of combat exposure (r = .46) in a Vietnam veteran sample (Weathers et al., 1993).

The Geriatric Depression Scale - Short Form (GDS-10)

The presence of depressive symptomatology was measured with the GDS-10 (D'Ath, Katona, Mullan, Evans, & Katona, 1994), which is a condensed version of the original 30-item measure (GDS-30; Yesavage, Brink, Rose, et al., 1983). Other forms of the GDS include the 15-item and 4-item scales (see Scogin, Rohen, & Bailey, 1999). The GDS assesses mood and behavioural changes caused by depression, and excludes measurement of physical or somatic symptoms, thereby reducing the risk of misinterpreting symptoms caused by physical illness. The GDS and accompanying short-form versions are, therefore, considered excellent choices for assessing depression in older adults (Yesavage et al., 1983)

The GDS-10 contains 10 screening questions that indicate the possibility of depression. For example, '*Are you basically satisfied with your life?*' and '*Do you feel your life is empty?*'. Participants are asked to circle *YES* or *NO* for each statement referring to how they are at the present time. Scoring of the GDS involves assigning a value of 1 for all *YES* responses and summing the scores to give an overall depression score (DEP T1/T2). The potential scoring range is 0 - 10 with higher scores portraying increased levels of depressive symptomatology.

Psychometric properties of the GDS-10 are promising. The test has proved to be as effective as the longer form in detecting depression among older people (Chattat, Ellena, & Cucinotta, 2001). Furthermore, the GDS-10 significantly correlates with the GDS-30, which has excellent validity and reliability and has been extensively used to accurately detect depression among older people suffering from mild to moderate dementia and physical illness (Sheikh & Yesavage, 1986). Populations in which significant correlations between GDS-10 and GDS-30 have been found include geriatric male veterans (Aikman & Oehlert, 2001) and older people living within the community (Chattat et al., 2001). Internal consistency of the scale in the current study was good with a Cronbach's alpha of .78.

The Curious Experiences Survey - Short Form (CES - SF)

Dissociative symptoms were measured with the CES-SF. Developed by Goldberg (1999), the CES and CES-SF are newly revised measures of dissociation, originating from the widely used Dissociative Experiences Scale (DES) (Bernstein & Putnam, 1986). As compared to the DES, the CES has a more user-friendly item and response format, takes less time to complete, is more reliable and has been shown to be unrelated to gender, educational level, intelligence, vocational interests and skills (Goldberg, 1999). These factors made it appealing for use with an older population in the current study.

The CES-SF is a 17-item scale that includes three subscales of dissociation: depersonalization (sense of separation from the self), absorption (retreating into a fantasy world) and amnesia (memory disturbances). As a shortened version of the original CES, only one item measures amnesia, while depersonalization and absorption contain 7 and 9 items, respectively.

Participants rate statements on a 5-point Likert-type scale (0 = *never happens*; 4 = *almost always happens*) regarding the frequency with which each experience is occurring. To control for the possibility that medication may be causing the experiences, an additional item was included: *Regarding the last 17 questions: Could any of the above experiences be due to medication?* Respondents were asked to circle *YES*, *NO* or *NOT SURE*.

Potential CES scores range from 0-68 (DISS T1/T2), with higher scores signifying more severe dissociative symptomatology. Separate scores for depersonalization (DEPERS T1/T2), absorption (ABSRP T1/T2) and amnesia (AMNES T1/T2) were also calculated. As a relatively new scale, studies supporting the validity of the scale are sparse. However, the CES' three-factor structure has been supported (Cann & Harris, 2003; Goldberg, 1999) and scores significantly correlate with a number of other variables theoretically expected to be associated with dissociation (Cann & Harris, 2003; Goldberg, 1999). Internal consistency of the CES-17 is good with a Cronbach's alpha of .89 (Goldberg, 1999). In the current study, Cronbach's alpha was .86.

The Stanford Acute Stress Reaction Questionnaire - Anxiety Scale

The SASRQ is a 30-item modified version of a preliminary 98-item assessment tool called the Acute Stress Reaction Questionnaire, which was developed to assess acute reactions to trauma (Cardeña et al., 2000). The SASRQ evaluates immediate reactions to trauma in terms of dissociation, reexperiencing, avoidance, anxiety and impairment in functioning.

The SASRQ anxiety subscale, which consists of six items, was used for the current study. The scale was chosen because of its brevity and specificity to stress-related anxiety; characteristics not typically found with other anxiety measures (e.g., The State-Trait Anxiety Inventory). Participants rate six statements on a 5-point Likert-type scale, from *not at all* to *very often*, ranking the degree to which each symptom has been problematic over the last two weeks. Scaled responses were summed to gain a total anxiety score (ANX T1/T2) ranging between 0 and 36.

Overall, the SASRQ has sound psychometric properties (Cardeña, Grieger, Staab, Fullerton, & Ursano, 1997; Cardeña et al., 2000). Of particular relevance to the present study, a relationship between trauma exposure and the SASRQ subscales has been found. Spiegel, Koopman, Cardeña, and Classen (1996) found, for example, that exposure to fire in a large firestorm correlated significantly with scores on the SASRQ anxiety subscale ($p < .01$). The anxiety scale was found to have very good internal consistency with a Cronbach alpha of .87 in the current study.

5.4.3 Measurement of Physical Health

The Self-Evaluation of Health Rating Scale

Global physical health was measured with the self-evaluation of health rating scale. The use of single item measures of perceived health has been validated extensively in a number of prior studies, particularly with older populations (e.g., Ferraro, 1981; Idler & Kasl, 1991; Linn & Linn, 1980; Vincent et al., 1991; Wolinsky & Johnson, 1991). Self-rated health has been shown to be more predictive of mortality and health care than other more tangible indicators of health such as biological or lifestyle risk factors, physical disability and health problems (Idler & Kasl, 1991). Various versions of the perceived health question have been used. In the present study, the health question included a comparison to a person of the same age: *Compared to a person your own age with good health how would you rate your health at the present time?* Participants rated responses on a 7-point scale from *terrible* to *excellent.* Self-rated physical health scores (SRHLTH T1/T2) ranged from 1 to 7 with higher scores being indicative of better health perceptions.

Chronic Health Conditions Checklist

Chronic health problems were measured with an 18-item checklist of common health conditions. The conditions include cancer, diabetes, epilepsy, asthma, other respiratory conditions, arthritis or rheumatism, heart trouble, hepatitis, high blood pressure or hypertension, stomach ulcer or duodenal ulcer, hernia or rupture, chronic liver trouble, bowel disorders, kidney or urinary tract conditions, skin conditions, hearing impairment or loss and sight impairment or loss. The checklist was an amended version of Belloc and colleagues' (1971) inventory used in Flett and colleagues' (2002) community survey of trauma, changed to incorporate conditions included in the 1992-1993 Household Health Survey (Statistics New Zealand & Ministry of Health, 1993, as cited in Flett et al., 2002), and thereby including the most frequent chronic conditions. Respondents were required to indicate with a tick any conditions that had been diagnosed by a medical professional. An option of 'other health conditions' was also included for the present study. Positive responses were added at both times for a HLTHPRBS T1/T2 score.

Activities of Daily Living Scale (ADL Scale)

Functional ability was measured with Wolinsky and Johnson's (1991) 21-item ADL Scale, made up from items of two existing scales: Katz and colleagues' (1963) ADL scale and Nagi's (1976) disability scale.

Items measuring difficulty performing personal, household and advanced instrumental activities were adopted from Katz and colleagues' (1963) scale. Five items assessed personal activities (getting out of bed, bathing, toileting, eating and dressing); four items assessed household activities (shopping, light housework, heavy housework and meal preparation); and two items assessed advanced instrumental activities (managing money and using the telephone). From Nagi's (1976) disability scale, four items evaluated upper body limitations (lifting or carrying, reaching up, reaching out and using fingers to grasp objects) and five evaluated lower body limitations (walking, stepping, standing, crouching or kneeling, sitting). For the present study, simple YES/NO options replaced Likert-type answer options to indicate the absence or presence of functional disabilities. Scoring of the ADL Scale involved summing all *YES* responses for an overall score signifying current functional disability (ADL T1/T2). Scores ranged from 0 to 21 with higher scores portraying more functional limitation.

5.4.4 Measurement of Trauma-Related Beliefs and Perceptions

Trauma-schemata is a theoretical term defined as cognitive structures that elicit trauma-related beliefs and perceptions that threaten one's core sense of safety, control and invulnerability. The constructs chosen to represent active trauma-schemata in the present study were posttraumatic vulnerability perceptions and sense of mastery. The tools used were the Schillace Post-Traumatic Vulnerability Scale (SPTVS) and Pearlin's Mastery Scale (PMS).

Schillace Post-Traumatic Vulnerability Scale (SPTVS)

The SPTVS (Schillace, 1994) is a 24-item tool consisting of statements written in the first person requiring *True* or *False* responses. Items evaluate beliefs associated with one's sense of vulnerability to future danger and misfortune, perceptions of the world as dangerous and unsafe, control and mastery beliefs and one's sense of insecurity and

defensiveness. Examples of items include *I feel as though there is punishment hanging over my head ready to drop at any time* and *I feel it is important to always keep my guard up and to be alert to possible threats.* One original item was removed for the present study because it would not apply to most participants: *I get angry at family or friends who need to warn me about dangers in my work.* Participants circled *YES* or *NO* to each statement. Scoring involved assigning a point for every item answer consistent with a self-perception of vulnerability and summing points for an overall score.

Scores at T1 for the SPTVS ranged from 0 to 23 with higher scores portraying increased levels of posttraumatic vulnerability perceptions. However, there were a high percentage of missing responses on the SPTVS at T1. The SPTVS had eight questions with between 3.2% and 5.2% missing data points. It was decided that answer options to either agree or disagree with statements might have been too rigid. The 2-point response scale was therefore replaced with a 4-point response scale for Q2. Answer options were *strongly agree*, *agree*, *disagree* and *strongly disagree*. Scoring procedures remained the same and answers consistent with a self-perception of posttraumatic vulnerability were added. The change in answer format at T2 increased responses for questionnaires: the average amount of missing data decreased to around 2% per question.

Test-retest reliability of the SPTVS over 12-weeks (r = .85) was substantiated in a study of 51 undergraduate respondents (Schillace, 1994). Internal reliability (r = .79) was validated in a study of 457 undergraduate volunteer subjects (Schillace, 1994). Cronbach's alpha for the current study was .80. Validity of the SPTVS has also been supported in a study of 128 respondents, mostly African American females (17-56 years), revealing significant correlations between levels of posttraumatic vulnerability perceptions and reported history of assault (Brown, 2000). The same study revealed significant correlations between SPTVS scores and self-, world- and other- schemata typically affected by trauma (Brown, 2000).

Pearlin's Mastery Scale (PMS)

Sense of control was measured with the PMS (Pearlin et al., 1981), a 7-item tool that assesses mastery versus powerlessness. More specifically, the measure determines the "...extent to which one regards one's life-chances as being under one's own control, in

contrast to being fatalistically ruled" (Seeman, 1991, p.304). Participants rate statements written in the first person on a 4-point scale regarding the extent that they either agree or disagree. Scores range from 7 to 28 with lower scores indicating a decreased sense of mastery and control.

Validity of the PMS is supported by its consistent relationships with other scales and variables (Seeman, 1991). For example, studies of respondents aged 18-65 years revealed mastery as negatively correlated with depression and economic strain, and positively correlated with self-esteem, social supports and education (Pearlin & Schooler, 1978; Pearlin et al., 1981). The scale demonstrated good internal consistency with a Cronbach's alpha coefficient of .85 in the present investigation.

5.5 Procedure

5.5.1 Time 1 Data Collection Procedure

Advertisements in the form of letterbox mailers, public noticeboard messages and requests in community newspapers were used to recruit participants. Most advertising was distributed throughout Christchurch, Palmerston North and Auckland regions. Advertisements invited people 60 years and older to partake in a Massey University study about trauma, health and aging (see Appendix C for the advertisement placed in letterboxes and on noticeboards). A toll free number was provided for people to request a questionnaire. Because non-response rates are generally quite high for mail surveys (Moore & Tarnai, 2002) and longitudinal studies have their own problem with attrition (Pfeffermann & Nathan, 2002), a large sample of participants was sought at T1. Aiming for at least 600 participants, approximately 2000 questionnaires were mailed out. This figure was based on a low estimated return rate of around 30%. The actual return rate was 74.5%, however, with 1489 completed questionnaires returned.

5.5.2 Time 2 Data Collection Procedure

Twelve months later data collection proceeded for T2. Q2 was mailed out to 1376 consenting participants from T1. Of the respondents who were sent Q2, 1050 were completed and returned for data analyses. The return rate of 76.3% was, once again, unexpectedly high for a mail survey.

5.6 Ethical Considerations

The research gained ethics approval from the Massey University Human Ethics Committee (HEC, Application 04/156). One ethical consideration was participant confidentiality. The Information Sheets (see Appendices A-1 & B-2) assured full participant confidentiality in that individuals would remain anonymous and all data would be reported in group format. Ensuring confidentiality also required that all questionnaires were opened and read by the researcher only. All forms that requested a copy of the results and participation in longitudinal research were detached and coded so that personal details remained separate from questionnaire answers. Participants were informed that all gathered information would be property of the researcher only and that participating in the research, including completing the second questionnaire at a later date was voluntary.

Due to the nature of some questions in the TEI, the Information Sheet stated that if respondents should become unduly distressed or emotionally overwhelmed while completing the questionnaires, they should stop answering questions and a support person should be contacted. A detachable List of Services (see Appendix A-4) was affixed with each questionnaire for participants to refer to if they required additional support.

5.7 Chapter Summary

To investigate the impact of traumatic and stressful events on trauma-related perceptions, psychological symptoms and physical health during later life, a cross-sectional/longitudinal design using self-report questionnaires was employed. Participants aged 60 years or older were recruited via advertising, mainly throughout Christchurch, Palmerston North and Auckland. Questionnaires that contained a number of measures were mailed out. Response rates were unusually high. A total of 1489 participants at T1 became involved in the research. Of those, 1050 participants continued with the study and completed Q2 at one year later at T2. All measures were statistically evaluated within the study; however, of the psychological symptoms measured, only PTSD was investigated comprehensively. The study gained approval by the Massey University Human Ethics Committee before commencement.

Chapter Six

RESULTS: PART ONE

Part 1 of the Results reviews procedures for data screening and analyses. Measures and research variables are named. The socio-demographic composition of both the cross-sectional and longitudinal samples are reported. Results of the scales measuring physical health, PTSD and trauma-related beliefs for the cross-sectional (N = 1489) and longitudinal samples (N = 1050) are summarised. The mean, standard deviation and range of each measure for the cross-sectional sample at T1 and the longitudinal sample at both T1 and T2 are reported. Socio-demographic differences for each measure are noted (at p < .001). Finally correlations between the PTSD T1/T2 variables and other variables are reported.

6.1 Data Screening and Analyses

Evaluation of the data was with the statistical package, SPSS for Windows, version 12. (SPSS Inc., 2003). Information was screened for data-entry errors and missing values. There was an average of 7.5% missing data per variable at T1 (0 - 11.4%). The majority of missing data were randomly distributed across variables with most questions missing no more than 3.0% total answers. Fourteen questions had high levels of missing data. The Schillace Post-Traumatic Vulnerability Scale (SPTVS) had eight questions with between 49 (3.2%) and 78 (5.2%) missing data points. Concentration of missing data within one variable can indicate that questions are problematic and may call for deletion of actual variables or questions (Tabachnick & Fidell, 2007). Deletion of the SPTVS T1 data was not considered because over 90.0% of the data for this scale were valid. The requirement to either agree or disagree with specific statements, with no middle ground, was considered the reason for the missing data. As a result, for T2, answer options were changed to a 4-point response scale from *strongly agree* to *strongly disagree*. These changes improved response rates to 98.0% per item at T2.

RESULTS: PART ONE

Screening of T2 data revealed that The Total Trauma Disclosure Scale was missing 62.0% of its data and the Stressor Disclosure Scale was missing 25.8%. Because both scales were invented for the present study and had no history of validation and reliability, they were both omitted from the study. Without the two disclosure measures, missing data from T2 variables averaged 6.1% (1.0% - 14.0%).

Data were handled in a pairwise fashion: cases were only deleted from specific analyses if data were missing from the variables being assessed. Univariate outliers were revealed among all continuous variables. To determine the degree to which outliers impacted on the mean, the 5% trimmed mean was compared to the original mean within each univariate distribution (Pallant, 2005). Small differences between the mean and the trimmed mean among continuous variables (.02 - .70) indicated that outliers would not distort statistical results.

Square root transformations were carried out on moderately skewed data sets and logarithm or inverse transformations on more severely skewed data (Tabachnick & Fidell, 2007). All Pearsons *r* correlation analyses and multiple regression analyses used transformed variables. All *t*-tests and ANOVAs used non-transformed variables in parametric tests. However, when the parametric test assumptions were in doubt (e.g., homogeneity of variance because of unequal group sizes) results of the non-parametric test alternative was also reported. For independent samples *t*-tests, when the Levene's test showed that data violated the assumption of equal variance between groups, the results for 'equal variances not assumed' was reported.

To compare respondents on different socio-demographic features the categories that were initially measured for sex, ethnicity, education and relationship status were used. Variables for ethnicity, education and relationship status were dichotomised when *chi-square* analysis was used. Ethnicity was dichotomised by creating the categories *NZ European + other* which comprised of those in the Maori, Samoan and other categories. Relationship status was dichotomised into *relationship + no relationship*. The *no relationship* group included participants from never married, separated/divorced and widowed categories. Gender was naturally dichotomised into male and female. To

compare respondents of different ages with between-groups analysis of variance (ANOVA) the samples were divided into three groups: young-old (60 - 71 years), middle-old (72 - 84 years) and old-old (85+ years).

Use of statistical tests with large sample sizes can cause a high potential for Type I error, defined as the probability of making a decision to reject the null hypothesis when the opposite is true (Tabachnick & Fidell, 2007). Consequently, for all comparison tests that used each full data set (T1: $N = 1498$; T2: $N = 1050$), statistically significant results were reported at $p < .001$. However, use of statistical tests with small sample sizes can cause a high potential for Type II error, defined as the probability of making a decision to accept the null hypothesis when the opposite is true (Tabachnick & Fidell, 2007). Hence, when comparison tests assessed differences within partial data sets, the significance level was set at $p < .05$. The focus remained on effect size (ES), which was reported for each analysis.

Hierarchical multiple regression (MR) was the primary method of analysis used to test the research hypotheses. All analyses were 2-tailed. With the cross-sectional data set, hierarchical MR analysis allowed for the statistical control of certain variables (e.g., lifetime trauma) so that the unique effects of other variables (e.g., recent late-life stressors) could be determined. Furthermore, hierarchical MR permitted the testing of mediation effects between the DV and IVs by observing changes in the predictive power of variables that had been entered previously, upon the addition of subsequent variables. With the longitudinal data set, hierarchical MR helped with identifying variables that impacted on changes in DV variance between T1 and T2, by controlling for T1 data in the initial step. Between group ANOVAs, *t*-tests and non-parametric tests (i.e., Chi-Square, Mann-Whitney, Kruskal Wallis) were used to compare groups on variable levels.

As noted earlier, large sample sizes can cause even small statistical effects to appear significant. However, unlike reporting of the comparison test results for full data sets, all correlation-based statistics were reported from $p < .05$. The reason for this was that all correlations and MR statistics were reported in graphs regardless of their status. Consequently, it made sense to report all significance values, but to keep the main focus

of correlation-based tests on ES. To further deal with the issue of statistical significance, each MR was repeated using the middle 300 cases of the original data set (T1 or T2). This ensured that each regression had just over the ideal number of cases-to-IVs ratio to avoid a Type I error. This figure was based on the recommended formula for the least number of cases to test MR which is $N \geq 50 + 8m$ (where m is the number of IVs) (Green, 1991). Applied to the present study, the maximum number of IVs was 10, generating the formula 50 + (8) (10) = 130 cases. To encompass this minimum amount of cases in a pairwise fashion, the middle 300 cases of either data set (T1 or T2) were used for each repeated MR. Results of each repeated analysis were only reported when they differed from the original MRs with the full data-set.

6.2 Study Measures and Research Variables

This section describes the study measures and research variables for T1 and T2. Table 2 depicts variable names used in the present study.

Table 2

Study measures and research variables for T1 and T2

Measure	Variable
TEI - Traumatic Events Inventory (lifetime)	LIFE.TRMA
TEI - Traumatic Events Inventory (past-year)	REC.TRMA T2
Multiple experiences of same trauma (lifetime)	LIFE.MTRMA
Multiple experiences of same trauma (past-year)	REC.MTRMA T2
Experiences of abuse (lifetime)	LIFE.ABUSE
Experiences of abuse (past-year)	REC.ABUSE T2
Trauma ≥ 12 yrs	TRMACHILD
Trauma 12 - 17 yrs	TRMA ADOL
Trauma 18 - 30 yrs	TRAMAYNG
Trauma 31 - 59 yrs	TRMAMIDD
Trauma 60 + yrs	TRMAOLD
RSQ - Recent Stressors Questionnaire	REC.STRSSR T1
RSQ - Recent Stressors Questionnaire	REC.STRSSR T2
PCL C - PTSD Checklist Civilian	PTSD T1
PCL C - PTSD Checklist Civilian	PTSD T2
PCL C - PTSD Checklist Civilian	PTSD.DIAG T1
PCL C - PTSD Checklist Civilian	PTSD.DIAG T2
PCL C - PTSD Checklist Civilian	PTSD.SUB T1
PCL C - PTSD Checklist Civilian	PTSD.SUB T2
Self Evaluation of Health Rating Scale	SRHLTH T1
Self Evaluation of Health Rating Scale	SRHLTH T2
SPTVS - Schillace Post Traumatic Vulnerability Scale	VULN T1
SPTVS - Schillace Post Traumatic Vulnerability Scale	VULN T2
PMS - Pearlin's Mastery Scale	CNTRL T1
PMS - Pearlin's Mastery Scale	CNTRL T2

6.2.1 Traumatic and Stressful Events

Lifetime trauma variables measured with the TEI at T1 were lifetime trauma exposure (LIFE.TRMA), multiple exposure to a trauma-type (LIFE.MTRMA), lifetime abuse (LIFE.ABUSE), and traumatic exposure during childhood (TRMACHILD), adolescence

(TRMAADOL), young adulthood (TRMAYNG), middle age (TRMAMIDD) and later life (TRMAOLD). Recent traumatic event variables measured with the TEI at T2 were past-year exposure to trauma (REC.TRMA), multiple past-year experiences of the same trauma (REC.MTRMA) and past-year abuse (REC.ABUSE). Stressful event variables measured with the RSQ included past year stressors at both T1 and T2 (REC.STRSSR).

6.2.2 Psychological Symptoms

Comprehensive investigation of all psychological measures was beyond the scope of the present thesis. While measures of depression, anxiety and dissociation were used in some basic analyses, PTSD was evaluated more extensively. PTSD was scored on a continuous scale (PTSD) and categorically as meeting full-PTSD (PTSD.DIAG) and subthreshold PTSD diagnostic criteria (PTSD.SUB).

6.2.3 Physical Health

Extensive analyses of self-rated health (SRHLTH), ADL problems and chronic health problems were beyond the requirements for the present research. SRHLTH was selected to represent physical health status. SRHLTH measured at both T1 and T2 had robust correlations with chronic health conditions (T1: $r = .48$, $p < .001$, $N = 1460$; T2: $r = .43$, $p < .001$, $N = 1010$) and ADL problems (T1: $r = .46$, $p < .001$, $N = 936$; T2: $r = .58$, $p < .001$, $N = 942$), thereby supporting the use of SRHLTH as a fair measure of overall physical health status in the present study.

6.2.4 Trauma-Related Beliefs

Two variables represented active trauma-schemata. Posttraumatic vulnerability beliefs and perceptions (VULN) were assessed using the Schillace Post-Traumatic Vulnerability Scale (SPTVS) (Schillace, 1994). Sense of control (CNTRL) was assessed with Pearlin's Mastery Scale (PMS) (Pearlin et al., 1981).

6.3 Demographic Composition of T1 and T2 Samples

Of 2000 questionnaires sent out at T1, 1489 questionnaires were completed and returned. Of 1378 respondents who gave permission to participate further, 1050 completed and returned the second questionnaire. The return rates were 74.5% and 76.2% for T1 and T2, respectively. These rates were unusually high for mail questionnaires, resulting in large sample sizes for the present study.

Table 3

Demographic profiles for samples at T1 (N = 1489) and T2 (N = 1050)

Variable	Time 1 N = 1489	Time 2 N = 1050	Time 1 Total %	Time 2 Total %
Age (Years)	1480	1047	99.4	99.7
60 - 69	643	376	43.4	35.8
70 - 79	558	454	37.7	43.2
80 - 89	254	202	17.2	19.2
> 90	25	15	1.7	1.4
Gender	1487	1050	99.9	100.0
Male	460	330	30.9	31.4
Female	1027	720	69.1	68.6
Relationship Status	1476	1042	99.1	99.2
Never Married	42	33	2.8	3.1
Married / Defacto	694	486	47.0	46.3
Separated / Divorced	264	184	17.9	17.5
Widowed	476	339	32.2	32.3
Ethnicity	1486	1048	99.8	93.7
NZ Maori	47	26	3.2	2.5
NZ European	1284	928	86.4	88.4
NZ Pacific Island	5	2	.3	.2
Other	150	92	10.1	8.8
Education	1467	1039	98.5	98.9
No School Qualifications	358	226	24.4	21.5
School Certificate	288	200	19.6	19.1
School Qualifications, UE	129	99	8.8	9.4
Trade Cert, Diploma	433	319	29.5	30.4
Uni Degree or Diploma	259	195	17.7	18.6

Socio-demographic features for each sample are shown in Table 3. The mean ages for T1 and T2 were 72.1 years and 71.7 years, respectively. Each sample consisted of around one third males and two third females. The composition of socio-demographic features for both T1 and T2 were similar, with only small percentage differences across variables. In the table, the total number of participants for each feature deviates from the sample total due to missing data.

6.4. Results of PCL-C, Health, SPTVS and PMS Measures

The mean, standard deviation and range for the PCL-C, the self-evaluation rating of physical health, the SPTVS and the PMS for both T1 and T2 are detailed. Table 4 provides an overview of these data, in addition to a summary of trauma and stressor results, which received more thorough scrutiny in the following chapter.

Table 4

Study measures summary: Results of measures for trauma, recent stressors, PTSD, physical health, vulnerability perceptions and control belief measures for the cross-sectional sample (N = 1489) and the longitudinal sample (N = 1050).

Variable	Group	Valid *N*	*M*	*SD*	Range
LFETRMA	One (T1)	1489	7.78	5.18	0 - 29
	Two (T1)	1050	7.63	5.07	0 - 28
RECTRMA T2	Two (T2)	994	.72	1.16	0 - 9
RECSTRSSRS T1	One (T1)	1369	5.94	3.28	0 - 17
	Two (T1)	981	5.87	3.20	0 - 16
RECSTRSSRS T2	Two (T2)	987	5.62	3.17	0 - 29
SRHLTH T1	One (T1)	1470	5.30	1.13	1 - 7
	Two (T1)	1037	5.37	1.11	1 - 7
SRHLTH T2	Two (T2)	1047	5.37	1.32	1 - 7
PTSD T1	One (T1)	1397	30.07	10.35	17 - 82
	Two (T1)	1001	29.52	10.00	17 - 82
PTSD T2	Two (T2)	1012	28.48	9.46	17 - 76
VULN T1	One (T1)	1165	7.57	4.18	0 - 23
	Two (T1)	825	7.28	4.09	0 - 23
VULN T2	Two (T2)	919	6.63	4.06	0 - 22
CNTRL T1	One (T1)	1423	20.53	3.90	7 - 28
	Two (T1)	1013	20.87	3.82	8 - 28
CNTRL T2	Two (T2)	1013	20.86	3.90	7 - 28

6.4.1 PTSD Checklist Civilian Measure (PCL-C)

Cross-Sectional Data Group: PTSD T1

Overall PTSD T1 scores for the cross-sectional sample were low. Scores ranged from 17-82 with a mean of 30.07 (SD = 10.35, N = 1397). PTSD T1 scores did not differ across different ages, gender, ethnic backgrounds, relationship status or educational achievement. Scores for each PCL-C subscale was relatively low. Reexperiencing scores ranged from 5-25 with a mean of 8.81 (SD = 3.97, N = 1464), avoidance scores ranged from 5-25 with a mean of 11.80 (SD = 4.51, N = 1427) and hyperarousal scores ranged from 7-35 with a mean of 9.60 (SD = 3.40, N = 1448).

PCL-C subscale scores did not differ across ethnic groups, relationship status or gender. Findings of a series of one-way ANOVAs found differences in PTSD hyperarousal scores between age groups and education groups. As confirmed by the small ES (eta^2 = .02 and .01, respectively), however, the actual differences of around one point were too small to be relevant.

Longitudinal Data Group: PTSD T1

Overall, PTSD T2 scores for the longitudinal sample were low. Scores ranged from 18-72 with a mean of 29.52 (SD = 10.00, N = 1001). PTSD T2 scores were similar across different ages, gender, ethnic backgrounds, relationship status and educational achievement. Scores for each PCL-C subscale were low. Reexperiencing scores ranged from 5-25 with a mean score of 8.64 (SD = 3.78, N = 1037). Avoidance scores ranged from 5-25 with a mean of 11.53 (SD = 4.39, N = 1018) and hyperarousal scores ranged from 7-35 with a mean of 9.40 (SD = 3.23, N = 1032). These data were comparable to scores achieved by the cross-sectional sample at T1.

A series of one-way ANOVAs comparing PTSD scores across gender, ethnic groups, relationship status, educational groups and relationship status found two significant effects. PTSD reexperiencing scores differed among relationship status groups, and PTSD hyperarousal scores differed among educational groups. As the small ES' confirmed (eta^2 = .03 and eta^2 = .02, respectively) the differences of around one point

were too small to be of any practical importance.

Longitudinal Data Group: PTSD T2

The longitudinal sample scored slightly lower at T2, than T1, with a mean of 28.48 (*SD* = 9.46). Scores ranged from 17-76. Socio-demographic differences between participants did not generate significant variance in PTSD T2 scores. Subscale scores were similar to T1. Mean scores were 8.18 (*SD* = 3.51, *N* = 1045) for reexperiencing, 11.19 (S*D* = 4.10, *N* = 1030) for avoidance and 9.08 (*SD* = 8.00, *N* = 1034) for hyperarousal. A one-way ANOVA identified only one effect for socio-demographic difference in a subscale score. Relationship status groups differed in reexperiencing scores. Separated/divorced and widowed participants scored higher than married or never married participants. The score difference of only one point between groups and low effect size ($eta^2 = .02$) indicated that variations had no practical value.

T1 and T2 PTSD scores for the longitudinal sample correlated robustly, $r = .74$, $p < .001$, $N = 960$. PTSD scores for males ($N = 302$) did not differ between T1 and T2 ($M =$ 29.10 and 28.52, respectively). PTSD scores for females significantly decreased from T1 ($M = 29.78$, $SD = 9.94$) to T2 ($M = 28.22$, $SD = 9.18$), $t(662) = 5.45$, $p < .001$, $N =$ 663. The small effect size ($eta^2 = .04$) indicated that the difference between mean scores from T1 to T2 was of no practical significance.

6.4.2 Self-Evaluation of Health Rating Scale

Cross-sectional Data Group: SRHLTH T1

The mean SRHLTH T1 score for the cross-sectional sample was 5.30 (*SD* = 1.13, *N* = 1470). Scores ranged from 1 (terrible) to 7 (excellent). On average respondents reported their own health to be *good*. Only 5.4% (*N* = 6) selected *terrible, very poor* (*N* = 16) or *poor* (*N* = 57). A large percentage (63.8%) selected *good* (*N* = 447) or *very good* (*N* = 491). A smaller number selected *excellent* (13.5%, *N* = 198). Socio-demographic differences in self-rated physical health for the cross-sectional group were not found.

Longitudinal Data Group: SRHLTH T1

At T1 the longitudinal sample scored a mean of 5.37 (SD = 1.11, N = 1037). Scores ranged from 1 (terrible) to 7 (excellent). On average, the group indicated their health to be *good* or *very good*. Only 4.2% (N = 44) selected *terrible*, *very poor* or *poor* and 16.6% (N = 172) selected *fair*. The majority of participants selected *good*, *very good* or *excellent* (79.2%, N = 821). No socio-demographic differences in SRHLTH scores were found in the sample.

Longitudinal Data Group: SRHLTH T2

At T2 the longitudinal sample scored a mean of 5.37 (SD = 1.13, N = 1043). Again, the majority of participants reported their health to be *good*, *very good* or *excellent* (80.1%, N = 836). Only 5.7% (N = 59) selected *terrible*, *very poor* or *poor* and 14.2% (N = 148) as *fair*. No socio-demographic differences in SRHLTH T2 scores were observed in the sample.

6.4.3. Schillace Post-Traumatic Vulnerability Scale (SPTVS)

Cross-Sectional Data Group: VULN T1

Posttraumatic vulnerability perceptions were generally low among the cross-sectional sample. VULN T1 scores ranged from 0 - 23 with a mean of 7.57 (SD = 4.18, N = 1165). No socio-demographic differences in VULN T1 scores were found in the sample.

Longitudinal Data Group: VULN T1 & VULN T2

Posttraumatic vulnerability perceptions among the longitudinal sample were also generally low. The mean VULN T1 score for the longitudinal sample was 7.28 (SD = 4.09, N = 825). Scores ranged from 0 - 23. One year later this group had a lower mean VULN T2 score of 6.63 (SD = 4.06, N = 919) and scores ranged from 0 - 22. VULN T1 and VULN T2 were strongly correlated (r = .77, p < .001, N = 752). An independent-samples t-test indicated that VULN scores from T1 (M = 7.31, SD = 4.17) to T2 (M = 6.75, SD = 4.16) decreased, $t(751) = 5.39$, $p < .001$. However, the small ES, eta^2 = .04, confirmed that the difference was not meaningful. Socio-demographic differences were not demonstrated for either VULN T1 or VULN T2 scores.

6.4.4 Pearlin's Mastery Scale (PMS)

Cross-sectional Data Group: CNTRL T1

Overall, the cross-sectional sample reported a strong sense of control. CNTRL T1 scores ranged from 7 - 28, with a mean of 20.53 (SD = 3.90, N = 1470). No socio-demographic differences in CNTRL T1 scores were revealed.

Longitudinal Data Group: CNTRL T1 & CNTRL T2

Again, sense of control was generally robust among the sample. The mean CNTRL score for the longitudinal sample at T1 was 20.87 (SD = 3.82, N = 1013). CNTRL T1 scores ranged from 8 - 28. The mean CNTRL T2 score for the longitudinal group was 20.86 (SD = 3.90, N = 1013) and scores ranged from 7 - 28. CNTRL T1 and CNTRL T2 scores were strongly correlated (r = .69, $p < .001$, N = 984). One-way ANOVAs comparing means scores among socio-demographic features found one effect. CNTRL T1 scores differed among those of varying educational backgrounds, $F(3, 1015) = 7.15$, $p < .001$, *Kruskal Wallis*, $\chi^2 = 20.30$, $p < .001$. The score difference of only one point between groups and low effect size ($eta^2 = .02$) indicated no practical value.

6.4.5 Summary of Results for Measures

Overall, the samples reported good physical health, low PTSD scores, low levels of posttraumatic vulnerability perceptions and high levels of control beliefs. Analyses of potential score variations among socio-demographic groups did not reveal any differences that were of true practical value.

6.5 Correlates of PTSD

Pearson *r* correlation analyses determined associations between PTSD scores and other variables including traumatic events variables, recent stressors, posttraumatic vulnerability perceptions, control beliefs and physical health. Tables 5 and 6 document the resulting correlation coefficients.

6.5.1 PTSD and Trauma

As shown in Table 5, positive relationships were identified between PTSD T1 and LIFE.TRMA, $r = .33$, $N = 1397$, $p < .001$, LIFE.MTRMA, $r = .32$, $N = 1397$, $p < .001$ and LIFE.ABUSE, $r = .31$, $N = 1397$, $p < .001$. Increased PTSD scores was related to increased trauma exposure. The relationships were medium in strength. Shared variance between associated variables ranged from 9.6% to 10.9%.

Positive relationships between PTSD T2 and REC.TRMA T2, $r = .11$, $N = 385$, $p < .05$, REC.MTRMA T2, $r = .24$, $N = 924$, $p < .001$ and REC.ABUSE T2, $r = .22$, $N = 992$, $p < .001$ were revealed. Higher PTSD scores were associated with increased levels of past-year trauma. All correlations were weak. Shared variance of associations ranged from 1.2% to 5.8%.

Positive relationships ($p < .001$) were identified between PTSD T2 and three individual past-year traumatic events: involvement in an emotionally abusive relationship, $r = .22$, $N = 993$; being diagnosed with a life-threatening illness, $r = .15$, $N = 990$; and 'other' trauma, $r = .13$, $N = 990$. These relationships were weak. Shared variance between associated variables ranged from 1.6% - 4.8%.

Table 5

Pearson r values between PTSD T1/T2 and lifetime trauma variables, recent trauma variables and recent stressor variables.

Variable	PTSD T1	PTSD T2
LIFE.TRMA	.33**	.28**
	N = 1397	N = 1012
LIFE.MTRMA	.32**	.24**
	N = 1397	N = 1012
LIFE.ABUSE	.31**	.30**
	N = 1397	N = 1039
REC.TRMA T2	--	.11*
		N = 385
REC.MTRMA T2	--	.24**
		N = 924
REC.ABUSE T2	--	.22**
		N = .992
REC.STRSSR T1	.51**	.44**
	N = 953	N = 953
REC.STRSSR T2	--	.48**
		N = 917

*p < .01 **p < .001

NOTE: Because traumatic and stressful events represent IVs in further analyses for this study, Pearson r correlation coefficients were not determined between PTSD T1 scores and T2 event variables (recent trauma and recent stressors).

6.5.2 PTSD and Recent Stressors

As shown in Table 5, a robust positive relationship was identified between REC.STRSSR T1 and PTSD T1, r = .51, N = 953, p < .001. Higher exposure to past-year stressors was strongly associated with increased PTSD scores. Past-year stressors explained 26.0% of the variance in PTSD scores in the older sample. Because recent stressors were frequent, respondents who experienced stressors were divided into two groups: a low stressor group (1 - 4 stressors) and a high stressor group (5+ stressors). PTSD T1 scores between the low stressor group (M = 25.10, SD = 6.98, N = 1290) and the high stressor group (M = 32.69, SD = 10.90, N = 834) were different, $t(1290)$ = 15.23, p < .001, eta^2 = .15. The ES was large: 15.2% of the variance in PTSD T1 scores was explained by the number of stressors encountered in the prior year.

Analyses of longitudinal data also revealed a robust, positive correlation between PTSD T2 and REC.STRSSR T2, $r = .48$, $p < .001$, $N = 917$. The high stressor group (5+ stressors) had a significant decrease in mean PTSD scores from T1 ($M = 32.30$, $SD = 10.37$) to T2 ($M = 31.05$, $SD = 9.77$), $t(559)=3.75$, $p < .001$. The decrease in PTSD scores over time was unexpected; however, the small ES ($eta^2 = .02$) confirmed that the difference between groups was of no real importance.

The Pearson r correlation coefficient between RECSTRSSRS T1 and PTSD T2 scores was moderate, $r = .44$, $N = 953$, $p < .001$. Recent stressors, as reported one-year prior, was associated with higher PTSD scores. The coefficient of determination pointed to a medium ES, with shared variance between variables of 19.4%.

6.5.3 PTSD and Posttraumatic Vulnerability Perceptions

Table 6 shows that VULN T1 had strong positive correlations with PTSD T1, $r = .60$, $N = 1110$, $p < .001$, and PTSD T2, $r = .60$, $N = 808$, $p < .001$. Similar correlations were revealed between VULN T2 and PTSD T2, $r = .61$, $N = 898$, $p < .001$. The results indicate that increased posttraumatic vulnerability beliefs are related to higher PTSD scores. The ES' for all of these correlations were large. Around 37.0% of the variance was shared between variables.

Table 6
Pearson r values between PTSD T1/T2 and VULN T1/T2, CNTRL T1/T2 and SRHLTH T1/T2

Variable	PTSD T1	PTSD T2
VULN T1	.60*	.60*
	$N = 1110$	$N = .808$
VULN T2	.54*	.61*
	N = .884	$N = 898$
CNTRL T1	-.50*	-.46*
	$N = 1345$	$N = 983$
CNTRL T2	-.45*	-.61*
	N = 967	$N = 917$
SRHLTH T1	-.40*	-.34*
	$N = 1382$	N = 1001
SRHLTH T2	-.37*	-.42*
	$N = 998$	$N = 1004$

*$p < .001$

6.5.4 PTSD and Control Beliefs

CNTRL T1 was negative correlated with PTSD T1, r = -.50, p < .001, N = 1345 and PTSD T2, r = -.46, p < .001, N = 983. CNTRL T2 and PTSD T2 were also strongly related, r = -.61, p < .001, N = 898. Decreased control beliefs were associated with higher PTSD scores, presently, and one year later. Shared variance was relatively high at 25.0%, 21.2% and 37.2%, respectively.

6.5.5 PTSD and Physical Health

Moderate negative correlations were found between SRHLTH T1 and PTSD T1, -.40, N = 1382, p < .001 and between SRHLTH T2 and PTSD T2, r = -.37, N = 998, p < .001. These analyses indicated that higher levels of PTSD are linked to lower physical health ratings. SRHLTH T2 and PTSD T1 were also negatively associated, r = -.42, N = 1004, p < .001, indicating that PTSD symptoms are linked to lower physical health ratings one year later. SRHLTH T1 was also related to PTSD T2 scores one year on, r = -.34, N = 1001, p < .001, making interpretation of the results difficult. It is probable that PTSD and physical health impact on each other in a reciprocal relationship. The hierarchical multiple regression analyses that are reported in Chapter Nine delineate the health-PTSD association further. Shared variance between these bivariate relationships ranged from 11.6% - 17.6%.

6.6 Chapter Summary

Mean scores for each measure showed that the majority of respondents reported good physical health, low PTSD scores, low levels of posttraumatic vulnerability perceptions and high levels of control beliefs. Comparisons of mean scores among socio-demographic variables revealed no differences that were large enough to be of practical importance.

A series of Pearson *r* correlation analyses indicated that high levels of PTSD during later life are associated with high exposure to both lifetime trauma and past-year stressors during later. High levels of PTSD are associated with endorsement of perceptions that are related to a sense of posttraumatic vulnerability and powerlessness. Older adults with high levels of PTSD are likely to perceive their health as fair or poor. A series of MRs reported in Chapter Nine explore these relationships more comprehensively. The next chapter outlines, in detail, results of the traumatic and stressor event measures, including the nature and frequency that traumatic and stressful events were reported by each sample.

Chapter Seven

RESULTS: PART TWO

The following section reports results for lifetime trauma exposure for both cross-sectional and longitudinal data groups. The nature and number of past-year events, including recent traumatic events and late-life stressors are also reported. Socio-demographic differences in the nature of events are summarised. All results are reported and reviewed with reference to objectives 1 and 2 as outlined below.

Objective 1: To describe the quantity and nature of lifetime traumatic events and past-year traumatic events reported by the sample of older adults, including socio-demographic differences in the types of traumas experienced.

Objective 2: To describe the quantity and nature of late-life past year stressors reported by the samples of older adults, including socio-demographic differences in the types of recent stressors experienced.

7.1 Lifetime Exposure to Trauma

7.1.1 Frequency of Lifetime Trauma Exposure

As presented in Figure 1, the number of past traumatic events reported by the cross-sectional sample ranged from 1 - 29. Respondents reported an average of approximately eight lifetime traumas ($M = 7.8$, $SD = 5.2$, $N = 1489$). At least one traumatic event was reported by 98.5% ($N = 1466$), at least two traumatic events were reported by 93.8% ($N = 1397$) and at least three events were reported by 87.1% ($N = 1297$). Just under one third of the sample (29.3%, $N = 437$) reported 10 or more lifetime traumas. Only 1.5% ($N = 25$) reported no traumatic encounters.

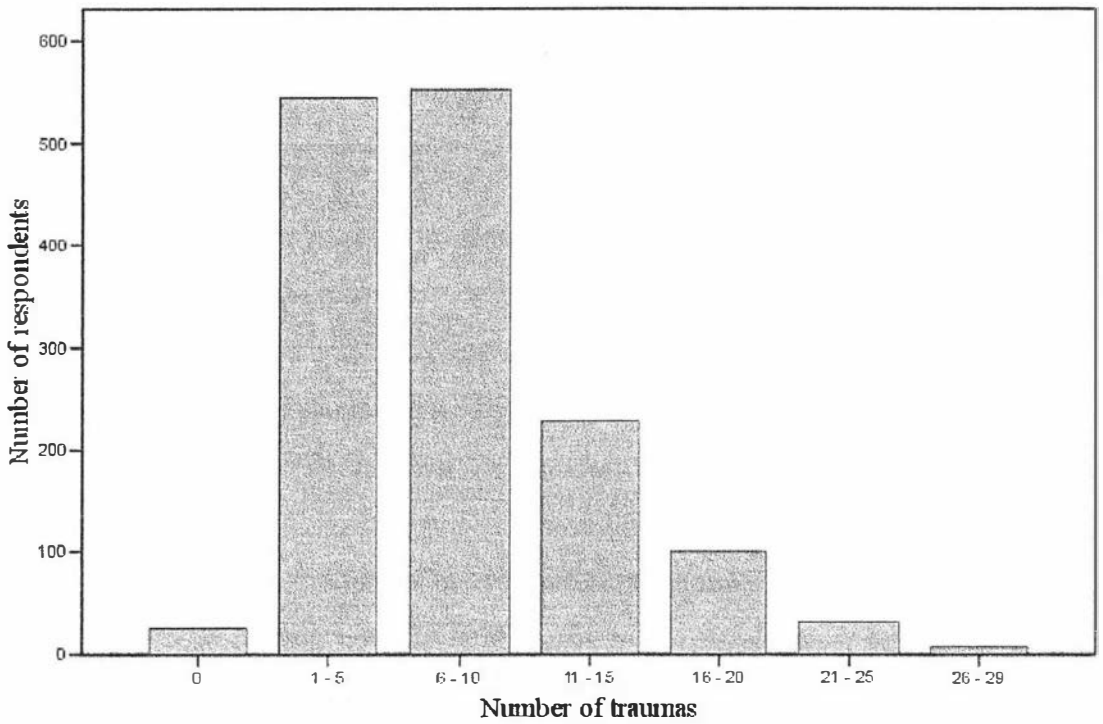


Figure 1: Lifetime exposure to traumatic events (LIFE.TRMA) (N = 1489)

A series of one-way between-groups ANOVAs showed that gender, age, ethnicity and education (at $p < .001$) had no effect on LIFE.TRMA scores. However, there was a statistically significant effect for relationship status, $F(3, 1471) = 13.42$, $eta^2 = .03$, *Kruskal-Wallis*, $\chi^2 = 48.33$, $p < .001$. Single participants who had never been married had lower LIFE.TRMA scores ($M = 5.71$, $SD = 4.13$) than widowed ($M = 8.10$, SD = 5.02), separated or divorced participants ($M = 9.16$, $SD = 5.35$). Although the ES was small ($eta^2 = .03$), the mean trauma score for the single group was 2.9 less than the combined mean for the widowed, separated or divorced groups.

Life-threatening illness of a spouse (42.8%), experience of a life-threatening illness (42.7%), 'other' trauma (39.8%) and death of a spouse (37.6%) were the most frequently reported lifetime traumas. Life-threatening illness of a spouse (23.5%), death of a spouse (23.2%) and experiencing a life-threatening illness (20.3%) were the most frequently reported events from the age of 60 years. The event most commonly reported as 'other trauma not listed' was death of family members other than a spouse (e.g., parents and siblings). Table 7 documents these data.

Table 7

Exposure to specific traumatic events over the lifetime and at 60+ years (N = 1489).

Traumatic Event	lifetime Exposure		Exposure 60+ Yrs	
	N	%	*N*	%
Spouse Die	560	37.6	346	23.2
Child Die	317	21.3	95	6.4
Divorced	493	33.1	49	3.3
Witness Accident, Fire, Explosion	545	36.6	82	5.5
Natural Disaster	341	22.9	61	4.1
Unwanted Sexual Encounter (Adult)	139	9.3	8	.5
Violent Crime	184	12.4	60	4.0
Physically Violent Relationship (Adult)	241	16.2	21	1.4
Emotionally Abusive Relationship (Adult)	524	35.2	56	3.8
Witness Mutilation, Injury, Violent Death	320	21.5	17	1.1
Spouse Life-Threatening Illness	637	42.8	350	23.5
Child Life-Threatening Illness	401	26.9	128	8.6
Spouse Near-Fatal Accident or Injury	257	17.3	51	3.4
Child Near-Fatal Accident or Injury	179	12.0	39	2.6
Life-Threatening Illness	636	42.7	303	20.3
Near-Fatal Accident or Injury	257	17.3	51	3.4
Combat	118	7.9	2	.1
Sent to Foster home or elsewhere (Child)	303	20.3	--	--
Ongoing Sexual Abuse (Child)	138	9.3	--	--
Sexual Abuse Incident (Child)	283	19.0	--	--
Physical Abuse (Child)	211	14.2	--	--
Parent or Caregiver Died (Child)	245	16.5	--	--
Other Traumatic Encounter	592	39.8	80	5.4

7.1.2 Socio-Demographic Differences in Exposure to Specific Lifetime Traumas

Chi-square analyses identified gender differences (at $p < .001$) for the frequency of exposure to nine individual traumatic events (See Table 8):

- More females than males experienced death of a spouse; physical, emotional and sexual abuse as an adult; and sexual abuse incidents as children. ES' were small, *phi coefficient* = .12 - .24.

- More males than females experienced, witnessed or were involved in a vehicle accident, fire or explosion; witnessed the mutilation, serious injury or violent death of another person; had a near-fatal accident or injury; and fired a weapon in combat. ES was medium for fired a weapon in combat, *phi coefficient* = .33, and small for all other differences, *phi coefficient* = .13 - .17.

Table 8

Gender differences for exposure to specific lifetime traumatic events.

Variable	χ^2	Males		Females	
		N=460	(%)	*N=1027*	(%)
Spouse Died	36.2 *	121	26.3	438	42.6
Farm/Vehicle Accident	24.4 *	211	45.9	334	32.5
Sexual Abuse (Adult)	40.5 *	27	5.9	214	20.8
Emotional Abuse (Adult)	81.9 *	85	18.5	439	42.7
Witness Injury etc	41.2 *	146	31.7	174	16.9
Physical Abuse (Adult)	52.4 *	27	5.9	214	20.8
Near Fatal Acc/Injury	34.4 *	119	25.8	138	13.4
Fire Weapon Combat	162.9 *	98	21.3	20	1.9
Child Sex Abs (Incident)	21.6 *	55	12.0	228	22.2

* $p < .001$

Chi-square analyses tested potential differences between relationship status groups in exposure to specific lifetime traumas. The analyses identified differences between those currently in an intimate relationship and single participants (at $p < .001$) for the frequency of exposure to six individual traumatic events (See Table 9):

- More single participants reported death of a spouse; life-threatening illness of a spouse; divorce; and physical, sexual or emotional abuse as an adult as compared to participants in a current intimate relationship.

Another series of *chi-square* analyses comparing ethnic groups in the frequency of exposure to each trauma revealed no significant effects ($p < .001$). A final series of *chi-square* analyses found no difference for the frequency of each trauma reported between groups of different educational status (i.e. educational qualifications versus no qualifications).

Table 9

Relationship differences for exposure to specific lifetime traumatic events.

Variable	χ^2	In a Relationship		Single	
		N = 694	(%)	*N* = 782	(%)
Spouse Die	482.8*	54	7.8	495	63.3
Divorced	73.0*	151	21.8	335	42.8
Sexual Abuse (Adult)	15.8*	41	5.9	94	12.0
Emotional Abuse (Adult)	44.7 *	181	26.1	335	42.8
Spouse Life-Threat Illness	15.0*	259	37.3	371	47.4
Phys Abuse (Adult)	26.5*	74	10.7	160	20.5

* $p < .001$

7.1.3 Exposure to Lifetime Multiple Trauma

Repeated exposure to the same traumatic event over one's lifetime defined multiple trauma (LIFE.MTRMA) in the present study. Ongoing childhood sexual- and physical-abuse, chronic alcohol or drug use by parents, and abusive adulthood relationships were incorporated into the multiple trauma construct because of their repetitive nature.

The mean LIFE.MTRMA score for the cross-sectional data group was 2.38 (*SD* = 2.66). The range was 0 - 16. At least one repeated exposure to the same trauma was reported by 78.5% (*N* = 1169) of the sample. Emotionally abusive relationships (35.2%), involvement in or witnessing accidents, fires or explosions (17.3%), experiencing life-threatening illnesses (16.0%) and physically abusive relationships (16.2%) were most frequently reported as multiple traumas. There were no significant age, gender, ethnicity, relationship or educational differences for LIFE.MTRMA scores, or for the frequency of specific events encountered repeatedly.

7.1.4 Lifetime Exposure to Abuse

Just over half of the cross-sectional data group (53.1%, *N* = 790) reported exposure to at least one encounter of childhood abuse (physical or sexual) or abuse during adulthood (emotional, physical or sexual). Of those who reported abuse, 46.5% (*N* = 367) reported one exposure, 27.7% (*N* = 217) reported two exposures, and 32.9% (*N* = 206) reported three or more exposures to abusive experiences. Most frequently reported was involvement in emotionally abusive relationships during adulthood (35.2%, *N* = 524), followed by childhood sexual abuse incident/s (19.0%, *N* = 283), physically violent relationships during adulthood (16.2%, *N* = 241) and childhood physical abuse (14.2%, *N* = 211). Unwanted sexual encounters during adulthood (9.3%, *N* = 139) and ongoing childhood sexual abuse (9.3%, *N* =138) were reported the least.

Chi-square analyses showed that females (*N* = 607, 59.1%) were more likely to report abuse than males (*N* = 164, 35.7%), $\chi^2(1, 1487) = 69.98$, $p < .001$, *phi coefficient* = .22. Between-group ANOVAs did not indicate effects for age, ethnicity or educational background for the frequency of exposure to lifetime abuse. An effect was shown for relationship status, $F(3, 1471)=58.26$, $eta^2 = .12$, *Kruskal-Wallis*, $\chi^2 = 163.89$, $p < .001$. Post-hoc comparisons using the Tukey HSD test indicated that the mean lifetime abuse score for the separated/divorced group was higher (*M* = 1.91, SD = 1.38) than the widowed (*M* = .84, *SD* = 1.18), married (*M* = .81, *SD* = 1.14) and never married (*M* = .90, *SD* = 1.25) groups. The ES was large.

7.1.5 Worst Lifetime Trauma

Of 1325 participants from the cross-sectional sample who answered the question "What was the worst traumatic event you ever experienced?", 33.6% (N = 500) reported 'other' trauma not specified. Death of a spouse (14.8%, N = 196), death of a child (11.0%, N = 145), life-threatening illness (6.8%, N = 90) and divorce (6.1%, N = 81) were also frequent.

7.1.6 Age of Trauma Exposure

Participants reported the least number of traumatic events for the periods of adolescence (12 - 17 years) and childhood (0 - 11 years) (M = .44 and .90, respectively). The age bracket documenting the highest number of traumatic events reported was the middle years (31 - 59 years) with an average of just under two traumas per person (M = 1.95). Early adulthood (18 - 30 yrs) and later life (60+ yrs) had averages of just over one reported trauma per age group (1.14 and 1.20, respectively).

7.2 Exposure to Past-Year Trauma

7.2.1 Past-Year Trauma Exposure for the Longitudinal Sample

Table 10 shows descriptive statistics for past-year trauma exposure of the longitudinal data group.

Table 10

Mean, standard deviation and range for REC.TRMA T2, REC.MTRMA T2 and REC.ABUSE T2 (N = 1050)

Variable Name	Valid N	M	SD	Range
REC.TRMA T2	994	.72	1.16	0-9
REC.MTRMA T2	959	.13	.46	0-4
REC.ABUSE T2	1034	.12	.34	0-2

The longitudinal sample reported between zero and nine past-year traumas. On average, just under one recent traumatic exposure was reported per person. Just over half of the sample (N = 593, 56.5%) reported no recent traumatic events (N = 593). Just under half of the sample (N = 457, 43.5%) reported at least one traumatic event (N = 457). Of these, 22.5% (N = 224) reported one event, 9.8% (N = 97) reported two events and 4.8% (N = 48) reported three events. A small number (N = 32) reported between four and nine past-year traumas.

7.2.2 Socio-Demographic Differences in Frequency of Past-Year Trauma

Chi-square analyses did not identify gender, relationship status, educational or ethnic differences in the frequency of recent traumas experienced. REC.TRMA T2 scores did not correlate with age.

7.2.3 Exposure to Past-Year Multiple Trauma

Multiple exposure to the same past-year traumatic event, including involvement in a physically or emotionally abusive relationship (REC.MTRMA T2), was reported by 16.9% (N = 178) of the longitudinal sample. A series of *chi-square* analyses found no socio-demographic differences in the number of people reporting recent multiple trauma.

7.2.4 Exposure to Past-Year Abuse

Recent abuse involving sexual, emotional or physical mistreatment in the past year (REC.ABUSE T2) was reported by 12.3% (N = 129) of the longitudinal sample. Most frequently reported was emotional abuse, experienced by 11.4% (N = 120). Four of those respondents reported exposure to more than one type of abuse. Only .2% (N = 2) reported sexual abuse and .7% (N = 7) reported physical abuse. There were no socio-demographic differences in the number of individuals reporting past-year abuse. REC.ABUSE scores did not correlate with age.

7.2.5 Specific Past-Year Traumas

Table 11 shows the number of times each recent traumatic event was reported by the longitudinal sample for the prior year.

Table 11

Past-year traumatic events reported by the longitudinal sample at T2 (N = 1050)

	Total		Males		Females	
Event	*N*=1050	%	*N*=330	%	*N*=720	%
Spouse died	35	3.4	27	3.9	8	2.5
Child died	12	1.2	3	.9	9	1.3
Divorced	5	.5	2	.6	3	.4
Witness acc., car acc., fire etc	43	4.2	15	4.6	28	4.0
Major disaster	12	1.2	2	.6	10	1.4
Sexual trauma	2	.2	--	--	2	.2
Violent crime	12	1.2	6	1.8	6	.8
Physical abuse	7	.7	3	.9	4	.6
Emotional abuse	120	11.6	25	7.7	93	13.2
Witness mutilation, injury or death	22	2.1	6	1.9	1	1.1
Spouse life-threatening illness	66	6.4	25	7.8	40	5.7
Child life-threatening illness	49	4.8	12	3.7	37	5.3
Spouse life-threatening acc. or injury	18	1.7	11	3.4	7	1.0
Child life-threatening acc. or injury	10	1.0	1	.3	8	1.1
Life-threatening illness	68	6.5	24	7.5	43	6.1
Life-threatening acc. or injury	24	2.3	9	2.8	15	2.1
Other	114	7.7	26	7.9	86	12.2

Being involved in an emotionally abusive relationship was most frequently reported (11.6%, N = 120). 'Other' trauma was also common (7.7%, N = 114), as was being diagnosed with a life-threatening illness (6.5%; N = 68) and having a spouse diagnosed with a life-threatening illness (6.4%; N = 66). Most commonly specified as 'other' traumas were death or life-threatening illness of other family members (e.g., grandchildren, parents and siblings) and serious physical injury of self or others.

7.2.6 Socio-Demographic Differences in Exposure to Specific Traumas

A series of *chi-square* analyses did not identify significant differences ($p < .001$) in gender age, relationship status, ethnicity or educational background for the frequency that any specific events were experienced in the past year.

7.2.7 Worst Past-Year Trauma

The TEI at T2 concluded with the question "*What was the worst trauma you experienced over the year?*" The five most frequent responses were: Other trauma, 38.3% ($N = 67$), being diagnosed with a life-threatening diagnosis, 13.7% ($N = 24$), spouse or partner died, 9.7% ($N = 17$), spouse diagnosed with a life-threatening illness, 8.0% ($N = 14$) and emotional abuse, 4.6% ($N = 8$).

7.3 Exposure to Recent Stressors

7.3.1 Frequency of Recent Stressors

Table 12 shows the number of recent stressors reported at T1 and T2. The cross-sectional sample reported between zero and 17 past-year stressors at T1, averaging six encounters per person ($M = 5.94$, $SD = 3.28$). Of 1369 respondents, 97.0% ($N = 1328$) reported at least one stressor, 64.9% ($N = 888$) reported at least five stressors and 21.0% ($N = 287$) reported at least nine stressors. Only 3.0% ($N = 41$) reported no recent stressors in the prior year.

The longitudinal sample at T2 reported between zero and 29 past-year stressors. Only one respondent reported 29 recent stressors. Exclusion of this case changed the maximum to 17. An average of five past-year stressors were reported per person ($M = 5.62$, $SD = 3.17$, $N = 1050$). Of the 96.8% who reported at least one event, 62.0% ($N = 612$) reported at least five events, and 11.9% ($N = 179$) reported at least nine events. Only 3.2% ($N = 32$) reported no stressors in the past year.

Table 12

Frequency of recent stressors reported at T1 and T2 (N = 1369)

No. of Stressors	T1		T2	
	N = 1369	%	*N* = 987	%
0	41	3.0	32	3.2
1 - 4	440	32.1	343	34.8
5 - 8	601	43.9	436	44.2
9 - 12	243	17.7	157	15.9
13 - 17	44	32.1	18	1.8
29	---	---	1	.1

7.3.2 Socio-Demographic Differences in Exposure to Recent Stressors

A series of between-group ANOVAs did not find socio-demographic differences for age, ethnicity, educational background and relationship status in the frequency of past-year stressors reported at T1 or T2. Although an independent-samples *t*-test indicated that females ($M = 6.20$, $SD = 3.23$, $N = 926$) reported more recent stressors at T1 than males ($M = 5.42$, $SD = 3.32$, $N = 441$), $t(1365) = -4.13$, $p < .001$, the ES was negligible ($eta^2 = .01$). Similar results were found for gender for the longitudinal sample at T2, except the ES was even smaller.

7.3.3 Distress From Stressors

Aggregate distress-ratings in relation to past-year stressors (DISTRSS T1) ranged from 0 - 39 for the cross-sectional sample at T1. The mean was 10.15. Pearson's *r* correlation analysis showed that DISTRSS T1 and REC.STRSSR T1 were robustly related, $r = .91$, $p < .001$, $N = 1369$.

Similarly, distress experienced from past-year stressors by the longitudinal group at T2 (DISTRSS T2) ranged from 0 - 37 and had a mean of 9.26. DISTRSS T2 and REC.STRSSR T2 were strongly correlated, $r = .87$, $p < .001$, $N = 939$.

The robust relationships between REC.STRSSR and DISTRSS at both T1 and T2 indicated that comprehensive analyses of DISTRSS, in addition to REC.STRSSR, would be of little value. Consequently, DISTRSS was only used in multiple regression analyses to assess how stressor distress impacts on particular bivariate relationships. All other analyses regarding recent stressors used the REC.STRSSR variable.

7.3.4 Exposure to Specific Stressors

Table 13 shows the quantity of respondents reporting each recent stressor listed in the RSQ at T1 and T2. The most frequently experienced event was serious health problems, reported by 68.0% of both T1 (N = 1012) and T2 (N = 714) samples. Also common was serious illness of family or friends reported by 55.5% of T1 (N = 827) and 54.1% of T2 (N = 568) respondents.

Table 13

Frequency of exposure to specific recent stressors measured at T1 and T2

	T1		T2	
	(N = 1489)	%	(N = 1050)	%
Sight/Hearing Problems	442	30.0	293	28.0
Serious Health Problems	1012	68.0	714	68.0
Medical Procedures	512	34.4	351	33.5
Fall or Accident	239	16.1	146	14.0
Hospitalised	416	27.9	298	28.5
ADL Problems	623	41.8	400	38.4
Marriage Problems	168	15.3	82	7.9
Conflict	482	32.4	287	27.4
Moved Residency	185	12.4	81	7.7
Friend/Family Ill	827	55.5	568	54.5
Death Loved One	574	38.5	393	37.6
Grief	550	36.9	308	29.5
Physical Appearance	460	30.9	266	25.5
Financial Problems	410	27.5	224	24.4
Caregiver	344	23.1	193	18.4
Retired	137	9.2	73	7.0
Spouse Retired	65	4.4	32	3.1
Concern Child/Grandchild	125	8.4	340	32.5
Other	715	48.0	444	42.3

Forty eight percent (N = 715) of the cross-sectional sample at T1 specified other stressors. Of this sample, 11.9% (N = 125) specified strong concern for the physical and/or psychological well-being of a child or grandchild. Because of its frequency, concern for the well-being of children/grandchildren was given its own category for data processing and listed as a specific RSQ stressor in Q2 (see Appendix B-3).

Forty two percent (N = 444) of the longitudinal sample specified other stressors at T2. Most frequently reported was the cognitive deterioration of a spouse (e.g., dementia), minor car accidents, car problems, dealing with agencies, unruly or noisy neighbours, physical pain, memory problems, estrangement from family, concern for elderly parents, study or work pressures and pets being sick or dying.

7.3.5 Socio-Demographic Differences for Exposure to Specific Stressors

Cross-Sectional Data

Table 14 shows the significant results found for Chi-square tests which assessed gender differences in the frequency that specific recent stressors were reported. The ES for each gender difference was small, *phi coefficient* = .09 - .14.

Table 14

Significant gender differences for individual T1 recent stressors (chi-square) (N = 1487)

Variable	χ^2	ES	Males		Females	
		Phi	N =460	%	N=1027	%
ADL Problems	22.27*	.12	151	33.1	472	46.4
Conflict	10.38*	.09	122	26.7	359	35.4
Change Physical App	16.49*	.11	109	23.9	351	34.6
Worries Children	20.40*	.12	24	19.0	133	13.3
Other	19.07*	.14	184	40.0	531	52.8

* $p < .001$

To summarise:

- More females (13%) reported concern for a child or grandchild than males (5%),
- More females (46%) reported ADL problems than males (33%)
- More females (35%) reported conflict with family or friends than male (27%)
- More females (36%) noticed a drastic change in physical appearance than males (24%)
- More females (53%) specified additional 'other' stressors than males (40%)

Chi-square tests determined relationship-status differences (at $p < .001$) in the frequency that three recent stressors were reported:

- Those not in a relationship reported someone close passing away more often (N = 337, 44.1%) than those in a relationship (N = 232, 33.8%), $\chi^2(1, 1451) = 15.63$, $p < .001$, *phi coefficient* = .11.
- Those not in a relationship reported ongoing long-term grief more often (N = 332, 43.5%) than those in a relationship (N = 208, 38.5%), $\chi^2(1, 1448) = 25.92$, $p < .001$, *phi coefficient* = .14.
- Those not in a relationship reported financial difficulties more often (n = 250, 32.3%) than those in a relationship (N = 154, 22.4%), $\chi^2(1, 1461) = 17.4$, $p < .001$, *phi coefficient* = .11.

The ES' for all relationship differences experienced were small.

Chi-square comparisons testing for education and ethnicity effects showed that there were no differences in the frequency that any specific stressor was experienced.

Longitudinal Data

Chi-square tests determined one gender difference (at $p < .001$) for the reporting of a specific recent stressor at T2. Females more frequently reported ADL problems (N = 308, 42.8%) than males (N = 87, 26.3%), $\chi^2(1, 1028) = 25.69$, $p < .001$, *phi coefficient* = .16.

Differences among educational background and ethnicity for the reporting of a specific recent stressor at T2 were not found.

Relationship status influenced the frequency with which two stressors were reported. Those not in a relationship reported more problems with grief over someone who died longer than a year ago (N = 200, 36.1%) than those in a relationship (N = 105, 34.4%), $\chi^2(1, 1035) = 24.7$, $p < .001$, *phi coefficient* = .14. Those currently in a relationship reported being in a care-giving role more often (N= 113, 23.3%) than those who were not in a relationship (N = 77, 13.9%), $\chi^2(1, 1038) = 14.9$, $p < .001$, *phi coefficient* = .10. However, those in a relationship were less likely to report grief over someone who died longer than a year ago (N = 200, 36.1%) than those in a relationship (N = 105, 34.4%), $\chi^2(1, 1035) = 24.7$, $p < .001$, *phi coefficient* = .14. Similar to results for the T1 data, all ES' for the socio-demographic differences found were small. The testing of differences between relationship status groups for exposure to specific stressors did not include the events that would not be reported by single respondents (i.e., marriage problems, spouse retired).

7.4 Chapter Summary

Objective 1 was to describe the frequency and nature of lifetime and recent traumatic events experienced by the samples. Lifetime trauma exposure was common among the cross-sectional sample with an average of eight events reported per person. Multiple exposure to a trauma over the lifetime was reported by over three-quarters of the sample. Abuse was reported by more than half of the sample. Death of a spouse, life-threatening illness of a spouse, being diagnosed with a life-threatening illness and 'other' trauma were the most frequently reported lifetime traumas. Males were more likely to witness or be involved in violent acts and accidents. Female respondents were more likely to experience abuse both during childhood and adulthood. Over one-third of the sample reported that the 'other' additional trauma they specified that was not listed in the inventory was the worst lifetime trauma experienced.

Just under half of the longitudinal sample reported at least one traumatic exposure within the prior year. Multiple exposure to a past-year trauma was reported by about one-fifth of the sample and at least one type of abuse was reported by just over one-tenth of the sample. Involvement in a relationship that involved emotional abuse was the most frequently experienced trauma and was reported mostly by females. Most frequently reported, as the worst traumatic event, was 'other' trauma.

Objective 2 was to establish the number and nature of past-year stressors reported by the samples. The data showed that recent stressors were pervasive. At both T1 and T2 samples reported an average of around six past-year stressors each. The most frequently reported stressors were serious health problems, serious illness of close family members and friends and 'other' stressor. More females than males reported ADL problems, conflict with family or friends, extreme change in physical appearance, concern for children or grandchildren and 'other' stressor. Participants in intimate relationships more frequently reported fulfilling a care-giving role. Single participants more frequently reported long-term grief. All noted socio-demographic differences were significant but small.

The following chapter outlines how 'trauma-related' symptoms were identified in the present study and imparts results regarding the psychological well-being of the samples.

Chapter Eight

RESULTS: PART THREE

This chapter details findings with regards to the manifestation of trauma-related symptoms during later life. Reported are the results of a principal components analysis (PCA) performed on responses to pooled items from the depression, dissociation, anxiety and PTSD measures. The PCA was performed to determine how symptom clusters present in relation to past trauma-exposure in older people. Data showing the current prevalence of full- and subclinical PTSD within the older sample are conveyed and information on how PTSD presents as a clinical disorder during later life is presented. Results of a logistic regression analysis revealed the variables that predict PTSD as a clinical disorder. The analyses in this chapter were carried out in order to meet objectives 3, 4 and 5, which are as follows:

Objective 3: To identify the types of symptoms (from the measures of depression, PTSD, dissociation and anxiety) that are best fitted to represent 'trauma-related symptoms' during later life.

Objective 4: To determine the number who meet full and subclinical PTSD diagnostic criteria within the samples and to ascertain how PTSD presents during later life as a clinical disorder.

Objective 5: To determine the current and pre-diagnostic factors that predict PTSD as a clinical disorder during later life.

8.1 Identification of Trauma-Related Symptoms

8.1.1 Principal Components Analysis

To gain an explicit understanding of the sample's psychological responses to trauma, a principal components analysis (PCA) was applied to all 47 items from the four measures that assessed psychological symptoms: The Geriatric Depression Scale - Short Form 10 (GDS-SF), Curious Experiences Scale - Short Form 17 (CES-SF), SASRQ Anxiety Scale and PTSD Checklist (PTSD-C). The goal was to extract a logical set of underlying components that could portray how various symptoms cluster during later life and to ascertain the extent that each symptom cluster is related to the trauma variables. When an empirical summary of the data set is all that is required, PCA is psychometrically sound, simpler mathematically (Stevens, 1996) and the best option when compared with factor analysis (Tabachnick & Fidell, 2007).

Appendix D-1 outlines the procedures of the PCA, which resulted in a 5-component solution. The components were identified as anxiety-hyperarousal, depression-numbing, dissociation-depersonalization, reexperiencing-avoidance and cognitive problems. Appendix D-2 tabulates the items for each component. The cut-off for selection was a rotated loading of .40 or greater (Tabachnick & Fidell, 2007).

The first component, anxiety-hyperarousal, explained 10.4% of the total variance and consisted of 11 items. The component included all items from the SASRQ anxiety scale and four items from the PTSD-C hyperarousal subscale.

The second component, depression-numbing, explained 10.0% of the total variance and consisted of 11 items. This component incorporated most of the items from the GDS-SF, and two PTSD-C avoidance items pertaining to feeling emotionally numb, and distant or cut off from others.

The third component explained 9.7% of the total variance and contained 11 items associated with dissociation. All items were from the CES-SF. Nine items were questions on depersonalization or feeling disconnected from one's sense-of-self and two

items were questions on absorption or retreating into a fantasy world.

The fourth component, reexperiencing-avoidance, encompassed symptoms that relate to both reliving distressing memories and the psychological/behavioural avoidance of traumatic reminders. Seven of the eight items were from the PCL-C, confirming that reexperiencing and avoidance are inseparable ailments, even during later life. One item, pertaining to reliving a past event, was from the CES-SF. The reexperiencing-avoidance component explained 9.2% of the total variance. It is worth noting that the majority of items from the PTSD-C were split across the reexperiencing-avoidance and anxiety-hyperarousal factors.

The final component, cognitive problems, explained 6.7% of the variance and included six items relating to cognitive difficulties such as memory and concentration problems. Four items were from the CES-SF, one item was from the PTSD-C hyperarousal scale, and one item was from the GDS-SF.

8.1.2 Correlations Between Symptom Variables and Trauma

The five components extracted from the PCA were composed as variables. The distributions of the new variables were converted from skewed to normal with square root, logarithm or inverse transformations. Table 15 shows the correlations between each lifetime trauma variable and both the PCA and original symptom variables.

The ES' for most of the correlation values were small (small $ES = .01$, medium $ES = 0.3$ and large $ES = 0.5$) (Cohen, 1988). As shown, the PCA components correlated significantly with most trauma variables and explained a similar amount of variability in the DVs as the original symptom variables that paralleled their content in measurement. For example, the PCA variables, reexperiencing-avoidance and anxiety-hyperarousal had the highest correlations with LIFE.TRMA, LIFE.MTRMA and LIFE.ABUSE. Comparable associations were found between the original PTSD variable and LIFE.TRMA, LIFE.MTRMA and LIFE.ABUSE.

Table 15:

Pearson r values between LIFE.TRMA, LIFE.MTRMA & LIFE.ABUSE and symptom variables (both original measures and PCA variables).

Variable/Factor	LIFE.TRMA	LIFE.MTRMA	LIFE.ABUSE
Original Variable			
PTSD T1	.34**	.19**	.31**
	N = 1397	*N* = 978	*N* = 1397
ANX T1	.26**	.16**	.28**
	N = 1465	*N* = 1019	*N* = 11
DISS T1	.24**	.14**	.21**
	N = 1297	*N* = 921	*N* = 1297
DEP T1	.18**	.11**	.11**
	N = 939	*N* = 666	*N* = 939
PCA Variable			
AVOIDNCE.RELIVING	.30**	.18**	.26**
	N = 1208	*N* = 876	*N* = 1208
HYPERVIG.ANXIETY	.28**	.17**	.27**
	N = 1426	*N* = 912	*N* = 1426
DISSOCIATION	.20**	.12**	.18**
	N = 790	*N* = 594	*N* = 790
DEPRESSION.NUMBING	.17**	.09*	.23**
	N = 1032	*N* = 732	*N* = 1032
COGNITIVE PROBS	.14**	.09*	.13**
	N = 1290	*N* = 912	*N* = 1290

*$p < .01$ **$p < .001$

Items from T2 data were arranged into PCA variables and their distributions transformed to normal. Table 16 shows the correlations between recent trauma variables at T2 and both the original and PCA symptom variables. Again, PCA symptom variables shared a similar amount of variability in REC.TRMA T2, REC.MTRMA T2 and REC.ABUSE T2 as the original variables that paralleled their content. For example, the PCA variable depression-numbing had the strongest correlation with REC.TRMA T2 (r = .16), which was comparable to the relationship between the original depression variable and REC.TRMA T2 (r = .15). The PCA variables anxiety-hyperarousal and avoidance-reliving had the strongest correlations with recent multiple trauma and recent abuse; as did the original PTSD and anxiety variables. The ES' for all correlations were small.

Table 16

Pearson r values between REC.TRMA T2, REC.MTRMA T2 & REC.ABUSE T2 and symptom variables (both original measures and PCA variables).

Variable/Factor	REC.TRMA T2	REC.MTRMA T2	REC.ABUSE T2
Original Variable			
PTSD T2	.11*	.15***	.22***
	N = 385	*N* = 923	*N* = 992
ANX T2	.11*	.13***	.20***
	N = 398	*N* = 942	*N* = 1015
DISS T2	.08	.07*	.16***
	N = 360	*N* = 829	*N* = 890
DEP T2	.15**	.09*	.09**
	N = 360	*N* = 860	*N* = 929
PCA Variable			
REEXPERIENCE-AVOIDANCE T2	.08	.12**	.19***
	N = 394	*N* = 936	*N* = 1005
ANXIETY-HYPERAROUSAL T2	.11*	.13***	.21***
	N = 388	*N* = 925	*N* = 996
DEPERSON-DISSOCIATION T2	.04	.04	.16***
	N = 391	*N* = 931	*N* = 1002
DEPRESSION-NUMBING T2	.16**	.12**	.17***
	N = 367	*N* = 889	*N* = 959
COGNITIVE PROBLEMS T2	.07	.04	.13***
	N = 382	*N* = 852	*N* = 1011

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

NOTE: Significance levels are inconsistent across analyses in relation to *r* values due to variations of *N* within each analysis.

8.1.3 Conclusions Regarding the PCA Results

Results of the above analyses endorsed the original symptom measures as suitable for measuring trauma-related psychopathology during later life. Correlations of trauma variables with the PCA-generated variables were comparable to correlations with the original psychological variables that paralleled their content. Even the purest measurements of the three main PTSD symptom types for reexperiencing, avoidance and hyperarousal, as derived from the PCA, retained the highest correlation values with lifetime trauma, recent multiple trauma and recent abuse during later life. Original and

PCA symptom variables that measured depression, each maintained the highest correlations with recent trauma.

Objective 3 was to distinguish the symptom types that best represent traumatic-stress during later life. Despite the small ES' yielded by most of the correlation analyses, the results validated the importance of examining PTSD symptoms first and foremost when investigating traumatisation in older people. The findings also indicated, however, that anxiety, depressive and dissociative symptoms are still worth examining to gain a thorough profile of the older traumatised adult.

8.2 PTSD as a Clinical Disorder

Applying a PTSD diagnosis was based on recommendations for the PCL-C, as outlined in Chapter Five. While DSM-IV (APA, 1994) guidelines for PTSD specify that a stressor needs to have been experienced, the guidelines for a PTSD diagnosis based on the questionnaire does not. An additional question was added: "*Is there a particular event/situation that may have triggered any of the above problems*?" Of those meeting PTSD criteria for the questionnaire, around two-thirds (T1 = 77.3%; T2 = 58.8%) reported that they could identify at least one stressor that had triggered PTSD symptoms. Approximately one-fifth (T1 = 19.6%; T2 = 25.5%) reported being unsure and a small number (T1 = 3.1%; T2 = 11.8%) reported being unable to identify any recent triggers.

8.2.1 PTSD Diagnosis at T1

Of the participants in the cross-sectional data group, 6.5% (N = 97) met full PTSD diagnostic criteria at T1. Of those in the PTSD.DIAG T1 group, a smaller percentage of NZ Europeans met PTSD criteria (6.5%, N = 77) as compared to those of *other* ethnicity (10.8%, N = 20), χ^2 (1, 1379) = 3.91, $p < .05$. The ES was small, *phi coefficient* = .06. There were no other socio-demographic differences (relationship status, educational background and gender). Of the PTSD.DIAG T1 group, 6.2% (N = 6) rated their health as *terrible* or *very poor*, 40.1% (N = 39) as *poor* or *fair*, 29.9% (N = 29) as *good* and

21.7% (N = 21) as *excellent*. Of those in the cross-sectional data group, a further 6.4% (N = 95) met criteria for subthreshold PTSD. Socio-demographic differences were not found in the number of adults in the PTSD.SUB T1 group.

8.2.2 PTSD Diagnosis at T2

Of the longitudinal data group, 4.8% (N = 51) met PTSD diagnostic criteria at T2. A lower proportion of those with educational or trade qualifications (4.0%, N = 31) met PTSD criteria, than those without qualifications (8.9%, N = 19), χ^2 (1, 987) = 7.43, p < .05; as did a lower number of NZ European (4.4%, N = 39) in comparison to *other* ethnicity (9.5%, N = 11), χ^2 (1, 998) = 4.52, p < .05. The *ES* for both comparisons were small, *phi coefficient* = .09 and .07 respectively. Of the PTSD.DIAG T2 group 5.9% (N = 3) rated their health as *terrible* or *very poor*, 51.0% (N = 26) as *poor* or *fair*, 27.5% (N = 14) as *good* and 13.7% (N = 7) as *excellent*.

A further 6.1% (N = 64) of the longitudinal group met criteria for subthreshold PTSD at T2. Of the PTSD.SUB T2 group, no differences were found in the proportion of those with differing socio-demographic characteristics (age, sex, education, relationship status and ethnicity).

Of the PTSD.DIAG T2 group, 25.5% (N = 13) had already attained full PTSD status at T1, 15.6% (N = 8) had attained subthreshold PTSD status at T1, and the majority (43.1%, N = 22) had not met criteria for either full or subthreshold PTSD at T1. The PTSD status of 15.6% (N = 8) of the PTSD.DIAG T2 group was unknown.

PTSD scores from T1 (M = 45.92, SD = 12.37, N = 48) to T2 (M = 51.75, SD = 8.66, N = 48) differed for the PTSD.DIAG T2 group, $t(47)=3.68$, p < .001. The magnitude in differences was large (eta^2 = .22).

8.2.3 Specific PTSD Symptoms in Diagnostic Groups

The presence of each of the 17 PTSD symptoms was determined for each respondent in the PTSD.DIAG group for T1 and T2. As Table 17 shows, all PTSD symptoms were common; however, symptoms from the PTSD hyperarousal sub-scale were most frequently reported. The most common symptoms within each sub-scale were:

- Re-experiencing subscale: *Feeling very upset when something reminded you of a stressful experience from the recent or distant past* (T1 = 89.7%; T2 = 90.2%) and *Repeated, disturbing memories, thoughts, images of stressful experiences from the recent or distant past* (T1 = 59.8%; T2 = 52.9%).

- Avoidance Subscale: *Avoiding thinking or talking about a past stressful experience or avoiding having feelings related to it* (T1 = 77.3%; T2 = 82.4%) and *Avoiding activities or situations because they remind you of a stressful experienced from the past* (T1 = 62.9%; T2 = 66.7%).

- Hyperarousal Subscale: *Trouble falling or staying asleep* (T1 = 77.3%; T2 = 80.4%) and *Feeling irritable or having angry outbursts* (T1 = 64.9%; T2 = 64.7%).

Chi-square tests comparing the proportion of males and females in PTSD.DIAG T1 endorsing each PTSD symptom revealed differences in the frequency of two PTSD symptoms. Females more frequently reported *Avoiding activities or situations because they remind you of a stressful experience from the past* (Females 71.6%, $N = 48$; Males 43.3%, $N = 13$), $\chi^2 (1, 97) = 5.95$, $p < .05$. The ES was medium, *phi coefficient* = .34. Males more frequently reported *Feeling irritable or having angry outbursts* (Female: 56.7%, $N = 38$; Male: 83.3%, $N = 25$), $\chi^2(1, 97) = 5.33$, $p < .05$. The ES was medium, *phi coefficient* = .26. As compared to T1, no differences were found in the proportion of males and females in the PTSD.DIAG T2 group reporting any specific symptom; however, the small number in the analyses ($N = 51$) may have lowered power considerably.

Table 17

Frequency of PTSD symptoms present in PTSD.DIAG T1/T2 groups

PTSD SYMPTOM	T1 (*N* = 97) %	*N*	T2 (*N* = 51) %	*N*
Reexperiencing Symptoms				
Repeated, disturbing memories, thoughts, images of stressful experience from the recent or distant past	59.8	(*N*=58)	52.9	(*N*=27)
Repeated, disturbing dreams of a stressful experience from the recent or distant past	22.7	(*N*=22)	37.3	(*N*=19)
Suddenly acting or feeling as if a stressful experience from the past were happening again	48.5	(*N*=47)	52.9	(*N*=27)
Feeling very upset when something reminded you of a stressful experience from the recent or distant past	89.7	(*N*= 87)	90.2	(*N*=46)
Having physical reactions when something reminded you of a stressful experience from the recent or distant past	32.0	(*N*=31)	52.9	(*N*=27)
Avoidance Symptoms				
Avoiding thinking or talking about a past stressful experience or avoiding having feelings related to it	77.3	(*N*=75)	82.4	(*N*=42)
Avoiding activities or situations because they remind you of a stressful experience from the past	62.9	(*N*=61)	66.7	(N=34)
Trouble remembering important parts of a stressful experience from the past	30.9	(*N*=30)	35.3	(*N*=18)
Loss of interest in activities you used to enjoy	57.7	(*N*=56)	56.9	(*N*=29)
Feeling distant or cut off from other people	54.6	(*N*=53)	62.7	(N=32)
Feeling emotionally numb or being unable to have loving feelings for those close to you	58.8	(*N*=57)	56.9	(*N*=29)
Feeling as if your future will be cut short somehow	36.1	(*N*=35)	33.3	(*N*=17)
Hyperarousal Symptoms				
Trouble falling or staying asleep	77.3	(*N*=75)	80.4	(*N*=41)
Feeling irritable or having angry outbursts	64.9	(*N*=63)	64.7	(*N*=33)
Having difficulty concentrating	61.9	(*N*=60)	33.3	(*N*=17)
Being 'superalert' or on guard	63.9	(*N*=62)	66.7	(*N*=34)
Feeling jumpy or easily startled	51.5	(*N*=50)	64.7	(*N*=33)

8.2.4 Symptom Identifiers for PTSD

The presence of emotional numbing, flashbacks and nightmares were calculated in groups meeting full and subthreshold PTSD criteria. Each of these three symptoms has been identified as unique to PTSD alone as an anxiety disorder (Foa & Rothbaum, 2001). At least one of these three symptoms was present in about 90% (T1 = 92.2%; T2 = 89.7%) of the PTSD.DIAG respondents and in about 75% (T1 = 76.3%; T2 = 74.2%) of PTSD.SUB respondents. In contrast, only a small percentage from the NO.DIAG groups reported at least one of the three symptoms (T1 = 12.3%; T2= 17.3%). Signs of emotional numbing, flashbacks and nightmares in older individuals during clinical assessment should lead to further enquiry leading to the possible diagnosis of full or subthreshold PTSD.

8.2.5 Section Summary

Approximately one-tenth of both T1 and T2 samples met criteria for either subthreshold or full PTSD. There were small differences between NZ Europeans and *other* ethnic groups, and between respondents with and without educational qualifications in the number of respondents that met full PTSD criteria.

The presence of PTSD in later life may be revealed with a large number of anxiety and hyperarousal symptoms, in addition to behavioural avoidance in females and irritability or anger in males. Emotional numbing, flashbacks or nightmares, identified as unique to PTSD as an anxiety disorder (Foa & Rothbaum, 2001), are also strong indicators that an older person is suffering from clinically significant levels of PTSD. Older respondents with PTSD may present more frequently with poor or fair physical health, as opposed to very good or excellent health.

8.3 Temporal Changes in PTSD Diagnostic Status From T1 to T2

Each participant in the longitudinal group was placed into one of four categories depending on their PTSD diagnostic status from T1 to T2:

1) Participants did not meet PTSD criteria at T1, nor did they meet PTSD criteria at T2 (T1 NO DIAG, T2 NO DIAG).

2) Participants met PTSD criteria at T1, but not at T2 (T1 DIAG, T2 NO DIAG).

3) Participants did not meet PTSD criteria at T1, but did at T2 (T1 NO DIAG, T2 DIAG).

4) Participants met PTSD criteria at both T1 and T2 (T1 DIAG, T2 DIAG)

8.3.1 T1 DIAG, T2 DIAG

Thirteen respondents (1.2%) met full PTSD criteria at both T1 and T2. This constitutes a conservative estimate of the number of older adults with chronic PTSD, since DSM-IV duration criteria for chronic PTSD is three months. Of these, 46.2% ($N = 6$) were male and 53.8% ($N = 7$) were female. This group reported an average of 7.5 recent stressors and 2.1 recent traumatic events. The mean PTSD T2 score of 50.92 ($SD = 7.28$) for this group was the highest of all four diagnostic groups and was higher than the remainder of the longitudinal group ($M = 28.19$, $SD = 9.13$), $t(1010) = 8.95$, $p < .001$, $eta^2 = .07$. The ES was medium. The PTSD symptoms most frequently reported for this group were, *Feeling very upset when something reminded you of a stressful experience from the recent or distant past* (92.3%, $N = 12$); *Avoiding thinking or talking about a past stressful experience or avoiding having feelings relating to it* (84.6%, $n = 11$); and *Trouble falling or staying asleep* (84.6%, $N = 11$).

8.3.2 T1 NO DIAG, T2 DIAG

Twenty-nine participants (2.7%) obtained a new PTSD diagnostic status from T1 to T2. Of this group, 41.4% (N = 12) were male and 58.6% (N = 17) were female. The group reported an average of 8.6 stressors and 1.6 traumas in the past year. More specifically, 69.0% (N = 20) reported at least one trauma from the TEI and 38.0% (N = 11) reported at least two events on the TEI. Recent abuse was reported by 48.3% (N = 14) of participants in this group: 3.4% (N = 1) reported sexual abuse, 6.9% (N = 2) reported a physically abusive relationship and 48.3% (N = 12) reported emotional abuse. The average number of lifetime traumatic events reported by this group at T1 was nine, and 33.3% (N = 9) reported between 11 and 23 events. Although respondents in this group did not met PTSD criteria until T2, the mean PTSD T1 score of 38.48 (SD = 6.31, N = 29) were still significantly higher than the mean PTSD T1 score of 29.89 for rest of the longitudinal sample (SD = 10.34, N = 1368), $t(1395) = 7.13$, $p < .001$. The ES was small, $eta^2 = .04$. Of this group, 27.6% (N = 8) had met criteria for subthreshold PTSD at T1.

8.3.3 T1 DIAG, T2 NO DIAG

Forty-eight respondents (4.5%) improved between assessments and met full PTSD criteria at T1, but not at T2. Of respondents in this group, 72.9% (N = 35) were female and 27.1% (N = 13) were male. The group reported an average of 7.9 recent stressors and 1.2 past-year traumas. Although the individuals in this group improved over the year, they still maintained higher levels of PTSD symptoms at T2 (M = 38.75, SD = 6.56) than the longitudinal group as a whole (M = 27.97, SD = 9.72), $t(1010) = 7.95$, $p < .001$, $eta^2 = .06$. The ES was medium. Thirty five percent (N = 17) of this group still met criteria for subthreshold PTSD at T2.

8.3.4 T1 NO DIAG, T2 NO DIAG

Most participants (N = 860; 81.9%) did not meet PTSD diagnostic criteria at either assessment. Of this group 30.9% (N=266) were male and 69.1% (N=594) were female. Independent samples t-tests showed that this group reported the least number of recent

stressors at T2 (M = 5.26, SD = 2.94) in comparison to the rest of the longitudinal sample (M = 7.02, SD = 3.29), $t(984) = 7.17$, $p < .001$, and the lowest levels of recent trauma (M = .65, SD = 1.06) when compared to the rest (M = 1.04, SD = 1.49), $t(992) = 4.16$, $p < .001$. The ES' was medium for recent stressors ($eta^2 = .05$) and very small for recent trauma ($eta^2 = .01$).

8.3.5 Summary of PTSD Results

Results suggested that PTSD symptoms increase or decrease on a continuum over time. The 2.7% that gained a new PTSD diagnosis from T1 to T2 still had higher than average PTSD scores one year earlier. The 4.5% who lost a PTSD diagnosis from T1 to T2 maintained higher than average PTSD scores at T2. These results suggest that PTSD symptoms occur on a continuum, gradually increasing or decreasing over time. They further suggest that vulnerability to PTSD should be considered if PTSD scores are just under the threshold for a diagnosis.

8.4 Predictor Variables for Meeting PTSD Criteria

8.4.1 Logistic Regression of PTSD Diagnosis

To meet the requirements of Objective 5, a logistic regression was performed to determine the present and pre-diagnostic factors that predict PTSD.DIAG T2 membership. Initially, the analysis was to be performed on a full-PTSD diagnosis versus a non-PTSD diagnosis. However, the number of PTSD cases (N = 14) compared with the number of variables (N = 13) was insufficient causing a potential for over-fitting in which a perfect solution would be found to be meaningless (Hosmer & Lemeshow, 2000; Tabachnick & Fidell, 2007). The criteria for inclusion into the logistic regression extended to incorporate those who also met subthreshold PTSD criteria at T2. Inclusion of both subthreshold and full PTSD cases (DIAG T2) increased the size of the sample for the analysis substantially (N = 82).

A direct logistic regression was performed on DIAG T2 as outcome and 12 predictors: age, gender, relationship status, ethnicity, education, lifetime trauma, recent trauma (T2), recent stressors (T1, T2), posttraumatic vulnerability perceptions (T1, T2) and control beliefs (T1, T2).

After deletion of 448 cases due to missing data, 602 cases were available for analysis. A test of the full model with all predictors against a constant-only model was statistically significant, $\chi^2(13, N = 602) = 140.48$, $p < .001$. Overall, between 21.0% and 38.0% of the variability was explained by this set of variables (*Cox & Snell R Square* = .21; *Nagelkerke R Square* = .38). The model had a positive predictive value of 63.2% and a negative predictive value of 89.9%. This means that of those in the DIAG group 63.2% were accurately identified. Of those not in the DIAG group, 89.9% were accurately identified.

Table 18 shows regression coefficients, Wald statistics, odds ratios and 95% confidence intervals for each of the 12 predictors. According to the Wald criterion, four variables significantly contributed to DIAG T2 group membership: LIFE.TRMA, $\chi^2(1, N = 602) = 5.57$, $p < .05$; VULN T1, $\chi^2(1, N = 602) = 5.21$, $p < .05$; VULN T2, $\chi^2(1, N = 602) = 9.74$, $p < .01$; and CNTRL T2, $\chi^2(1, N = 602) = 4.06$, $p < .05$. The analysis confirmed that lifetime trauma, current and past year traumatic vulnerability perceptions and current control beliefs predicts subthreshold- or full-PTSD membership during later life.

A model run without the above four significant predictors was reliably different from the full model, χ^2 (9, $N = 680$) = 34.37, $p < .001$, confirming that all four variables are important predictors of DIAG T2. However, this model was still reliably different from the constant-only model, χ^2 (9, $N = 680$) = 106.11, $p < .001$, and revealed two additional predictors: RECSTRSSRS T2, χ^2 (1, $N = 680$) = 8.23, $p < .01$ and CNTRL T1, χ^2 (1, $N = 680$) = 32.71, $p < .001$. These results suggest, therefore, that sense of control measured one-year prior and past-year recent stressors, still play an important role in predicting PTSD diagnostic membership. Recent stressors measured one-year prior, and past-year trauma, were not significant predictors of DIAG T2.

Table 18

Logistic regression analysis of DIAG T2 as a function of socio-demographics, LIFE.TRMA, REC.TRMA T2, REC.STRSSRS T1, REC.STRESSRS T2, VULN T1, VULN T2, CNTRL T1 and CNTRL T2 (N = 602)

Variable	*B*	Wald chi-square	Odds ratio	95% Confidence interval for odds ratio	
				Lower	*Upper*
AGE	.01	0.39	1.01	0.97	1.06
GENDER	-.55	2.73	0.58	0.30	1.11
RELATIONSHIP	.05	0.02	1.05	0.57	1.94
ETHNICITY	.16	0.13	1.17	0.50	2.72
EDUCATION	-.48	2.19	0.62	0.33	1.17
LIFE.TRMA	.07*	5.57	1.07	1.01	1.13
REC.TRMA T2	.00	0.00	1.00	0.78	1.25
REC.STRSSRS T1	-.04	0.40	1.00	0.86	1.08
REC.STRSSRS T2	.09	1.78	1.09	0.96	1.24
VULN T1	.12*	5.21	1.13	1.04	1.27
VULN T2	.15**	9.74	1.17	0.95	1.14
CNTRL T1	.03	0.25	1.03	0.62	1.03
CNTRL T2	-.11*	4.06	0.89	0.04	0.90

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

8.4.2 Gaining a PTSD Diagnosis From T1 to T2

Of the 29 respondents who gained a full PTSD diagnosis from T1 to T2, 65.5% ($N = 19$) experienced at least one past-year trauma and 37.9% ($N = 11$) experienced two or more traumas. Of this group, 48.3% reported at least one form of recent abuse ($N = 14$). Emotional abuse within a relationship was reported most frequently (41.3%, $N = 12$), followed by physical abuse within a relationship (6.9%, $N = 2$) and unwanted sexual experiences (3.4%, $N = 1$). The mean number of lifetime traumas experienced among this group was high at 9.4 traumas. Just over one-third of the group (34.4%, $N = 10$) reported between 11 and 23 events. An average of 8.6 past-year stressors were reported per person. These analyses again confirm that lifetime trauma, recent traumatic events and past-year stressors all appear to be related to the development of PTSD during later life.

8.4.3 Section Summary

Understanding the role of variables in predicting clinically meaningful levels of PTSD is a complex process requiring appreciation of how certain variables work together to increase or decrease risk of group membership. The odds ratios of the four predictors in the full model, ranging from .89 to 1.17, indicated little change in the likelihood of a PTSD diagnosis on the basis of a one-unit change for each predictor. Based on these results, lifetime trauma, recent stressors, posttraumatic vulnerability perceptions and control beliefs appear to work together to increase chances of reaching clinically significant levels of PTSD. Subsequent evaluation of traumatic events experienced by participants who gained a new PTSD diagnosis from T1 to T2 indicated that past-year emotional abuse may play a particularly strong role in the development of PTSD. Socio-demographic variables, recent stressors as reported one year ago and recent past-year traumatic events were not significant predictors.

8.5 Past-Year Events and Probability of PTSD

8.5.1 Differences Across Recent Traumas in Probability of PTSD

Participants were assessed for PTSD on the basis of the specific past-year traumatic events that were reported. Table 19 shows the proportion of T2 respondents who experienced each specific traumatic event (P1). Emotional abuse was most frequently experienced (11.0%, N = 116), followed by *other* trauma (9.7%, N = 102) and life-threatening illness (6.2%, N = 65).

The column labelled P2 in Table 19 indicates the likelihood that a participant with PTSD experienced a specific past-year trauma. This figure is the proportion of respondents from those who met full PTSD criteria at T2 who experienced each specific trauma. As with the full sample, the PTSD.DIAG T2 group also encountered emotional abuse most frequently (31.4%, N = 16), followed by *other* trauma (17.6%, N = 9) and life-threatening illness (11.8%, N = 6).

The column labelled P3 indicates the likelihood of a traumatic event being related to PTSD. This figure is the proportion of people in P1 (who experienced each trauma) who also met full PTSD diagnostic criteria. The traumatic event with the highest probability of being related to a PTSD diagnosis was unwanted sexual experiences, in which 50.0% (N = 4) of those who experienced this trauma over the prior year, met PTSD criteria at T2. Physical abuse (28.6%, N = 2), divorce (25.0%, N=1) and child died (25.0%, N=1) were also strongly related to PTSD at T2. A series of *chi-square* analyses indicated that males and females did not differ in the likelihood of a PTSD diagnosis with the experience of any specific traumatic event. Caution in interpreting these results needs to be exercised, however, due to the small number of participants in each analysis.

Table 19

The proportion of participants at T2 who reported each recent trauma (P1), the proportion in the PTSD.DIAG T2 group who reported each recent trauma (P2), and the proportion of people in P1 also in the PTSD.DIAG T2 group (P3).

Past-Year Trauma T2	Total Sample P1 N=1050	P1 %	PTSD.DIAG Group T2 P2	P2 %	P3 %
Spouse died	35	3.3	5	9.8	14.3
Child died	11	1.0	2	3.9	18.2
Divorced	4	0.3	1	2.0	25.0
Witnessed acc/fire	43	4.1	5	9.8	11.6
Natural disaster	12	1.1	1	2.0	8.3
Violent crime	12	1.1	1	2.0	8.3
Physical abuse	7	0.7	2	3.9	28.6
Emotional abuse	116	11.0	16	31.4	13.8
Unwanted sexual exp	4	0.3	2	3.9	50.0
Witness mutilation, death	22	2.1	2	3.9	9.0
Spouse life-threat illness	66	6.3	5	9.8	7.8
Child life-threat illness	46	4.4	5	9.8	10.9
Spouse accident/injury	17	1.6	1	2.0	5.9
Child accident/injury	10	0.9	1	2.0	10.0
Self life-threat illness	65	6.2	6	11.8	9.2
Self accident/injury	24	2.3	1	2.0	4.2
Combat	21	2.0	0	0.0	9.5
Other	102	9.7	9	17.6	8.8

P1: Proportion among the full sample who experienced the event (frequency each event was experienced).

P2: Proportion of respondents in the PTSD.DIAG T2 group who experienced each event (likelihood that those in the PTSD.DIAG T2 group experienced each event).

P3: Proportion of the group who experienced each event who were also in the PTSD.DIAG T2 group (likelihood the event will be related to PTSD)

8.5.2 Differences Across Recent Stressors in Probability of PTSD

Respondents in the longitudinal sample were assessed for PTSD on the basis of the exposure to each past-year stressor. Table 20 depicts the proportion of respondents that experienced each specific stressor from the full sample (P1).

Table 20

The proportion of participants at T2 who reported each recent stressor (P1), the proportion in the PTSD.DIAG T2 group who reported each recent stressor (P2), and the proportion of people in P1 also in the PTSD.DIAG T2 group (P3).

Stressor	TOTAL		PTSD.DIAG		
	P1 *N*=1050	P1 %	P2 *N*=51	P2 %	P3 %
Sight/hearing problems	293	27.9	25	49.0	8.5
Health problems	714	68.2	45	88.2	6.3
Medical procedures	351	33.5	3	5.8	6.2
Serious fall or accident	146	14.0	7	13.7	2.5
Hospitalised	298	20.0	16	31.4	11.0
ADL problems	400	26.9	34	66.7	8.5
Marriage/relationship problems	82	5.5	8	15.7	15.9
Conflict family/friends	287	19.3	30	58.8	10.5
Moved residency	81	5.4	4	7.8	4.9
Family-friend ill	568	38.1	35	68.6	6.2
Death of a loved one	393	26.4	21	41.2	5.3
Ongoing grief	308	20.7	24	47.1	7.7
Drastic change physical appearance	266	17.9	29	56.9	10.9
Financial problems	224	15.0	19	37.3	8.4
Caregiver role	193	13.0	14	27.5	7.3
Retired	73	4.9	2	3.9	2.7
Spouse retired	32	2.1	3	5.9	9.3
Concern for child or grandchild	340	22.8	27	52.9	7.9
Other	444	42.3	25	49.0	5.6

P1: Proportion among the full sample who experienced the event (frequency each event was experienced).

P2: Proportion of respondents in the PTSD.DIAG T2 group who experienced each event (likelihood that those in the PTSD.DIAG T2 group experienced each event).

P3: Proportion of the group who experienced each event who were also in the PTSD.DIAG T2 group (likelihood that the event will be related to PTSD).

Most frequently reported stressors were health problems (68.2%, N = 714), serious illness of a family member or friend (38.1%, N = 568), medical procedures (33.5%, N = 351), ADL problems (26.9%, N = 400) and death of a loved one (26.4%, N = 393). The column labelled P2 indicates the proportion of respondents who met PTSD criteria at T2 that experienced each stressor. Like the full sample, serious health problems were most frequent (88.2%, N = 45), followed by family or friend ill (68.6%, N = 35) and ADL problems (66.7%, N = 34). Conflict with family and friends (58.8%, N = 30) and change in physical appearance (56.9%, N = 29) were also common.

The likelihood of a past-year stressor being related to current diagnosis of PTSD is labelled P3. This figure is the proportion of people in P1 (who experienced each recent stressor) who also met full PTSD diagnostic criteria. The stressors with the highest likelihood of being related to a PTSD diagnosis were marriage/relationship problems (15.9%, N = 8), hospitalization (11.0%, N = 16), change in physical appearance (10.9%, N = 29) and conflict with family and friends (10.5%, N = 30). A series of chi-square analyses indicated that males and females did not differ in the likelihood of a PTSD diagnosis with the experience of any specific stressor.

8.6 Chapter Summary

Objective 3 was to identify the symptom types (from those measured) that best represent traumatic-stress during later life. PTSD was distinguished as being most strongly associated with past trauma-exposure. However, the findings inferred that investigating depression, dissociation and anxiety in older trauma-victims would also be of value in creating a deeper understanding of late-life traumatisation.

The current PTSD prevalence for each sample, ascertained to meet Objective 4, was unexpectedly high. Approximately one-tenth of both the cross-sectional and longitudinal samples met either subthreshold or full PTSD criteria. Full PTSD cases presented with a large number of anxiety and hyperarousal symptoms. Behavioural avoidance was more common in females, while irritability or anger was more common in males. Older people with PTSD were more likely to report *poor* or *fair* physical health. Emotional numbing,

flashbacks and nightmares were identified as symptoms that are indicative of a PTSD diagnosis.

Objective 5 was to determine the current and pre-diagnostic factors that predict PTSD (including subclinical PTSD). The logistic regression analysis suggested that lifetime trauma, recent stressors and trauma-related beliefs measured both currently and one year prior, work together to increase the likelihood of a PTSD diagnosis. Specific traumas with the highest probability of being associated with a subsequent PTSD diagnosis were unwanted sexual experiences, physical abuse, divorce and death of a child. There were no specific recent stressors identified as leading to particularly high probability of a PTSD diagnosis. However, marriage/relationship problems, hospitalisation, change in physical appearance, and conflict with family and friends had slightly higher probabilities than the other events. The next chapter reports the results of a series of hierarchical multiple regression analyses performed to test general predictions about the effects of trauma, late-life stressors and trauma-related beliefs on PTSD and physical health during later life.

Chapter Nine

RESULTS: PART FOUR

Chapter Nine consists of a series of hierarchical multiple regression (MR) analyses performed to test general predictions about the impact of traumatic and stressful events on PTSD and physical health. Procedures for data preparation and prediction testing are outlined first. The general predictions regarding outcomes precede each MR analysis. The MRs were analysed with reference to Objectives 6 and 7 as follows:

Objective 6: To ascertain the impact of lifetime trauma, recent trauma, past-year stressors and trauma-related beliefs on current PTSD symptoms during later life. It is predicted that while all trauma variables will be related to PTSD, recent stressor distress will mediate these relationships. Trauma-related beliefs are expected to impact on any relationship between event variables and PTSD.

Objective 7: To ascertain the cumulative effects of lifetime trauma and the immediate impact of recent trauma on physical health during later life. It is predicted that lifetime trauma and recent trauma will correlate with physical health ratings, and that PTSD scores will mediate these relationships.

9.1 Data Preparation and Prediction Testing

9.1.1 Assumption Testing

Preliminary regressions were performed to test that the assumptions of the analyses were met. The tolerance statistic is the degree that the specified IV is *not* explained by other IVs in the model. The variance inflation factor (VIF) is how much variability of each IV is explained by other IVs in the model (Pallant, 2005). Both the tolerance and VIF did not expose problems with multicollinearity for the analyses. Tolerance and VIF still allow for reasonably high correlations between IVs, therefore, correlation coefficients

between IVs were also examined to ensure they were not excessive. All bivariate correlation coefficients remained below the recommended value of .7 (Tabachnick & Fidell, 2007); so all IVs remained in the analyses.

Normal probability plots of the regression standardized residuals were inspected to ensure there were no major deviations from normality. The presence of outliers (cases with standardised residuals of more than 3.3 or less than -3.3) (Tabachnick & Fidell, 2007) were detected from scatter plots. If the Mahalanobis distance value exceeded the critical *chi-square* value, consideration was given as to whether the case should be deleted. Most analyses revealed only a few outliers. Because of the large sample sizes no action was taken because such cases were not considered a threat to the accuracy of the final results (Pallant, 2005).

9.1.2 Case-to-IV Ratio

As samples become larger, any multiple correlation will depart significantly from zero, even one that predicts negligible variance in the DV (Tabachnick & Fidell, 2007). Due to the large sample size and risk for Type I error, each multiple regression analysis was repeated with a smaller number of cases. As detailed in Chapter Six, use of a formula outlined by Green (1991) determined the ideal number of cases-to-IVs ratio for the MRs. The outcome of the formula was 130 cases. To cover this minimum number of cases in a pairwise fashion, the middle 300 cases of each data set were reassessed after each MR to ensure that the findings were comparable. Actual differences in MR findings between the original and smaller data sets were minimal. When they did differ, significance levels were reported. The main focus remained on the coefficient of determination and the amount of shared variance between variables.

9.1.3 Dependent and Independent Variables

The DVs for analysis of T1 and T2 data were psychological and physical health variables: PTSD symptoms (PTSD T1; PTSD T2) and self-rated physical health (SRHLTH T1; SRHLTH T2). The IVs were entered as possible predictors or mediators of DV variance. These were lifetime trauma (LIFE.TRMA), lifetime multiple trauma

(LIFE.MTRMA), lifetime abuse (LIFE.ABUSE), recent trauma (REC.TRMA T2), recent multiple trauma (REC.MTRMA T2), recent abuse (REC.ABUSE T2), recent stressors (REC.STRSSR T1/T2), stressor distress (DSTRSS T1/T2), control beliefs (CNTRL T1/T2) and traumatic vulnerability perceptions (VULN T1/T2).

9.1.4 Control Variables

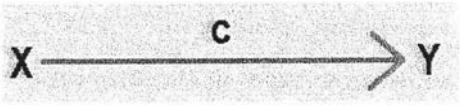
Socio-demographic variables were entered into most hierarchical MR analyses at Step 1 as controls. The nominal demographic variables (education, ethnicity and relationship status) were dichotomized. Education was dichotomized by creating the categories *no qualifications* + *qualifications*. To reach the prerequisite 10/90% split for statistical analysis as recommended by Tabachnick and Fidell (2007), ethnicity was dichotomized by creating the categories *NZ European* (T1: 86.2%, T2: 88.4%) + *other* (T1: 13.6%, T2: 11.4%) which comprised of those in the Maori, Samoan and other categories. Relationship status was dichotomized into *relationship* (T1: 46.6%, T2: 46.3%) + *no relationship* (T1: 52.5%, T2: 53.0%). The *no relationship* group included participants from never married, separated/divorced and widowed categories. Gender was naturally dichotomized into male (T1: 30.9%, T2: 31.3%) and female (T1: 69.0%, T2: 68.5%). Age was left as a continuous variable.

9.1.5 Hypothesis Testing

Hierarchical MRs were performed on outcome variables. Hierarchical MRs are recommended when explicit predictions are tested about the impact of one variable on an IV, after variance due to other IVs are already accounted for (Tabachnick & Fidell, 2007). As opposed to standard MRs, hierarchical MRs allowed for the testing of mediation effects of certain variables on the IV, while controlling for the effects of other variables. After socio-demographic and other control variables were entered, predictor variables were subsequently entered in steps. When working with the longitudinal data group and establishing the short-term effects of predictors over one year, T1 data for DVs were entered as control variables before predictors were entered in subsequent steps. This allowed for analysis of the predictive values of IVs on changes in the DV from T1 to T2.

Mediation occurs when the relationship between an IV (predictor) and DV (outcome) (Figure 2A) can be explained by an intervening variable. The mechanism by which the relationship between variables X and Y (Path c') occurs is explained by variable M (mediator) (Figure 2B). The mediator is not only presumed to cause the outcome (Path b), but be elicited by the predictor (Path a).

A.



B.

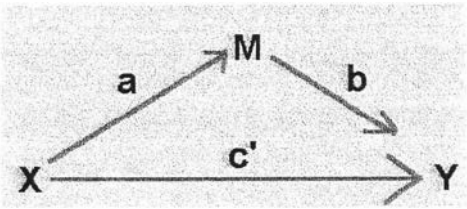


Figure 2: Diagram of a mediation model

To test for each mediation effect a preliminary assessment was performed with a hierarchical MR analysis using a simple strategy described by Baron and Kenny (1986). Predictor variables were entered and hypothesized mediating variable/s entered in subsequent steps. A decrease in the strength of the initial predictor-outcome relationship after the hypothesized mediating variable was included indicated the presence of a mediation effect, which formed the basis for further analyses.

Three sets of standard regressions provided tests of the critical linkages for each mediational model (Baron & Kenny, 1986). First, the outcome variable (Y) was regressed on the predictor variable (X) to determine that there was an effect to mediate (Path c in Figure 2A). Second, the mediator (M) was regressed on the predictor variable to verify Path a (see Figure 2A) within the mediational sequence. Third, the outcome was regressed on both predictor and mediator variables, which provided a test to establish if the mediator was related to the outcome (Path b) and calculated the relation

between the predictor and the outcome while controlling for the mediator (Path c'). A full mediation effect occurred when the relation between outcome and predictor was zero, while controlling for the mediator (Path c'). A partial mediation effect took place when the relation between the predictor and outcome was significantly smaller once the mediator was included in the equation (Path c'), than when the mediator was not (Path c) (Baron & Kenny, 1986). The standardized regression coefficients (β), unstandardised regression coefficients (B), standard error of B ($SE\ B$) and confidence intervals (CI) were tabulated for each set of regressions testing mediation effects.

Post hoc tests were conducted to determine significance levels for the indirect effect of the predictor on the outcome variable via the mediator. To determine significance of the difference between Path c (direct effect) and Path c' (indirect effect inclusive of the mediating variable), the product of Paths a and b were divided by a standard error term. The Sobel test (1982) was used to provide a standard error term, where ab equals the square root of $b^2sa^2 + a^2sb^2$ in which a and b are unstandardised regression coefficients and sa and sb are their standard errors. When the mediated effect (product of Paths a and b) is divided by its standard error, a z score of the mediated effect is generated. A score of more than 1.96 means the effect is significant at the .05 level. The large sample size for each regression analysis was beneficial, since a sample size of at least 500 is needed to accurately estimate proportion of the total effect mediated (MacKinnon, Warsi, & Dwyer, 1995). A subsequent test, which ascertained the scale of the mediated effect, was also calculated. This test used unstandardised regression coefficients with the equation ab/c (Shrout & Bolger, 2002). General significance values were reported at $p < .05$; however, the focus of each MR remained on the percentage of variance that DVs explained in each IV.

9.2 Cross-Sectional Data Analyses: MR Analyses of PTSD T1 Scores

The following set of analyses was conducted with the first cross-sectional data set obtained at T1. Hierarchical MR analyses tested the extent that lifetime trauma and recent stressor scores predicted PTSD scores. Recent stressor distress was expected to mediate the relationship between lifetime trauma and PTSD. Furthermore, trauma-

related beliefs (i.e., vulnerability perceptions, control beliefs) were expected to mediate the relationship between event variables (i.e., lifetime trauma and stressors) and PTSD.

9.2.1 MR of PTSD T1 Scores on Lifetime Trauma, Recent Stressors and Trauma-Related Beliefs

The IVs were entered into the regression equation in four steps (see Table 21). At Step 1 socio-demographic variables explained 2.0% of the variance of PTSD T1 (Adjusted R^2 = .02, $F(5, 1082) = 4.24$, $p < .01$). The significance level changed to $p < .05$ when the analysis was repeated with fewer participants ($N = 280$).

At Step 2 the addition of LIFE.TRMA increased the amount of variance explained in PTSD T1 scores to 12.0% (Adjusted $R^2 = .12$, $F(6, 1081) = 25.16$, $p < .001$). The *Beta* value for LIFE.TRMA was significant ($p < .001$) when entered and remained significant during the following regression steps, supporting the prediction that lifetime trauma is positively related to PTSD symptomatology during later life.

The inclusion of REC.STRSSR T1 at Step 3 resulted in a significant increase of 17.0% of the DV variance explained (Adjusted $R^2 = .29$, $F(7, 1080) = 64.07$, $p < .001$). The REC.STRSSR T1 variable had a Step 4 sr^2 value of .05, signifying that exposure to recent stressors contributed to 5.0% of the unique variance in PTSD T1 scores after all other variables were partialled out. The significant *Beta* of .45 for REC.STRSSR T1 supported the prediction that recent stressors are positively related to PTSD symptoms during later life, even after controlling for the effects of lifetime trauma.

At Step 4 the inclusion of VULN T1 and CNTRL T1 increased the amount of variance explained in PTSD T1 scores by 20.0% (Adjusted $R^2 = .49$, $F(9, 1078) = 116.59$, $p < .001$). VULN T1 was positively related to PTSD T1. CNTRL T1 was negatively related to PTSD T1. The Step 4 sr^2 values revealed that VULN T1 contributed uniquely to 8.0%, and CNTRL T1 to 3%, of the variance in PTSD T1 scores. The *Betas* of .35 for VULN T1, and -.20 for CNTRL T1 were significant ($p < .001$) supporting the prediction that trauma-related beliefs are related to PTSD symptoms during later life, even after controlling for lifetime trauma and recent stressors.

Table 21

Hierarchical multiple regression of PTSD T1 scores on demographic, LIFE.TRMA, REC.STRSSR T1, VULN T1 & CNTRL T1, showing standardized regression coefficients (Beta), multiple R, R^2, adjusted R^2, R^2 change, and step 4 squared semi-partial correlations (sr^2) (N = 1291)

Predictors	Step 1	Step 2	Step 3	Step 4	Step 4 sr^2
Step 1: Controls					
Age	.10**	.08**	.06*	.07*	.00
Sex	.00	.02	.03	.03	.00
Relationship Status	.09**	.03	.02	.04	.00
Ethnicity	-.04	.03	-.02	-.01	.00
Education	.05	.06	.06	.02	.00
Step 2: Trauma					
LIFE.TRMA		.33***	.17***	.13***	.01***
Step 3: Stressors					
REC.STRSSR T1			.45***	.25***	.05***
Step 4: Schemata					
VULN T1				.35***	.08***
CNTRL T1				-.20***	.03***
R	.14	.35	.54	.70	
R^2	.02	.12	.29	.49	
Adjusted R^2	.02**	.12***	.29***	.49***	
R^2 Change	.02**	.10***	.17***	.20***	

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

Mediation of Recent Stressor Distress on the Relationship Between Lifetime Trauma and PTSD.

The above hierarchical MR analysis shows that the variance of LIFE.TRMA on PTSD T1 decreased significantly from Step 2 to Step 3 upon the inclusion of REC.STRSSR T1. This suggests that the elicitation of PTSD symptoms in relation to lifetime trauma may be triggered, in part, by the experience of recent age-related stressors. The experience of distress through recent stressors (DISTRSS T1) was included as the mediating variable between LIFE.TRMA and PTSD T1 so that this mediational model could be further investigated. Results of the three steps for testing mediation were supportive of the conditions required for a mediational model (see Table 22).

Table 22

Testing mediator effects of DISTRSS T1 on the relationship between LIFE.TRMA and PTSD T1

Testing steps in mediation model	*B*	*SE B*	95% CI	*β*
Testing Step 1 (Path c)				
Outcome: PTSD T1				
Predictor: LIFE.TRMA	.69	.05	.58, .78	.34**
Testing Step 2 (Path a)				
Outcome: DISTRESS T1				
Predictor: LIFE.TRMA	.47	.03	.41, .54	.35**
Testing Step 3 (Paths b and c')				
Outcome: PTSD T1				
Mediator: DISTRSS T1 (Path b)	.81	.03	.74, .87	.55**
Predictor: LIFE.TRMA	.30	.05	.22, .39	.15**

**$p < .001$

First, LIFE.TRMA (the predictor) was related to PTSD T1 (the outcome) ($B = .69$, $p < .001$). Second, DISTRSS T1, the hypothesized mediator, was related to the LIFE.TRMA (the predictor) ($B = .47$, $p < .001$). Third, DISTRSS T1 (the mediator) was related to PTSD T1 (the outcome) while controlling for LIFE.TRMA ($B = .30$, $p < .001$). The third regression also verified that although LIFE.TRMA was still significantly related to PTSD T1 while controlling for DISTRSS T1 ($B = .30$, $p < .001$), the coefficient was smaller than Path c ($B = .69$). The analyses confirmed a partial mediation effect of DISTRSS T1 on the relationship between LIFE.TRMA and PTSD T1.

Analysis of the equation parameters with the Sobel Test revealed that the mediation effect was significant ($z = 13.55$, $p < .001$), substantiating the prediction that distress caused by recent late-life stressors plays a mediating role in the relationship between lifetime trauma and PTSD. Applying the formula *ab/c* (Shrout & Bolger, 2002) to the coefficients indicated that about 55.0% of the total effect of lifetime trauma on PTSD symptoms during later life is mediated by distress experienced from recent stressful events.

Mediation of Trauma-Related Beliefs on the Relationship Between Lifetime Trauma and PTSD.

Analysis of the *Beta* values for the above MR on PTSD T1 (as tabulated in Table 21) indicated that the variance of RECSTRSSRS T1 on PTSD T1 decreased significantly from Step 3 to Step 4 when the traumatic belief variables, VULN T1 and CNTRL T1, were added. These results suggest that trauma-related beliefs mediate the relationship between recent late-life stressors and trauma-related symptoms.

To test the mediation effect of VULN T1 and CNTRL T1, occurring through LIFE.TRMA and not via recent stressful events, DISTRSS T1 was also entered as a predictor during the last step (pathway b). This controlled for the effects of DISTRESS T1 while assessing the contribution of CNTRL T1 and VULN T1 as potential mediating variables (see Table 23).

Table 23

Testing mediator effects of VULN T1 and CNTRL T1 on the relationship between LIFE.TRMA and PTSD T1

Testing steps in mediation model	*B*	*SE B*	95% CI	*β*
Testing Step 1 (Path C)				
Outcome: PTSD T1				
Predictor: LIFE.TRMA	.69	.05	.58, .78	.34**
Testing Step 2 (Paths a)				
1-Outcome: VULN T1				
Predictor: LIFE.TRMA	.20	.02	.15, .24	.24**
2-Outcome: CNTRL T1				
Predictor: LIFE.TRMA	-.09	.02	-.13, -.05	.12**
Testing Steps 3 (Paths b and c')				
1- Outcome: PTSD T1				
Predictor: LIFE.TRMA	.23	.04	.15, .32	.12**
Mediator: VULN T1	1.06	.06	.95, 1.18	.43**
Control: DISTRESS T1	.51	.04	.44, .59	.35**
2 - Outcome: PTSD T1				
Predictor: LIFE.TRMA	.32	.04	.24, .40	.16**
Mediator: CNTRL T1	-.82	.06	-.93, -.71	-.31**

**$p < .001$

Results of the standardized regressions met conditions for two mediation effects. First, LIFE.TRMA (the predictor) was related to PTSD T1 (the outcome) ($B = .69$, $p < .001$) indicating that there was an effect to mediate. Second, the hypothesized mediators were regressed on LIFE.TRMA in separate equations and verified Path a within each mediational sequence: VULN T1 ($B = .20$, $p < .001$) and CNTRL T1 ($B = -.09$, $p < .001$). Third, PTSD T1 was regressed on LIFE.TRMA and each proposed mediator in two separate regressions. These regressions revealed that although LIFE.TRMA was still significantly related to PTSD T1 in each case, the unstandardised regression coefficients (VULN T1: $B = .23$, $p < .001$, CNTRL T1: $B = .32$, $p < .001$) for LIFE.TRMA were smaller than during the first regression when entered with the control variable only ($B = .69$, $p < .001$).

While 30.7% of the total direct effect of lifetime trauma on PTSD symptoms during later life was mediated by traumatic vulnerability, 10.7% was mediated by decreased control beliefs. Analyses using the Sobel test established that the mediation effects for VULN T1 ($z = 8.70$, $p < .001$) and CNTRL T1 ($z = 4.27$, $p < .001$) were both significant. This verified that the trauma-related beliefs tested play a partial mediating role in the relationship between lifetime trauma and PTSD.

Mediation of Trauma-Related Beliefs on the Relationship Between Recent Stressor Distress and PTSD

The MR analysis tabulated above in Table 21 indicates that the *Beta* values of REC.STRSSR T1 on PTSD T1 decreased from .45 at Step 3 to .25 at Step 4 upon inclusion of VULN T1 and CNTRL T1. The decrease suggests that the experience of recent stressors generate PTSD symptoms through the elicitation of trauma-related beliefs into consciousness.

Conditions of the mediational model were met: all three sets of standard regressions that test the critical linkages between variables were significant (See Table 24). First, results were significant when PTSD T1 (outcome) was regressed on REC.STRSSR T1 (predictor) confirming that there was an effect to mediate ($B = 1.64$, $p < .001$). Second, VULN T1 and CNTRL T1 were each regressed on PTSD T1 in separate regressions (B

= .55; B = -.42, respectively) to reveal relationships and verify Path a within the mediational sequences. Third, both VULN T1 and CNTRL T1 (mediators) were related to PTSD T1 (outcome) showing that the mediators were related to the outcome. RECSTRSSRS T1 remained associated with PTSD T1 when entered with VULN T1 (B = .96, p < .001) and CNTRL T1 (B = -1.24, p < .001). However, the unstandardised regression coefficients were smaller than when Path c was tested during the first regression (B = 1.64, p < .001).

Application of Shrout and Bolger's (2002) *ab/c* formula to the coefficients showed that 41.6% of the total effect of recent stressors on PTSD scores was mediated by posttraumatic vulnerability beliefs, and 24.3% was mediated by a decreased sense of control. The Sobel Test indicated that both mediation effects were significant (VULN T1, z = 11.45, p < .001; CNTRL T1, z = 10.49, p < .001). These analyses demonstrated that the trauma-related beliefs measured are moderately accountable for the association between past-year stressors and PTSD scores during later life.

Table 24

Testing mediator effects of VULN T1 and CNTRL T1 on the relationship between REC.STRSSR T1 and PTSD T1

Testing steps in mediation model	*B*	*SE B*	95% CI	*β*
Testing Step 1 (Path C)				
Outcome: PTSD T1				
Predictor: RECSTRSSR T1	1.64	.08	1.49, 1.79	.52**
Testing Step 2 (Paths a)				
1-Outcome: VULN T1				
Predictor: RECSTRSSR T1	.55	.04	.48, .62	.43**
2-Outcome: CNTRL T1				
Predictor: RECSTRSSR T1	-.42	.03	.48, .36	.35**
Testing Step 3 (Paths b and c')				
1-Outcome: PTSD T1				
Predictor: RECSTRSSR T1	.96	.08	.81, 1.11	.30**
Mediator: VULN T1 (Path b)	1.24	.06	1.12, 1.36	.50**
2-Outcome: PTSD T1				
Predictor: RECSTRSSRS T1	1.24	.07	1.10, 1.39	.39**
Mediator: CNTRL T1 (Path b)	-.95	.06	-1.07, -.83	.36**

** p < .001

9.2.2 MR of PTSD T1 Scores on Trauma During Life-Stages, Multiple Trauma and LifeTime Abuse

The second set of analyses tested the effects of trauma during specific life-stages, lifetime multiple trauma and lifetime abuse on PTSD T1 outcomes. While each trauma variable was expected to impact on PTSD scores, lifetime exposure to sexual, physical and emotional abuse (LIFE.ABUSE) was expected to have the strongest impact. The number of cases for this MR was ideal for determining appropriate significance levels for the statistics (N = 287). As Table 25 shows, at Step 1 the trauma variables explained 12.0% of the variance in PTSD T1 scores (*Adjusted* R^2 = .12, F (7, 287) = 5.64, p < .001).

LIFE.MTRMA and trauma experienced throughout five specific life-stages (TRMACHILD, TRMAADOL, TRMAYNG, TRMAMIDD, TRMAOLD) did not uniquely contribute to PTSD T1 scores at Step 1. LIFE.ABUSE revealed a significant *Beta* value of .24 (p < .001) supporting the prediction that lifetime abuse predicts PTSD symptoms during later life.

The inclusion of REC.STRSSR T1 at Step 2 generated a significant increment of 18.0% of the amount of explained variance in PTSD T1 scores (*Adjusted* R^2 = .28, F(8, 286) = 15.30, p < .001). The *Beta* statistic for REC.STRSSR T1 of .46 was significant at p < .001. The *Beta* value of LIFE.ABUSE decreased significantly at Step 2 on the inclusion of REC.STRSSR T1 suggesting that recent stressor distress partially mediates the relationship between lifetime abuse and PTSD scores.

The addition of VULN T1 and CNTRL T1 at Step 3 produced a significant increment of 19.0% of the amount of variance explained in PTSD T1 scores (*Adjusted* R^2 = .19, F(10, 284) = 27.38, p < .001). The *Beta* values for VULN T1 of .35, and for CNTRL T1 of .19, were significant at p < .001. VULN T1 and CNTRL T1 each uniquely contributed to 13.0% and 5.0% (respectively) of the variance in PTSD T1 scores.

Table 25

Regression of PTSD T1 scores on TRMACHILD, TRMAADOL, TRMAYNG, TRMAMIDD, TRMAOLD, LIFE.MTRMA, LIFE.ABUSE, REC.STRSSR T1, VULN T1 & CNTRL T1 on PTSD T1 showing standardized regression coefficients (Beta), multiple R, R^2, adjusted R^2, R^2 change, and step 3 squared semi-partial correlations (sr^2) (N = 287)

Predictors	Step 1	Step 2	Step 3	Step 3 sr^2
Step 1: Trauma Variables				
LIFE.MTRMA	.06	.03	.04	.00
LIFE.ABUSE	.24***	.14*	.09	.01
TRAMCHILD (0-11yrs)	.03	.03	.02	.00
TRMAADOL (12-17yrs)	.00	.05	.02	.00
TRMAYNG (18-30yrs)	.10	.09	.06	.00
TRMAMIDD (31-59yrs)	.03	.02	.00	.00
TRMAOLD (60+ yrs)	.08	.01	.01	.00
Step 2: Recent Stressors				
REC.STRSSR T1		.46***	.26***	.09***
Step 3: Traumatic Beliefs				
VULN T1			.35***	.13***
CNTRL T1			-.19***	.05***
R	.35	.55	.70	
R^2	.12***	.30***	.49***	
Adjusted R^2	.10***	.28***	.47***	
R^2 Change	.12***	.18***	.19***	

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

Analysis of the *Beta* values for the above MR also demonstrated that the variance of RECSTRSSR T1 on PTSD T1 decreased significantly from Step 2 at the inclusion of trauma-related beliefs at Step 3. These results are consistent with prior analyses, which indicated that traumatic beliefs mediate the relationship between recent stressors and PTSD.

Mediation of Recent Stressors on the Relationship Between Lifetime Abuse and PTSD

The addition of REC.STRSSR T1 into the regression equation shown in Table 25 generated a decline in the *Beta* value and significance level for LIFE.ABUSE from Step 1 ($p < .001$) to Step 2 ($p < .05$). The results indicate that distress from late-life stressors partially mediates the association between lifetime abuse and current PTSD symptoms. Further investigation of this relationship revealed that all supporting conditions were met for mediation (see Table 26).

Firstly, LIFE.ABUSE (the predictor) and PTSD T1 (the outcome) were related ($B = 2.70$, $p < .001$) indicating that there was an effect to mediate. Secondly, the hypothesized mediator, DISTRSS T1, was related to LIFE.ABUSE (the predictor) ($B = 1.62$, $p < .001$) in the second analysis. Also, DISTRSS T1 was related to PTSD T1 while controlling for LIFE.ABUSE ($B = .81$, $p < .001$). Thirdly, after controlling for DISTRSS T1, LIFE.ABUSE T1 was still related to PTSD T1 ($B = 1.39$, $p < .001$) indicating partial mediation of DISTRSS T1 on the relationship between LIFE.ABUSE T1 and PTSD T1.

Table 26

Testing mediator effects of DISTRSS T1 on the relationship between LIFE.ABUSE T1 and PTSD T1

Testing steps in mediation model	*B*	*SE B*	95% CI		*β*
Testing Step 1 (Path c)					
Outcome: PTSD T1					
Predictor: LIFE.ABUSE T1	2.70	.21	2.3,	3.1	.33*
Testing Step 2 (Path a)					
Outcome: DISTRESS T1					
Predictor: LIFE.ABUSE T1	1.62	.14	1.35,	1.89	.29*
Testing Step 3 (Paths b and c')					
Outcome: PTSD T1					
Mediator: DISTRSS T1 (Path b)	.81	.03	.75,	.88	.55*
Predictor: LIFE.ABUSE T1	1.39	.18	1.04,	1.74	.17*

*$p < .001$

The formula *ab/c* revealed that approximately 48.6% of the total effect of lifetime abuse on PTSD scores was mediated by distress through recent stressors. Sobel Test results confirmed that the mediation effect was significant ($z = 10.83$, $p < .001$). Overall, these results support the hypothesis that recent past-year stressors mediate the relationship between lifetime abuse and PTSD symptoms during later life.

9.2.3 Summary of Findings for Cross-Sectional Data

The MRs indicated that lifetime traumatic events impact moderately on PTSD symptoms during later life. While neither multiple trauma, nor trauma during any one of five life-span age periods specifically impact on late-life PTSD symptoms, the cumulative experiences of lifetime abuse do.

The analyses demonstrated that past-year recent stressors not only appear to be strongly associated with PTSD scores, but act as a mediating link between lifetime trauma and PTSD. The relationship between lifetime abuse and PTSD also appears to be partially mediated by past-year stressors. The finding that trauma-related beliefs tend to mediate the stressor-PTSD relationship provides some explanation regarding why common late-life events have the capacity to elicit traumatic-stress symptoms in older people. These results support the ideas behind Trauma-Schema Theory and will be discussed further in Chapter Ten.

9.3 Longitudinal Data Analyses: MR of PTSD T2 Scores

The following set of analyses was conducted with the longitudinal data set. Hierarchical MRs tested the extent that past-year traumatic and stressful events impacted on PTSD scores from T1 to T2. Recent stressor distress was expected to mediate the relationship between recent trauma and PTSD. Current levels of traumatic beliefs (i.e., traumatic vulnerability perceptions and control beliefs) representing active traumatic schemata were expected to mediate relationships between event variables (i.e., recent trauma, recent stressors) and PTSD scores.

9.3.1 MR of PTSD T2 on Recent Trauma, Recent Stressors and Trauma-Related Beliefs

Table 27 shows results of the hierarchical MR which determined the effects of recent trauma, recent stressors and trauma-related beliefs on changes in PTSD scores from T1 to T2. At Step 1 socio-demographic variables did not explain variance in PTSD T2 scores. However, PTSD T1 accounted for 56.0% of the total variance in PTSD T2 scores (Adjusted $R^2 = .56$, $F(6, 344) = 73.86$).

At Step 2, with the inclusion of REC.TRMA, the total variance explained increased to 57.0% (Adjusted $R^2 = .57$, $F(7, 343) = 65.05$, $p < .001$). The *Beta* value for REC.TRMA T2 (*Beta* = .09, $p < .05$) was significant. The prediction that recent trauma would be positively related to increased PTSD scores over the year was supported. However, REC.TRMA explained only an additional 1.0% of the total variance in PTSD T2. Subsequent analyses were performed to ascertain if PTSD scores increased over time for those who experienced at least one past-year trauma. A frequency analysis showed that of the 369 respondents that experienced at least one trauma, 42.0% (N = 155) experienced an increase in PTSD scores over the year, and 7.0% (N = 26) met full PTSD criteria. A paired samples t-test showed no difference between PTSD scores at T1 (M = 31.96, SD = 10.72) and T2 (M = 31.32, SD = 10.41, N = 369) for recent trauma victims.

The inclusion of REC.STRSSR T2 at Step 3 generated a significant increase (R^2 *Change* = .03) of the amount of variance explained in PTSD T2 scores (Adjusted $R^2 = .60$, $F(8, 342) = 64.96$). The *Beta* of .21 ($p < .001$) for REC.STRSSR T2 during Step 3 confirmed that recent stressors are related to increased PTSD symptoms over one year.

Addition of the VULN T2 and CNTRL T2 at Step 4 increased the amount of variance explained in PTSD T2 scores to 65.0% (Adjusted $R^2 = .65$, $F(10, 340) = 63.29$, $p < .001$). The increment of 5.0% was significant ($p < .001$). The prediction that vulnerability and control beliefs would be related to increased PTSD scores over one-year was supported. Step 4 sr^2 values determined that 2.0% of VULN T2 and 1.0% of CNTRL T2 uniquely contributed to the DV variance with other variables partialled out.

Table 27

Hierarchical multiple regression of PTSD T2 scores on demographics, PTSD T1, REC.TRMA T2, REC.STRSSR T2, VULN T2 & CNTRL T2 showing standardized regression coefficients (Beta), multiple R, R^2, adjusted R^2, R^2 change, and step 4 squared semi-partial correlations (sr^2) (N = 350)

Predictors	Step 1	Step 2	Step 3	Step 4	Step 4 sr^2
Step 1: Controls					
Demographics					
Age	.02	.02	.01	.00	.00
Sex	.04	.04	.07	.08	.00
Relationship status	.04	.05	.04	.05	.00
Ethnicity	.02	.01	.05	.01	.00
Education	.04	.04	.04	.02	.00
T1 Control					
PTSD T1	.75***	.74***	.66***	.53***	.18***
Step 2: Recent trauma					
REC.TRMA T2		.09*	.04	.02	.00
Step 3: Recent stressors					
REC.STRSSR T2			.21***	.16***	.02***
Step 4: Perceptions beliefs					
VULN T2				.18***	.02***
CNTRL T2				-.12**	.01**
R	.75	.76	.78	.81	
R^2	.57	.58	.61	.66	
Adjusted R^2	.56***	.57***	.60***	.65***	
R^2 Change	.56***	.01*	.03***	.05***	

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

Mediation of Recent Stressor Distress on the Relationship Between Recent Trauma (T2) and PTSD (T2)

The MR equation in Table 27 shows that when REC.STRSSR T2 was entered at Step 3, the REC.TRMA T2 *Beta* value (*Beta* = .09, $p < .05$) decreased and became non-significant (*Beta* = .04). This finding indicates that the experience of recent late-life stressors mediates the pathway between recent trauma and increased PTSD symptoms over a year. Analyses were carried out to test this mediating model (see Table 28).

Table 28

Testing mediator effects of DISTRSS T2 on the relationship between REC.TRMA T2 and PTSD T2

Testing steps in mediation model	*B*	*SE B*	95% CI	*β*
Testing Step 1 (Path c)				
Outcome: PTSD T2				
Predictor: REC.TRMA T2	1.15	.18	.80, 1.50	.14**
Control: PTSD T1	.66	.02	.62, .70	.72**
Testing Step 2 (Path a)				
Outcome: DISTRSS T2				
Predictor: REC.TRMA T2	2.47	.17	2.13, 2.80	.43**
Testing Step 3 (Paths b and c')				
Outcome: PTSD T2				
Predictor: REC.TRMA T2	.42	.19	.05, .79	.05**
Mediator: DISTRSS T2	.36	.04	.29, .43	.25**
Control: PTSD T1	.56	.02	.52, .61	.62**

**$p < .001$

First, REC.TRMA T2 was related to PTSD T2 ($B = 1.15$, $p < .001$) after controlling for PTSD T1. Although small, an effect was present to mediate, thereby meeting the first condition for testing a mediation model. Second, the hypothesized mediator, DISTRSS T2, was related to the predictor, REC.TRMA T2 ($B = 2.47$, $p < .001$), establishing pathway *a* in the model and meeting the second condition. Third, the mediator, DISTRSS T2, was related to the outcome, PTSD T2, while controlling for REC.TRMA T2 ($B = .36$, $p < .001$) in the third analysis which established pathway *b*. The third regression also indicated that although REC.TRMA T2 was still significantly related to PTSD T2 ($B = .42$, $p < .001$), the unstandardised regression coefficients were smaller than during the first equation ($B = 1.15$, $p < .001$). The three regression analyses established a mediation effect of DISTRSS T2 on the relationship between REC.TRMA T2 and PTSD T2 during later life. Analysis of the equation parameters with the Sobel Test revealed that the mediation effect was significant ($z = 7.65$, $p < .001$). Recent-stressor distress appears to mediate the small relationship between recent trauma and increased PTSD scores over one year.

Applying the formula *ab/c* (Shrout & Bolger, 2002) to the coefficients revealed that about 77.3% of the total effect of recent trauma on PTSD symptoms is mediated by stressor-distress.

Mediation of Trauma-Related Beliefs on the Relationship Between Recent Stressors and PTSD T2

Examination of the *Beta* values for the MR on PTSD T2 (Table 27) indicated that the variance of REC.STRSSR T2 on PTSD T2 decreased significantly from Step 3 to Step 4 upon the addition of VULN T2 and CNTRL T2. The decrease, albeit small, suggests that increased PTSD symptoms due to recent stressors are partially explained by the elicitation of trauma-related beliefs. This mediating model was tested with PTSD T1 entered as a control variable, which allowed for the testing of mediation on increased PTSD symptoms from T1 to T2 only (see Table 29)

Table 29

Testing mediator effects of VULN T2 and CNTRL T2 on the relationship between REC.STRSSR T2 and PTSD T2

Testing steps in mediation model	*B*	*SE B*	95% CI	*β*
Testing Step 1 (Path c)				
Outcome: PTSD T2				
Predictor: REC.STRSSR T2	.64	.07	.50, .78	.21**
Control: PTSD T1	.60	.02	.56, .64	.66**
Testing Step 2 (Path a)				
1 - Outcome: VULN T2				
Predictor: REC.STRESSR T2	.59	.04	.52, .67	.45**
2 - Outcome: CNTRL T2				
Predictor: REC.STRSSR T2	-.47	.04	-.54, -.39	-.37**
Testing Step 3 (Paths b and c')				
1 - Outcome: PTSD T2				
Predictor: REC.STRSSR T2	.40	.07	.26, .54	.13**
Mediator: VULN T2 (Path b)	.69	.06	.51, .81	.30**
Control: PTSD T1	.48	.02	.44, .53	.53**
2 - Outcome: PTSD T2				
Predictor: REC.STRSSR T2	.50	.07	.36, .64	.16**
Mediator: CNTRL T2 (Path b)	-.47	.06	-.58, -.36	-.19**
Control: PTSD T1	.54	.02	.50, .58	.59**

**$p < .001$

Results of the standardized regressions met conditions for two significant mediation effects. First, REC.STRSSR T2 (the predictor) was related to PTSD T2 (the outcome) ($B = .64$, $p < .001$) while controlling for PTSD T1, indicating that there was an effect to mediate. Second, the hypothesized mediators were regressed on REC.STRSSR T2 in separate equations, verifying pathway *a* within both mediational sequences: VULN T2 ($B = .59$, $p < .001$) and CNTRL T2 ($B = -.47$, $p < .001$). Third, PTSD T2 was regressed on VULN T2 in one equation and CNTRL T2 in another. In each equation REC.STRESSR T2 (predictor) and PTSD T1 (control) were entered simultaneously.

The last two regressions showed that while REC.STRSSR T2 was still significantly related to PTSD T2, there were small declines in the unstandardised regression coefficients when entered with VULN T2 ($B = .16$, $p < .001$) and with CNTRL T2 ($B = .18$, $p < .001$) as compared to the first equation ($B = .21$, $p < .001$).

Approximately 64.3% of the total effect of recent stressors on new PTSD symptoms over the year was mediated by traumatic vulnerability beliefs. About 33.5% of the relationship between recent stressors and new PTSD symptoms over the year was mediated by a decreased sense of control. Analyses using the Sobel test found that mediation effects were significant for VULN T2 ($z = 4.6$, $p < .001$), and CNTRL T2 ($z = 3.0$, $p < .01$). Predictions that traumatic beliefs mediate the relationship between recent stressors and PTSD T2 were partially supported.

9.3.2 Summary of Longitudinal Data Findings

The analyses signified that exposure to past-year trauma has only a minimal impact on PTSD symptoms over one year. Recent stressor distress fully mediated the small relationship between recent trauma and PTSD and had a moderate relationship with PTSD symptoms. Traumatic vulnerability and control beliefs mediated the relationship between recent stressors and increased PTSD symptoms. Posttraumatic vulnerability beliefs were shown to have a larger mediating role than control beliefs in the stressor-PTSD relationship.

9.4 Cross-Sectional Data-Analyses: MR Analysis of SRHLTH T1 Scores

The subsequent analyses were conducted with the cross-sectional data set obtained at T1. A hierarchical MR analysis tested the extent that lifetime trauma and PTSD predict physical health status during later life. Further regressions examined the accuracy of the prediction that the trauma-health relationship is mediated by PTSD symptoms.

To reliably assess the impact of lifetime trauma on physical health, the LIFE.TRMA variable was examined for any health-related traumas it may incorporate. There was one trauma, *life-threatening illness,* that may have inflated the trauma-health relationship, since it is part of both the predictor (LIFE.TRMA) and a physical health outcome. Although a Pearson's r correlation analysis revealed that the relationship between *life-threatening illness* and SRHLTH T1 was small (r = .24, p < .001, N = 1470), *life-threatening illness* was entered separately as a control in the MR. In controlling for this event, however, the true relationship between LIFE.TRMA and SRHLTH T1 might become understated. As an additional test, therefore, the same MR was performed without controlling for *life-threatening illness.* Results between both MRs were similar.

9.4.1 MR of SRHLTH T1 Scores on LIFE.TRMA and PTSD T1

IV's were entered into the regression equation in three steps (See Table 30). The health-related event, *life-threatening illness,* was included as a control during Step 1, in addition to socio-demographic variables. LIFE.TRMA was entered at Step 2 and PTSD T1 was entered at Step 3.

Step 1 variables explained 6.0% of the variance in SRHLTH T1 (*Adjusted* R^2 = .06, F(6, 1375) = 15.68, p < .001). The strongest predictor was *life-threatening illness* (*Beta* = -.23, p < .001). Educational background was significant at p < .05. However, a further analysis indicated that the difference in SRHLTH T1 scores between those with educational qualifications (M = 5.16, N = 353) and those without (M = 5.35, N = 1097) was minor.

Table 30

Hierarchical multiple regression of SRHLTH T1 scores on LIFE.TRMA and PTSD T1, showing standardized regression coefficients (Beta), multiple R, R^2, adjusted R^2, R^2 change, and step 3 squared semi-partial correlations (sr^2) (N = 1381)

Predictors	Step 1	Step 2	Step 3	Step 3 sr^2
Step 1: Control Variables				
Age	-.03	-.02	.01	.00
Sex	-.05	-.04	-.05	.00
Relationship Status	-.02	-.00	.01	.00
Education	-.07*	-.07*	-.05	.00
Ethnicity	.05	.05	.04	.00
Health-Related Trauma				
Life Threatening Illness	-.23***	-.20***	-.19***	.04***
Step 2: lifetime Trauma				
LIFE.TRMA		-.08**	-.04	.00
Step 3: Trauma Symptoms				
PTSD T1			-.39***	.14***
R	.25	.26	.45	
R^2	.06	.07	.20	
Adjusted R^2	.06***	.06***	.20***	
R^2 Change		.00	.14***	

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

The addition of LIFE.TRMA into the regression equation at Step 2 (*Adjusted* $R^2 = .06$, $F(7, 1374) = 14.53$, $p < .001$) resulted in no change in the amount of variance explained in SRHLTH T1 scores. LIFE.TRMA predicted only a small amount of SRHLTH T1 variance (*Beta* = -.08, $p < .01$) after Step 1 variables were controlled for. The *Beta* value for LIFE.TRMA were similar for the subsequent MR which was repeated with a smaller number of subjects (*Beta* = -.12, $N = 279$); however, the value was not significant, $p = .06$.

At Step 3, the addition of PTSD T1 (*Adjusted* R^2 = .20, $F(8, 1373) = 43.03$, $p < .001$) produced a significant increase of 14.0% ($p < .001$) in the amount of variance explained in SRHLTH T1 scores. The sr^2 value of .14 indicated that PTSD T1 scores uniquely contributed to 14.0% of the variance in SRHLTH T1 scores after all shared variance was partialled out. These results support the hypothesis that PTSD symptoms are a significant predictor of SRHLTH T1.

Decline of the LIFE.TRMA *Beta* value from .08 to .04 upon the inclusion of PTSD T1 at Step 4 supported a mediation effect. Similar declines were found in the additional MR that did not control for *life-threatening illness* (*Beta* = -.15 to -.02), and in the MR that was repeated with fewer cases (*Beta* = -.12 to .04, $N = 279$). Post-hoc tests were conducted to determine if a mediation model was applicable to the statistics.

Mediation of PTSD T1 on the Relationship Between Lifetime Trauma and Self-Rated Health at T1.

The conditions of a mediating model outlining the effect of PTSD on the relationship between lifetime trauma and physical health were tested (Table 31). First, LIFE.TRMA (predictor) had a small relationship with SRHLTH T1 ($B = -.04$, $p < .001$) indicating that there was an effect to mediate. Second, the hypothesized mediator, PTSD T1, was regressed on LIFE.TRMA and verified Path *a* within the sequence ($B = .69$, $p < .001$). Third, when SRHLTH T1 was regressed on LIFE.TRMA T1 and PTSD T1 simultaneously to test Path *c'*, the regression coefficient for LIFE.TRMA was smaller ($B = -.01$, *ns*) than during the first equation for Path *c* ($B = -.04$). The Sobel Test established that the mediation effect for PTSD T1 was significant ($z = 20.00$, $p < .001$).

These results indicate that there is a small relationship between lifetime trauma and physical health, and PTSD symptoms are mostly accountable for this relationship. Application of the *ab/c* formula signalled that 68.1% of the total effect of lifetime trauma on physical health during later life is mediated by PTSD symptoms.

Table 31

Testing mediator effects of PTSD T1 on the relationship between LIFE.TRMA and SRHLTH T1

Testing steps in mediation model	*B*	*SE B*	95% CI	*β*
Testing Step 1 (Path c)				
Outcome: SRHLTH T1				
Predictor: LIFE.TRMA	-.04	.01	.05, -.24	-.16***
Testing Step 2 (Paths a)				
I- Outcome: PTSD T1				
Predictor: LIFE.TRMA	.69	.05	.59, .78	-.34***
Testing Step 3 (Paths b and c')				
Outcome: SRHLTH T1				
Mediator: PTSD T1 (Path b)	-.04	.00	-.05, -.04	-.38***
Predictor: LIFE.TRMA	-.01	.01	-.02. .01	-.03

** $p < .001$

9.4.2 Summary of Findings in Relation to Cross-Sectional Data

The above MR analyses indicated that lifetime trauma has minimal predictive power in physical health scores during later life. Predictions were correct. Present levels of PTSD symptoms fully mediated the relationship between lifetime traumatic events and current levels of physical health in the cross-sectional sample of older adults.

9.5 Longitudinal Data Analyses: MR Analyses on SRHLTH T2

The following set of analyses was conducted with the longitudinal data set. A hierarchical MR tested the extent that recent trauma and PTSD predicted physical health ratings over one year. It was predicted that past-year trauma and SRHLTH T2 would be correlated. PTSD was expected to mediate this trauma-health relationship.

9.5.1 MR of SRHLTH T2 Scores on REC.TRMA T2 and PTSD T2

IV's were entered into the equation in three steps (See Table 33). In addition to socio-demographic variables, the health-related event, *life-threatening illness,* was included as a control during Step 1. SRHLTH T1 was controlled for so that the effects of trauma on

physical health over one year could be determined. REC.TRMA T2 was entered at Step 2. PTSD T1 was entered at Step 3.

Step 1 variables explained 48.0% of the variance in SRHLTH T2 (*Adjusted* R^2 = .48, $F(7, 373) = 60.01$, $p < .001$). The strongest predictor was SRHLTH T1 (*Beta* = .66). The inclusion of REC.TRMA T2 into the regression equation at Step 2 (*Adjusted* R^2 = .48, $F(8, 372) = 51.68$, $p < .001$) resulted in no change in the amount of variance explained in SRHLTH T2 scores. REC.TRMA did not significantly predict SRHLTH T2 variance (*Beta* = -.04) after Step 1 variables were controlled for.

Table 32

Hierarchical multiple regression of SRHLTH T2 scores on REC.TRMA T2 and PTSD T2, showing standardized regression coefficients (Beta), multiple R, R^2, adjusted R^2, R^2 change, and step 3 squared semi-partial correlations (sr^2) (N = 380)

Predictors	Step 1	Step 2	Step 3	Step 3 sr^2
Step 1: Control Variables				
Age	-.07	-.07	-.08*	.01*
Sex	.01	.01	.02	.00
Relationship Status	.01	.00	-.02	.00
Education	.03	.03	.02	.00
Ethnicity	.02	.02	.02	.00
Health-Related Trauma				
Life Threatening Illness	-.16***	-.15***	-.13***	.03***
Physical Health T1				
SRHLTH T1	.66***	.66***	.60***	.39***
Step 2: lifetime Trauma				
REC.TRMA T2		-.04	-.03	.00
Step 3: Trauma Symptoms				
PTSD T2			-.20***	.07***
R	.70	.70	.73	
R^2	.49	.49	.53	
Adjusted R^2	.48***	.48***	.52***	
R^2 Change		.00	.06***	

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

Controlling for the traumatic event, *life-threatening illness,* might have reduced the relationship between recent trauma and SRHLTH T2. The same MR, performed without controlling for *life-threatening illness,* resulted in a *Beta* value for REC.TRMA that was still non-significant and only slightly higher (*Beta* = -.06).

The addition of PTSD T2 (*Adjusted* R^2 = .20, $F(9, 371) = 51.83$, $p < .001$) at Step 3 produced a significant increment of 4.0% ($p < .001$) in the amount of variance explained in SRHLTH T2 scores. The Step 3 sr^2 value of .07 indicated that PTSD T2 scores uniquely contributed to 7.0% of the variance in SRHLTH T2 scores after all shared variance was partialled out. These results support the prediction that PTSD symptoms are related to physical health decline over one year.

Because there was no relationship found between recent trauma and physical health decline over one year, the prediction that PTSD would mediate the relationship between SRHLTH T2 and REC.TRMA T2 was not supported.

9.5.2 Summary of Findings in Relation to Longitudinal Data

The above analyses suggested that recent traumatic exposure is not related to physical health status decline during later life. This was in contrast to predictions (see Objective 7) of a significant association between recent trauma and physical health. PTSD symptoms, however, were significantly associated with physical health decline over the one-year time frame in the older sample.

9.6 Chapter Summary

The above series of MR analyses were performed to test a number of general predictions relating to the impact of traumatic and stressful events on psychological and physical health during later life. Objective 6 was to ascertain the impact of lifetime trauma, recent trauma, past-year stressors and trauma-related beliefs on current PTSD symptoms during later life. The MR analyses indicated that the cumulative effects of both lifetime trauma and lifetime abuse had a deleterious impact on current levels of PTSD in older people.

Nevertheless, past-year trauma had a small impact on increased PTSD scores over one year. From these data it can be inferred that the collective impact of traumatic events over the life span strongly influences posttraumatic-stress symptoms in older adults, as opposed to one or two traumatic events within a recent period.

All of the MR analyses identified recent stressors as having the strongest impact on PTSD scores. Recent stressor distress also mediated the trauma-PTSD relationship. In addition, posttraumatic vulnerability and control beliefs mediated the relationship between recent stressors and PTSD. This provided some support for the ideas behind Trauma-Schema Theory which claims that traumatic stress is caused by the activation of pre-established trauma-schemata which generate trauma-related perceptions that provoke PTSD symptomatology.

Objective 7 was to determine the cumulative influence of lifetime trauma, and the immediate impact of recent trauma, on physical health during later life. Lifetime trauma had a small impact on physical health status and this relationship was fully mediated by PTSD symptoms. Unexpectedly, past-year trauma was not associated with physical health decline in the longitudinal analyses; however, PTSD symptoms were. The analyses highlighted psychological health as the probable source of physical health decline during later life, as opposed to traumatic events per se.

Chapter Ten

DISCUSSION

This discussion summarises the results of the present study with reference to prior research and theory. Objectives are reiterated and examined in relation to the findings. Limitations in methodology are reported and further research proposals are introduced. Research should inform practice; therefore a number of practical implications involving the findings for the physical- and mental-health care of older adults are discussed. Trauma-Schema Theory is also evaluated in relation to the results, which bring to light additional ideas for improving procedures for the therapeutic assessment and treatment of older adult suffering from trauma-related problems.

10.1 Exposure to Lifetime Trauma and Recent Traumatic Events

The following discussion is based on Objective 1. The nature and quantity of lifetime and recent traumatic events reported by the cross-sectional and longitudinal data groups are detailed. Socio-demographic differences in the types of traumas reported are reviewed.

10.1.1 Lifetime Trauma

Lifetime trauma exposure levels in the present study seemed excessive. While nearly all participants (98.5%) reported at least one trauma, nearly one-third of the sample (29.3%) reported at least ten traumas. In comparison, Flett and colleagues (2002) found that of 1500 NZ community dwelling adults, two-thirds (64.1%) reported at least one trauma and only one-tenth (10.0%) reported between four and nine traumas. Epidemiological research in Australia and the US (e.g., Creamer et al., 2001; Kessler et al., 1995) estimate that between 37% and 92% of a population at any given time have experienced at least one event that meets DSM-IV criteria for a traumatic stressor (Cahill & Foa, 2007).

The high lifetime trauma rate in the present study might be explained by the longer life histories of the older participants. This is in contrast to studies that typically exclude or under-represent older populations. Response bias may have also contributed. The words "...impact of lifetime trauma..." contained in written advertisements for recruiting participants may have appealed to individuals with more extensive trauma histories. Also, content validity in life-events lists is critical, shaping the kinds of inferences and generalizations drawn (Norris & Slone, 2007). The TEI almost certainly contributed to the high trauma rate since the questionnaire contained twice as many events ($N = 24$) as trauma inventories in comparison studies. For example, the NZ Community Survey of Trauma (Flett et al., 2002), the US National Comorbidity Survey (Kessler et al., 1995) and the Australian National Survey of Mental Health and Well-Being (Creamer et al., 2001) each used inventories that listed only 12 traumatic events. It seems that consensus has not yet emerged concerning the differentiation between traumatic events and other undesirable happenings. In the present study around 40% of those who answered the question "*What was the worst traumatic event you ever experienced?*" documented an event other than the 24 specified traumas listed. This finding portrays the very nature of trauma as subjectively defined and, therefore, difficult to represent via a simple checklist. More investigative work is required to determine new ways to define a traumatic event. As discussed later in this chapter, the extent that trauma-schemata are reinforced in response to events may be one way of measuring the degree of trauma in people's lives.

Life-threatening illness of a spouse and *death of a spouse* were the most frequently reported lifetime traumas in the present study. This might explain why single respondents who had never been married reported fewer traumas than widowed, separated, or divorced respondents. *Life-threatening illness* was also frequently reported. Both life-threatening illness and spousal bereavement are often classified as traumatic events for younger age groups, but as predictable 'on-time' stressors for older people (Davies, 1996; Stuart-Hamilton, 2000). In light of the frequency of such events, health professionals would benefit from extended inquiry into the potentially traumatising impact of spousal bereavement and life-threatening illness within the context of an older person's life history.

In the present investigation some socio-demographic differences were found in the frequency of specific lifetime traumas reported. Consistent with other studies (e.g., Breslau et al., 1998; Creamer et al., 2001; Kessler et al., 1995), more men reported violent accidental trauma such as experiencing a near-fatal accident or injury, and witnessing the mutilation or violent death of another person. More women reported interpersonal trauma such as emotional, physical and sexual abuse; or events relating to the loss of, or serious illness of, a spouse. These differences yield gender-specific implications for the therapeutic treatment of traumatic-stress in older male and female patients, as discussed later in this chapter.

Participants not involved in an intimate relationship at the time of questioning reported six specific lifetime traumas more frequently than participants in a relationship. Included were obvious causes for being single: *spouse died*, *divorced* and *spouse diagnosed with a life-threatening illness*. Also associated with potential reasons for being single were *unwanted sexual experiences*, *adult physical abuse* and *adult emotional mistreatment* since perpetrators may have been previous partners. Separated or divorced participants reported over twice as much abuse as widowed, married and never-married groups. As with gender, relationship-status differences in exposure to specific events carry implications for therapy, also subsequently discussed in this chapter.

NZ European and *other* ethnic groups reported each TEI trauma at similar rates. These results differ from those of Flett and colleagues (2002) whose research on trauma exposure depicted Maori, NZ's largest ethnic minority group, as enduring both childhood and adulthood abuse more frequently than NZ Europeans. Findings may not have been reproduced in the present research due to the low number of Maori participants (T1: 3.2%; T2: 2.5%) in the sample, representing only about one-fifth (T1: 23.3%; T2: 21.7%) of the *other* ethnicity group. Data from Maori participants may have been obscured by data from the remaining group consisting of NZ Pacific Island and other ethnicities such as European (e.g., French, German and Swedish), Asian, English, American and South African. A critical challenge of any large-scale study involves drawing samples that accurately represent the diversity of the population (Norris & Slone, 2007). Indeed, a limitation of the present study was that data collection methods failed to recruit enough participant volunteers from NZ's largest ethnic minority groups.

10.1.2 Recent Trauma

Just under half of the longitudinal sample (43.5%) in the present study reported at least one past-year trauma at T2. The number of past-year traumas ranged from zero to nine. Although no known research has specifically studied past-year prevalence of traumatic exposure in a representative sample of older people (Cook & Niederehe, 2007), a US epidemiological trauma study used a subset of older participants to calculate a past-year trauma prevalence of 14% (Norris, 1992). Again, the high rate of past-year trauma reported by the older sample in the present study may be explained by the quantity of events in the TEI ($N = 24$). Sample selection bias may have also contributed. Traumatic exposure between T1 and T2 may have increased the likelihood of participation at T2. Even so, the data indicated that about half of the older population at any given time has experienced at least one potentially traumatic event within the prior year.

Although less than .5% of the older sample reported a physically abusive relationship or a sexually abusive encounter, 11.4% of the sample reported involvement in an emotionally abusive relationship. Being female and in an intimate relationship increased the probability of emotional abuse signifying that older male partners may be the perpetrators in many cases. These compelling data highlight that emotional abuse of older people in NZ may be more common than is currently recognized. Further research is required to determine who the perpetrators are (e.g., spouses, caregivers, children), the type and extent of emotional abuse that is occurring and the ways that such defective interpersonal relationships are affecting the lives of so many senior people in NZ.

Although the number of events listed in the TEI far exceeded the number typically listed in other trauma inventories, 10.9% of the longitudinal group specified additional past-year events under *other* traumas not listed. This again exemplifies the subjective nature of trauma. *Diagnosed with a life-threatening illness* (6.5%) and *spouse diagnosed with a life-threatening illness* (6.4%) were also common and two of the most frequent events reported in response to the question *"What was the worst trauma you experienced over the year?"* Such events are so typical, however, that health professionals may ignore the psychological impact that a life-threatening diagnosis can have on older adults and their spouses. Health workers need to remain aware of the potentially traumatising impact of

such events with the provision of psychological monitoring of both the diagnosed and their spouses. The devastating impact of PTSD on physical health, as shown in the present study, is a major reason why implementing the assessment of posttraumatic-stress symptoms into the physical-health treatment plan, should be a priority in treating life-threatening illnesses in older people.

10.2 Exposure to Recent Stressors

The following section is based on Objective 2. The quantity and nature of past-year recent stressors reported by the cross-sectional and longitudinal data groups are discussed. Socio-demographic differences in the types of stressors reported are reviewed.

10.2.1 Recent Stressors

The data showed that older people in NZ experience an average of five stressors yearly. Although no comparison data are available, this is an inordinately high number of potentially noxious experiences within a short period. Most commonly reported stressors were *serious health problems,* reported by about two-thirds of each sample (T1: 68.0%; T2: 68.0%) and *serious illness of close family or friends,* reported by about half of each sample (T1: 55.5%; T2: 54.1%). The centrality of physical health problems during aging highlights the importance of determining how physical health may not only impact on traumatic-stress symptoms, but also how traumatic-stress may cause further physical health decline. This issue is further discussed later in this chapter.

Education and ethnicity did not impact on the frequency of stressors reported at either T1 or T2. However, females experienced slightly more stressors than males. It is possible that women tend to perceive more circumstances as stressful, as demonstrated by women listing more *other* stressors in comparison to males. Females were also more likely to report *ADL problems* (difficulty in carrying out activities independently), *changes in physical appearance* and *conflict with family members or friends.* These differences may be explained by cultural influences on perception rather than actual

disparity in frequency. While females may readily acknowledge ADL difficulties, males may have difficulty admitting to declines in physical strength and agility, which are valued masculine traits within society. In contrast, females may be more likely to perceive and report negative changes in physical appearance or valued relationships because physical attractiveness and relatedness are esteemed feminine qualities within society.

Relationship status affected the frequency of some stressors reported. Single adults reported more past-year recent stressors than adults in emotionally involved relationships. A higher proportion of single older adults reported long-term grief and death of a loved one, possibly relating to spousal bereavement. More single participants also reported current financial difficulties. Older people currently in a relationship were more likely to report being a caregiver for a loved one, an indication that spouses are often the dependents. Those in relationships also reported more marriage/relationship problems and a spouse retiring, stressors unique to being in a relationship. Although statistical differences were small, relationship status did impinge on the nature of specific stressors encountered. Health professionals should remain aware that single older adults experience more long-term grief, recent bereavement and financial concerns, while non-single older adults experience more relationship-associated stressors. Such awareness of differences between single and non-single seniors provides clues as to events that might currently be influencing psychological well-being.

10.3 PTSD in Older People

10.3.1 Posttraumatic-Stress During Later Life

Following is a discussion of the results in relation to Objective 3, which was to identify the types of psychological symptoms that manifest as trauma-related problems during later life. The literature suggests that assessing PTSD symptoms might not be the best way to represent trauma-related psychopathology during later life. Older adults may manifest posttraumatic stress differently to younger adults. For example, older people may be more likely to experience major depressive reactions (Livingston et al., 1992;

McNaughton et al., 1990), poor immune system functioning (McNaughton et al., 1990), somatic ailments (Lipton & Schaffer, 1986; Nichols & Czirr, 1990), extreme guilt, problems expressing emotions (Hodgkinson & Stewart, 1991), restricted range of affect and memory deficits pertaining to the traumatic event (Gray & Acierno, 2002). Despite this research, the present findings indicated that although varied symptoms were reported in older trauma victims, PTSD reexperiencing, avoidance and hyperarousal were the strongest symptoms to manifest in relation to lifetime trauma exposure. A dose-response relationship between the severity and frequency of trauma-exposure and PTSD is a universal finding in epidemiological research (Friedman, Resick, & Kean, 2007). For example, lifetime trauma exposure in the US at 50-60% are related to lifetime PTSD prevalence of 8%, while lifetime trauma exposure in Algeria of 92% are associated with higher PTSD prevalence rates of 37% (de Jong, Komproe, Van Ommerende, et al., 2001; Kessler, et al., 1995). In the present study, even when the PCA clustered PTSD symptoms into two variables, anxiety and reexperiencing-avoidance, these variables retained the strongest relationships with most lifetime and recent trauma variables, as compared to anxiety, depression and dissociation. PTSD symptoms were clustered into anxiety and reexperiencing/avoidance variables from PCA results, PTSD symptoms retained the strongest relationships with most lifetime and recent trauma variables as compared to anxiety, depression and dissociation. Such results reinforce the importance of a central focus on PTSD when studying trauma-related symptoms during later life.

One variable, recent trauma, had the strongest association with depression. Although the ES was small, this finding is consistent with other research indicating that depressive reactions to trauma may be widespread in older populations (e.g., Hobfoll et al., 1989; McNaughton et al., 1990). While assessing PTSD symptoms is imperative, evaluating depression may also be essential to a thorough appraisal of trauma-related problems in older people. Indeed, depression is so common during later life it is likely to be comorbid with, or interact with, PTSD, to cause significant distress (Hyer & Stanger, 1997; Lee et al., 1995). Further research needs to address the issue of depression as a manifestation of traumatic-stress during later life. The presence of PTSD symptoms in the older sample, as the emphasis of the present study, will be discussed next.

10.3.2 Prevalence of PTSD in NZ's Older Population

A component of Objective 4 was to determine the proportion of participants that met diagnostic criteria for full and subclinical PTSD at both T1 and T2. Of the longitudinal data group, current PTSD prevalence rates for older adults were 6.5% at T1 and 4.8% at T2. These figures were higher than the typical 1% - 3% prevalence rates found for general population studies (Kaplan & Sadock, 1998) in countries such as Australia (1.3%; Creamer et al., 2001), the US (3.5%; Kessler et al., 2005) and Canada (2.7% women; 1.2% men; Stein et al., 1997). Measurement issues provide an explanation for the higher rates of PTSD found in the current study. Because the duration of PTSD symptoms was not measured, some PTSD cases may have more accurately fitted criteria for acute PTSD or acute stress disorder (ASD). Both acute PTSD and ASD are forms of traumatic-stress occurring as an immediate response to a stressor, but lasting for only a short duration (up to three months; up to four weeks, respectively) (APA, 1994). In contrast, chronic PTSD is diagnosed if symptoms last three months or longer (APA, 1994).

The prevalence of chronic PTSD in the present study was estimated by tallying the number that met PTSD diagnostic criteria at T1 and one year later at T2. The estimate of 1.2% for chronic PTSD, then, may have been conservative for the sample, yielding similar rates of PTSD to the general population studies mentioned above. Yet, because two assessments were conducted one year apart, fluctuations in PTSD status within the year are unknown. Similarly, of the 3 - 4% who appeared to improve from a PTSD to non-PTSD status over the year, nothing is known about PTSD variations that may have occurred either side of assessments. It is probable that PTSD symptoms wax and wane over short periods depending on circumstances. As elaborated on later in this chapter, a repeated-measures design assessing PTSD symptoms within shorter durations may track the course of the disorder more closely.

After accounting for those who meet full PTSD criteria, an extra 5% - 15% of any population will meet criteria for a subclinical form of PTSD (Kaplan & Sadock, 1998). For older people, subclinical forms of PTSD may be ten times more common than PTSD. For example, one study revealed that prevalence of 6-month PTSD was 0.9%, but

increased to 13.1% when subclinical levels were accounted for (van Zelst, de Beurs, Beekman, Deeg, van Dyck, 2003). In the present study, accounting for subclinical levels of PTSD increased PTSD prevalence by 6.8% at T1 (from 6.1% to 12.9%) and 4.4% at T2 (from 6.5% to 10.9%). Just one PTSD hyperarousal, reexperiencing or avoidant symptom is associated with impaired work or school functionality in adults (Stein et al., 1997). Therefore, while a small number of NZ's older population might meet DSM-IV criteria for full PTSD at any given time, many more may be experiencing PTSD levels that are distressing enough to impair quality-of-life, yet fall just under the radar for clinical detection. Consequently, mental-health workers would benefit from empirical research into the relationship between quality-of-life and PTSD symptoms in older populations, with emphasis on the extent that subthreshold levels interfere with day-to-day functioning.

When subclinical levels of PTSD are taken into account, research signifying that older age groups have the lowest risk of developing PTSD (e.g., Davidson et al., 1991; Kessler et al., 1995; Norris, 1992) becomes questionable. As indicative of the present study's results, PTSD symptom fluctuations in older people are common. While some may fall just below the threshold for meeting PTSD criteria, these individuals may still endure sufficient levels of PTSD to warrant therapeutic intervention. As the present research showed, elevated PTSD scores one-year prior were common in respondents meeting full PTSD criteria at T2. Consequently, older adults with subthreshold levels of PTSD may be at increased risk of full-blown PTSD in response to future late-life stressors. The present inquiry brings into question, therefore, the types of assessment procedures that researchers and mental health professionals employ to detect traumatic-stress in older people. Dichotomous assessment procedures that group individuals into a PTSD/non-PTSD classification may underestimate the number suffering from trauma-related distress. These practical implications of the study outcomes are discussed later in this chapter.

10.3.3 The Presentation of PTSD During later life

The second component of Objective 4 was to ascertain how PTSD presents during later life as a clinical disorder. As expected, older adults in all PTSD diagnostic groups reported *poor* or *fair* physical health more frequently than *very good* or *excellent* physical health. It could be argued that self-perceptions of physical health were biased due to state-of-mind. Older adults with PTSD may be more inclined to perceive themselves as experiencing the physical health deterioration that is expected with aging. These findings do, however, support other studies that have consistently linked poor health with PTSD in both veteran (e.g., Barrett et al., 2002; Neria & Koenen, 2003) and non-veteran populations (e.g., Zatzick et al., 2002). Because physical health is compromised in older patients with PTSD, primary-care professionals may be the first to evaluate traumatised older adults. This highlights the need for primary-care professionals to become informed about the signs of late-life traumatisation and for screening procedures to be established for the identification of trauma-related problems in older people. A more comprehensive discussion later depicts PTSD symptoms as playing a strong contributory role in the decline of physical health status during later life.

The symptom reported most frequently at both T1 and T2 by participants with PTSD was the reexperiencing symptom, *feeling very upset when something reminded you of a stressful experience from the recent or distant past* (T1: 89.7%; T2: 90.2%). This finding is compatible with other research, which shows that distress when exposed to trauma-related cues is widespread in older victims of both past chronic trauma (Hyer et al., 1995) and recent traumatic events (Gray & Acierno, 2002). Older adults tend to experience more intense distress when exposed to trauma-related stimuli, as compared to younger adults (Hyer et al., 1995). *Repeated, disturbing memories, thoughts or images of stressful experiences from the recent or distant past* was also a common reexperiencing symptom (T1: 59.8%; T2: 52.9%). However, the remaining reexperiencing symptoms were some of the least common symptoms reported.

Most frequently endorsed by the highest number of PTSD sufferers at both T1 and T2 were hyperarousal symptoms. These findings concur with research by Goenjian and colleagues (1994) who found that older adults scored higher on arousal symptoms and

lower on intrusive symptoms than younger adults 18 months after exposure to a major earthquake.

Of those meeting PTSD criteria, *having trouble falling or staying asleep* was the most frequently reported hyperarousal symptom (T1: 77.3%; T2: 82.4%). Previous studies have also identified sleep difficulties as pervasive among older traumatised patients (e.g., Blake et al., 1990). *Feeling irritable or having angry outbursts* (T1: 64.9%; T2: 64.7%) and *being superalert and on guard* (T1: 63.9%; T2: 66.7%) were also frequently reported hyperarousal symptoms. Research on older military veterans in long-term care revealed associations between PTSD and patient-reported feelings of anger and irritability, which were also related to staff observations of verbal and physical aggression (Carlson, Lauderdale, Hawkins, & Sheikh, 2008). The researchers concluded that stressors associated with long-term care settings could exacerbate PTSD and, therefore, increase aggressive behaviours in veterans. The present research supports these ideas, and further implies that susceptibility to anger is widespread among older traumatised people and not limited to veterans in care. The remaining hyperarousal symptoms were reasonably common, each evident in approximately 60% of those meeting PTSD criteria. Again, these results concur with other research, which suggests that older adults respond to trauma with higher arousal symptoms and less reexperiencing symptoms than younger adults (Goenjian et al., 1994).

Of the PTSD avoidance symptoms, *avoiding thinking or talking about a past stressful experience or avoiding having feelings relating to it* (T1: 77.3%; T2: 82.4%), and *avoiding activities or situations because they remind you of a stressful experience from the past* (T1: 62.9%; T2: 66.7%), were most commonly endorsed by PTSD sufferers. Conscious behavioural, cognitive and affective avoidance of traumatic reminders are pervasive in older victims of recent trauma (Gray & Acierno, 2002) and in older war veterans (Blake et al., 1990). The present study showed that other avoidant symptoms such as having problems remembering parts of a trauma, loss of interest in activities, feeling distant from others, feeling emotionally numb and feeling like one's future might be cut short were each experienced by approximately 30% - 63% of those with PTSD.

Gender differences were found for the frequency of two PTSD symptoms. Males with PTSD reported more irritability and anger. Females with PTSD reported more behavioural avoidance, jumpiness and being easily startled. Reasons for these findings are discussed later in this chapter.

A useful finding of the present research was that any one of emotional numbing, flashbacks or nightmares was strongly indicative of either subclinical- or full-PTSD. These results concur with research by Foa and Rothbaum (2001) who identified emotional numbing, flashbacks and nightmares as unique to PTSD and not shared with any other anxiety disorder. Assessment of these three indicators of PTSD may be useful for the screening of problematic levels of posttraumatic-stress within health-care settings where such problems in older adults may otherwise remain undetected.

10.3.4 Section Summary

Overall, the present study indicated that PTSD symptoms are central to traumatic-stress in older people and may manifest most strongly as anxiety and hyperarousal difficulties. Behavioural avoidance may be more common in older females and irritability or anger more common in males. The presence of emotional numbing, flashbacks or nightmares is strongly indicative of clinically significant levels of PTSD.

PTSD symptoms in older adults appear to exist on a continuum with the inclination to fluctuate gradually over time. With this in mind, subclinical levels of PTSD in older adults should be assessed for and treated in order to prevent PTSD escalation at a later date.

10.4 Predictors of PTSD During Later Life

The present findings are now examined in relation to Objective 5, which was to determine the current, and pre-diagnostic variables that predict PTSD as a clinical disorder during later life.

10.4.1 General Predictors of PTSD

The present study indicated that predicting subclinical- or full-PTSD is a complicated process that requires understanding of how particular variables work together to increase or decrease group membership. The analyses showed that trauma history, past-year stressors, high posttraumatic vulnerability and low control beliefs both one year earlier and recently, work together to increase chances of reaching clinically significant levels of PTSD. Unexpectedly, recent trauma was not identified as a predictor of PTSD. Such findings may explain why age has been implicated as both a risk factor and a protective factor, in the emergence of PTSD. For example, a research review of posttraumatic responses to a series of natural disasters identified older people as reporting the lowest levels of PTSD when compared to younger age groups (Bolin & Klenow, 1982). Such findings make sense since participant samples of the reviewed studies were formed from community-based populations and chosen on the merits of experiencing the same specific disaster. As implied with the present findings, most older people will not possess high levels of trauma-related beliefs in combination with a strong trauma-history and recent exposure to multiple stressors. Consequently, community-based samples will appear more resilient in the face of acute trauma.

Selective samples of older trauma victims, however, appear less resilient. Moderate-to-severe levels of psychopathology, including excessive levels of PTSD and depression, were found in older treatment-seeking adult crime victims (Gray & Acierno, 2002), and older Israeli civilians reported stronger intensification of depressive mood to the Israeli-Lebanon War as compared to younger civilians (Hobfoll et al., 1989). Because these samples are highly selective, however, and involve more vulnerable participants, the findings implicate age as a risk factor in the emergence of PTSD symptomatology.

10.4.2 Specific Past-Year Events and PTSD

No individual recent stressor was prominent in its likelihood of being associated with PTSD. Each stressful event was only slightly related to the likelihood of a PTSD diagnosis. Stressor quantity, not quality, appears to be the influencing factor in the prediction of PTSD during later life.

Although past-year traumas were less frequent, three recent traumas were related to a high probability of PTSD at T2. Fifty percent of those who reported unwanted sexual experiences, and 28.6% of those who reported a physically abusive relationship, also met full PTSD criteria, as did 25.0% of those who reported divorce. Research has not implicated divorce as being strongly related to the probability of a PTSD diagnosis during later life. Since divorce does not fit the usual description of a *traumatic* event (i.e., sudden, unexpected and shocking) it makes sense that professionals may not consider PTSD an outcome of this event. As discussed later in this section, divorce may also be a negative social implication of PTSD, rather than an antecedent. Nevertheless, routine screening of PTSD for older adults who disclose recent exposure to divorce and abuse should be implemented in all health-care practices.

The majority of respondents, however, appeared resilient to recent trauma. The data revealed that 50% - 96% of those who experienced each recent traumatic event did not meet PTSD criteria. These findings demonstrate how reviews of research can easily depict aging as a protective, rather than a risk, factor against PTSD (see Summers & Hyer, 1994). However, progressing the advancement of mental-health care for older people is not likely when research emphasises a resiliency perspective of aging to trauma. As the present investigation documents, a number of factors interact to create vulnerability to PTSD, many at subclinical levels, in older people. Accentuating these factors will hopefully accelerate the implementation of appropriate procedures for the assessment and treatment of traumatised older adults.

The evaluation of respondents who gained a PTSD diagnosis from T1 to T2 offered further clues about factors that promote PTSD. Of the 29 participants in this group, 41.4% reported an emotionally abusive relationship in the previous year. Because this

trauma was so common, reported by 11.4% of the entire sample, emotional abuse was not specifically acknowledged in the analysis as being strongly related to PTSD. However, of those who reported recent emotional abuse, 13.8% also met symptom criteria for PTSD. As already noted, the high prevalence of emotional abuse among older people in NZ should be studied further. It is possible that in some cases emotional abuse is an outcome, rather than a cause, of PTSD. Elevated posttraumatic vulnerability perceptions and decreased control beliefs were identified as common antecedents in older adults with PTSD criteria. The distortion of information processing in older adults with PTSD, postulated to occur as a result of active trauma-schemata, may cause the selective interpretation of certain social interactions as hurtful or abusive. This in turn may impact on behaviour in ways that increase the likelihood of emotional persecution by important others. Similarly, divorce may be strongly related to a PTSD diagnosis, not because it exacerbates PTSD symptoms, but because it is a consequence of interpersonal problems generated by PTSD. Further research is required to study the implications of PTSD and trauma in the social and interpersonal functioning of older people.

10.4.3 Section Summary

The present research indicated that trauma history, past-year stressors and trauma-related beliefs function together to increase the probability of a PTSD diagnosis during later life. While recent trauma was not implicated as a main risk factor for PTSD, sexual abuse, physical abuse and divorce, as recent traumatic events, were strongly associated with a PTSD diagnosis. Both the PTSD and non-PTSD groups commonly reported emotional abuse. Further research needs to determine if these negative interpersonal events are a negative social consequence of late-life PTSD.

10.5 Trauma-Schema Theory: Cross-Sectional Data

Objective 6 involved testing the validity of Trauma-Schema Theory through a series of multiple regression (MR) analyses. Predictions regarding the impact of lifetime trauma, recent trauma, late-life stressors and traumatic-beliefs on PTSD symptom levels were examined. The results of the MR analyses are discussed below.

10.5.1 Lifetime Trauma and PTSD Outcomes

As expected, lifetime trauma was related to PTSD symptom levels in the older sample. However, in a separate test on the impact of trauma within five age-brackets throughout the life span, no individual life-stage was predominately related to PTSD symptoms. It seems that the cumulative effect of trauma over one's entire history, rather than within a certain time frame, is the basis for PTSD susceptibility in later life. Such findings are consistent with Trauma-Schema Theory, which conveys that trauma-schemata are established and reinforced throughout one's trauma-history, and are the basis of all subsequent trauma-related psychopathology during later life.

Multiple trauma, repeated exposure to a traumatic event, did not uniquely contribute to PTSD levels during later life. These results are also consistent with Trauma-Schema Theory. Whether or not a traumatic event has been experienced before is unimportant. Any event will be classified as *traumatic* if it can activate trauma-schemata.

Accumulative lifetime exposure to physical, sexual and emotional abuse was related to PTSD symptoms in the older sample. Females were twice as likely to report childhood sexual abuse, and three times as likely to report abusive adulthood experiences, than males. Based on these findings interpersonal trauma may have a powerful impact on the establishment and preservation of traumatic schemata, possibly because of its often chronic nature.

It seems that the psychological well being of traumatised older adults rests on the accurate assessment of lifetime trauma exposure first and subsequent trauma-memory integration work. A discussion of recommended therapy procedures for use with older traumatised adults based on the present study's findings is included later in this chapter.

10.5.2 Recent Stressors and PTSD Outcomes

Recent past-year stressors were strongly related to PTSD symptoms, even after controlling for lifetime trauma exposure. Furthermore, about half of the total effect of both lifetime trauma and lifetime abuse on PTSD symptoms was mediated by recent

stressor distress. Although research has acknowledged the adverse impact of some late-life stressors in eliciting or exacerbating PTSD symptoms in previously traumatized populations (e.g., Krystal, 1981; Kuilman & Suttorp, 1989, as cited in Aarts & Op den Velde, 1996), the present study is the first to date that reveals the potentially traumatizing effects of late-life events in a general sample of older people. Considering the high frequency of stressors reported by the older sample in the present research, the risk of posttraumatic-stress, particularly in those with strong histories of lifetime trauma, is evident.

10.5.3 Trauma-Related Beliefs and PTSD Outcomes

Posttraumatic vulnerability perceptions and control beliefs represented active trauma-schemata in the present study. These trauma-related perceptions and beliefs were predicted to mediate the relationship between event variables (i.e., recent stressors, lifetime trauma and recent trauma) and PTSD. The analyses supported these expectations and helped to explain the results of research that has branded the late-onset or abrupt worsening of posttraumatic complaints as common following stressors in older survivors of past chronic trauma (e.g., Assael & Givon, 1984; Davidson, 1987; Hertz, 1990; Krystal, 1981; Ornstein, 1981). With reference to Trauma-Schema Theory, an older person's sense of invulnerability and safety is highly threatened by the occurrence of uncontrollable late-life stressors. In adults with strong trauma-histories, pre-established traumatic-schemata are activated by recent stressors, thwarting the natural processing of everyday events and eliciting aspects of past unresolved trauma memories. According to van der Kolk and McFarlane (1996) when memories are not synthesized into normal memory structures, a chronic replaying of the past unresolved trauma and the recent initiating event occurs in images, emotions, behaviours and/or physiological states. Behavioural and psychological avoidance is employed to prevent or alleviate traumatic reexperiencing and associated anxiety. This generates a cycle of intrusions, hyperarousal and avoidance, which represents PTSD (Horowitz, 1979).

Although delayed and exacerbated PTSD symptoms in response to late-life stressors can be explained by trauma-related beliefs, the present findings showed that not all of the variance in PTSD scores is accounted for by the beliefs and perceptions that were

measured. Incomplete theoretical development or errors/weaknesses in research methodology may have produced such findings. The limitations section of this chapter later evaluates potential concerns regarding the measurement of trauma-schemata in the present study.

10.6 Trauma-Schema Theory: Longitudinal data

A component of Objective 6 was to test the validity of Trauma-Schema Theory in relation to the longitudinal data. This was to determine the immediate impact of recent trauma and late-life stressors on PTSD symptom changes over the year. A series of MR analyses were performed with PTSD T2 as the dependent variable. PTSD T1 was entered as the baseline control variable so that PTSD score changes from T1 to T2 in relation to events could be evaluated.

10.6.1 Previous PTSD Scores and Current PTSD Outcomes

Baseline PTSD T1 scores predicted 56% of the variance in PTSD T2 scores at Step 1 in the first MR. Such findings show the chronicity of PTSD symptoms over time. Again, PTSD symptoms tend to shift gradually in response to circumstances, rather than fluctuate sharply to or from near-zero scores. These data are consistent with additional results showing that individuals who met PTSD criteria at T2, but not at T1, still had significantly higher PTSD T1 scores than the remaining respondents. As previously noted, the identification and treatment of subthreshold PTSD levels in older people might be an important step in helping to prevent full-blown PTSD in response to late-life stressors in the future.

10.6.2 Recent Trauma and PTSD Outcomes

The present findings showed that recent trauma played a small role in elevated PTSD scores over one year. An additional analysis showed that PTSD scores over one year did not change for respondents who experienced at least one past-year trauma. Such findings imply that recent trauma alone is not responsible for short-term elevation in

PTSD symptoms during later life. The complexity of the trauma-PTSD association during later life is again highlighted. In support of research that has consistently shown that trauma does not always cause clinically significant levels of PTSD (see Summers & Hyer, 1994), the present study also shows that trauma does not guarantee PTSD symptom elevation over a year.

Because of the large non-clinical sample, however, the data from a sizeable number of resilient individuals may have concealed the vulnerability of a few. The statistical procedures used may have also obscured the potential impact of recent trauma on PTSD symptoms. Elevated PTSD scores from T1 to T2 was taken as an indication that recent trauma had a short-term impact. However, the statistics did not account for the maintenance of high levels of PTSD from T1 to T2. Despite these methodological shortcomings, it can be concluded that the recent experience of trauma during later life is only a small part of a more complex picture on traumatic-stress in older people. Researchers concluding that aging protects against the effects of PTSD after recent trauma (e.g., Bolin & Klenow, 1982) have failed to take into account other variables that create vulnerability to traumatic-stress, such as trauma-history and recent stressors. Also, it will be recalled that recent trauma had the strongest relationship with depressive symptoms, as compared to PTSD, dissociation and anxiety. Although the ES for the trauma-depression association was small, it can be concluded that recent traumatic events impact on depressive symptoms at least as much as PTSD in older people. Further analyses are required to capture the direct impact of trauma on depressive symptoms, as compared to PTSD symptoms, in later life. Investigating more than one symptom type is critical in producing accurate symptomatic profiles of traumatised older individuals.

10.6.3 Recent Stressors and PTSD Outcomes

The present findings supported the idea that past-year stressors instigate elevated PTSD scores over one year. The results also indicated that recent stressor distress creates the pathway from recent trauma to the direct escalation of PTSD symptoms. The potentially noxious impact of late-life stressors on PTSD is apparent. These findings are in line with a body of research on older war veterans (e.g., Hermann & Eryavec, 1994; Port et al.,

2002) and Holocaust survivors (e.g., Kuilman & Suttorp, 1989, as cited in Aarts & Op den Velde, 1996; Solomon & Ginzburg, 1998) that describe a sudden worsening of posttraumatic complaints as typical following stressful life events. Generalization of the present findings, however, is not restricted to older adults exposed to one specific trauma-type. Results can be applied to older residentially- and community-based citizens.

The present data have implications for health-professionals dealing with older people. The assessment of recent and ongoing late-life stressors should be incorporated into methods of identifying potentially traumatised older adults. As discussed later in this chapter, ignoring the occurrence of these 'normal' age-related stressors in older people may prevent the detection and subsequent treatment of trauma-related syndromes in older adults.

10.6.4 Trauma-Schemata and PTSD

As expected, trauma-related beliefs also predicted increased PTSD symptom levels over one year in the older sample. While 64.3% of the total effect of recent stressors on PTSD elevation was mediated by posttraumatic vulnerability perceptions, 33.5% was mediated by decreased control beliefs. These findings were similar to results from the cross-sectional data analyses. They again provide preliminary support for Trauma-Schema Theory as a viable explanation regarding the pathway from distressing events to PTSD. The elicitation of fear-inducing beliefs of one's self as vulnerable and powerless against existential threat appears to contribute to the immediate exacerbation of PTSD symptoms during later life. The present findings help to explain why PTSD only manifests in some survivors of trauma (McFarlane & Yehuda, 1996). Individual differences involving thresholds for trauma-schema activation can explain the variations of responses to traumatic events.

Findings of the present study provide only preliminary support for Trauma-Schema Theory. Further empirical investigation is needed to validate and advance the theory. In particular, the operational definition of trauma-schemata requires explicit development through rigorous scientific procedures. These ideas are elaborated later in this chapter.

10.7 The Impact of Trauma on Physical Health: Cross-Sectional Data

The first component of Objective 7 was to determine the cumulative effects of lifetime trauma on physical health during later life. The findings are presented and discussed in relation to this aim.

10.7.1 Lifetime Trauma and Physical Health Outcomes

The present research showed that the link between lifetime trauma and ill health was minimal. These findings differ from results of studies on Holocaust survivors and POW victims (e.g., Green & Kimerling, 2004; Joffe et al., 2003; Solomon & Ginzburg, 1998) that showed strong associations between lifetime trauma and poor physical health. The present study's sample included a large number of community and residentially based participants, most without severe chronic trauma histories, unlike the samples used in the above studies. Not only could the direct experiences of being a POW or Holocaust survivor (e.g., malnutrition) have directly impacted on physical health, but such experiences are also associated with severe psychological problems, which may be the very cause of physical health problems in older traumatised adults.

In the present study, *life-threatening illness* (as a lifetime traumatic event) was controlled for in an effort to prevent partial confounding between the lifetime trauma and physical health variables. Although controlling for *life-threatening illness* decreased the risk of making Type I error, this step may have also decreased the power to detect a larger trauma-health relationship. This would be particularly true if being diagnosed with a chronic life-threatening disease led to the manifestation of additional health problems unrelated to the disease, as shown to occur in research by Markides and Cooper (1989). Considering this possibility, the analysis was repeated without controlling for *life-threatening illness*; however, the trauma-health relationship was only marginally higher.

10.7.2 PTSD and Physical Health Outcomes

As predicted, PTSD and physical health were strongly related. PTSD also mediated the trauma-health relationship accounting for 68% of the shared variance between variables. These results are consistent with investigations demonstrating that PTSD symptoms create a pathway from traumatic events to poor health (e.g., Schnurr, Green, & Kaltman, 2007).

The mediation effect of PTSD on the trauma-health relationship explains why many studies show a strong relationship between traumatic events and physical health. Studies that include highly symptomatic samples such as those with a history of interpersonal violence (Higgins & Follette, 2002), ex-war veterans and Holocaust survivors will be more likely to find a strong link between trauma and physical health, even if psychiatric condition is not accounted for (e.g., Ginzburg, 1996; Hankin et al., 1996; Miller et al., 1992; Solomon & Joffe et al., 2003). In most studies, trauma groups are compared with control groups who do not have a history of trauma-exposure. Since control groups are likely to be asymptomatic, the apparent effects of trauma-exposure on health will be more evident. However, the present results strongly indicate that it is the psychological effects of trauma, rather than trauma exposure per se, that contributes to physical health decline during later life.

10.8 The Impact of Recent Trauma on Physical Health: Longitudinal Data

The second component of Objective 7 was to determine the impact of past-year trauma on physical health over a year. Results of an MR analysis determined what changes occurred in physical-health ratings over one year in relation to past-year trauma. PTSD symptoms were expected to mediate any association between recent trauma and physical health.

10.8.1 Previous and Present Physical Health Ratings

Self-rated physical health scores entered as baseline data predicted around 48% of the variance in physical health scores one year later. A major predictor of physical health in an older person, therefore, is the status of physical health one-year prior. Such results indicate that fluctuations in physical health over one year are typically not immense for older people. Instead, there is probably a gradual decrease in physical health status as one ages. However, the results suggest that PTSD symptoms have a major impact on physical health over a one-year period.

10.8.2 Recent Trauma and Physical Health Outcomes

Recent past-year trauma was not related to changes in physical health status over the year. These findings conflict with research which has shown that specific traumatic events, like late-life bereavement (e.g., Stern et al., 1951; Stroebe et al., 1993; Thompson et al., 1984), are linked to indicators of immediate physical-health decline, including increased somatic symptoms, higher use of medications and increased risk of mortality. Use of the data on chronic-health problems and ADL difficulties would have provided a more informative analysis that might have yielded different results. As will be discussed later, the limited scoring range of the physical health scale might have decreased statistical power for detecting changes in ratings over time. Nevertheless, the results point to PTSD as explaining any immediate physical health decline after trauma, rather than trauma alone.

10.8.3 PTSD and Physical Health Outcomes

As expected, the MR findings showed that PTSD moderately impacted on physical health outcomes, accounting for 7.0% of the variance in health-score changes from T1 to T2. In line with these results, prior analyses had shown that respondents meeting PTSD criteria reported *poor* or *fair* health more frequently than *good* or *very good* health. Such results are consistent with research that has demonstrated PTSD as most consistently to blame for eliciting physical health problems in trauma victims in both veteran (e.g., Barrett et al., 2002; Kulka et al., 1990; Neria & Koenen, 2003; Schnurr et

al., 2000) and non-veteran populations (e.g., Kessler et al., 1995; Zatzick et al., 2002).

10.8.4 Summary of Physical Health Outcomes

The MR analyses showed that neither lifetime or past-year trauma, alone, is fully responsible for low or declining physical-health status during later life. Instead, trauma is only accountable through its elicitation of PTSD, which appears to have a large impact on both the immediate and long-term physical health of older adults.

It is probable that recent stressors, as a moderate predictor of PTSD symptoms, also impacts on physical well-being during later life. Testing for this effect in the MR analyses, however, would require control of health-related stressors. Untangling the cause-effect relationships between health-related stressors and physical health ratings would be difficult. The impact of recent stressors on physical health in relation to trauma should not be ignored though. In fact, De Longis, Folkman, and Lazarus (1988) have argued that daily hassles and minor stressors more adequately capture the harmful effects of events on physical health than major landmark events. Pillow and colleagues (1996) contend that minor stressors occurring as a result of traumatic events mediate the trauma-health relationship. Together, these investigations emphasize that minor stressors and daily hassles are important predictors of physical health decline. In light of the present findings, which showed that recent late-life stressors impact significantly on trauma-related symptoms, further research needs to evaluate daily stressors in relation to both PTSD and physical health.

10.9 Issues Related to the Study: Measurement, Generalizability and Internal Validity

Failure to find strong statistical evidence for theorised relationships may be due to poor measurement of the hypothesised constructs (Tabachnick & Fidell, 2007). Validity issues concerning the measures used in the present study will be discussed next.

10.9.1 The Measurement of Traumatic and Stressful Events

The DSM III-R (APA, 1987) criterion for a traumatic stressor defined as a psychologically taxing event that is beyond the scope of usual human experience once provided clear guidelines for classifying traumatic events. Publication of the DSM-IV (APA, 1994) changed the traumatic stressor criterion to focus on the individual response of intense fear, helplessness or horror to an event. Although fitting, the shift to emphasise subjective meaning has caused ambiguity for the classification of particular events as *traumatic*. One problem with the TEI in the present study was its inclusion of a wide range of events that may be considered potentially traumatic, but that are essentially defined as 'major life stressors' within the literature. Divorce, for example, is potentially traumatic, but does not fit the classic description of a traumatic event. Resick (2001) defines trauma as a sudden, unexpected and threatening occurrence that causes the body and mind to shift into survival mode. Use of Resick's description would have reduced the number of items in the TEI from 24 to 15, due to the removal of measures of secondary trauma (life-threatening illness and near-fatal accident of a child or spouse), life-threatening illness, sent away from the family as a child, and death of a spouse or child. Removing the *other* trauma category would have also reduced the subjectivity of the scale, possibly decreasing trauma rates found in the present study to rates similar to those found in other studies.

Some overlapping in the reporting of particular events as both a trauma and a stressor may have occurred in the present study. Death of a spouse, for example, was classified as a specific trauma in the TEI and in the stressor questionnaire as *death of a loved one*. This methodological flaw, resulting in some reporting of the same event in both questionnaires, might have contributed to the high prevalence of traumatic and stressful events reported by participants.

Gathering specific details of events could have assisted with the classification of each experience as either a *trauma* or a *stressor*, although a tighter definition for *trauma* would have been required. While a tighter definition would allow for a stricter checklist of the main traumas experienced, the exclusion of events potentially experienced as traumatic might limit its practicality in research. Alternatively, an event inventory listing

the full range of potentially traumatic events with additional questions to gauge the 'trauma-value' of each experience may have value in both research and practice. While some inventories attempt to quantify the traumatic value of an event by measuring degree of threat, exposure and loss (e.g., Vrana & Lauterbach, 1994), Atchison (1995, as cited in Stephens, 1996) points to the importance of measuring characteristics that influence the perceived meanings attributed to events. With reference to the present thesis, evaluating trauma-schema activation in response to events may be the best method for assessing the extent that events are *traumatic*. By shifting the concept of *trauma* away from a specific description of events towards a definition that integrates subjective traumatic meaning, any event could be gauged with a trauma-value. With such a tool, researchers could pinpoint the specific late-life stressors most frequently associated with traumatic beliefs and perceptions. Mental health professionals could also pinpoint, from a range of recently experienced late-life stressors, the specific event/s requiring active therapeutic processing. In light of the present findings, which implicate recent stressors as a major predictor of PTSD in older people, there is no doubt that older adults would benefit from the application of an inventory that identifies problematic late-life events that may need professional attention.

10.9.2 The Measurement of Traumatic Stress

Current prevalence rates of PTSD for the present study's samples (T1: 6.5%; T2: 4.8%) were much higher than found in other research (e.g., Creamer et al., 2001; Kessler et al., 2005; Stein et al., 1997). This overestimation may have been caused by the exclusion of a number of DSM-IV (APA, 1994) prerequisites for a PTSD diagnosis. These include specific criteria for traumatic exposure (criterion A), duration for at least one month (criterion E) and disturbance causing distress or impairment in important areas of functioning (criterion F).

Including criteria A, E and F in the measurement of PTSD would have improved statistical accuracy. However, the assessment of distress or impairment in important areas of functioning is the one criterion that might have been most advantageous to the present study. Enforcing the requirement for a traumatic stressor may have misrepresented those whose symptoms had been enhanced or re-activated by late-life

stressors; events that were not likely to meet DSM-IV criteria for a traumatic event. Measuring the duration of PTSD symptoms would not have been useful. The present study demonstrated that PTSD symptoms in older people tend to fluctuate below and above PTSD threshold levels over time. Knowledge about the duration of present symptoms would be inconsequential without additional information on prior symptom fluctuations from extreme to non-extreme levels. The division between a normal stress reaction and PTSD is defined by the intensification and prolongation of symptoms (Horowitz & Reidbord, 1992). Even so, the appearance of 'normal' short-lived traumatic stress reactions might actually be the typical waxing and waning of PTSD symptoms that were identified in older individuals with strong trauma histories. These issues highlight the importance of longitudinal research and implicate that continuing the present study would create useful knowledge regarding the trajectory of PTSD symptomatology during later life.

The present research would have benefited from a repeated-measures design that incorporated the assessment of DSM IV Criterion F: disturbance causing distress or impairment in important areas of functioning. Close monitoring of a selected few shown to have clinically significant levels of PTSD would provide informative guidelines regarding the areas of functioning that are impacted at different points in the course of PTSD. Such research would also allow the course of PTSD symptoms to be tracked more accurately in relation to late-life events. Such information could subsequently direct the type of practical support and interventions required to prevent the deterioration of life-quality in the older symptomatic adult.

In the present study *traumatic-stress* was represented by PTSD symptoms. However, PTSD is not the only disorder to emerge exclusively from a trauma outcome (Hyer & Sohnle, 2001). Posttraumatic stress outcomes may include dissociative states, panic attacks, psychotic symptoms and uncontrollable feelings of rage, anger or sadness. Moreover guilt, rejection or humiliation, violence, affect dysregulation, impulse control problems, substance-related disorders and overwhelming feelings of guilt, rejection or humiliation are common (van der Kolk, 1996a). Depressive symptoms commonly manifest in individuals with PTSD. Several researchers argue that symptom criteria for major affective disorder and PTSD tend to overlap (e.g., Brewin, Joseph, & Kuyken,

1993), while others maintain that the depressive symptoms of PTSD are distinct and not simply manifestations of a concurrent major depressive disorder (Marin, 1997). The present research also indicated that depression might be a common acute reaction to trauma during later life. Ideally, research investigating more of the associated features of posttraumatic stress in relation to PTSD symptoms would generate a more thorough clinical profile of the traumatised older person than offered in the present study. At the very least investigations into depressive symptomatology seem essential for enhancing our understanding of traumatisation during the later years.

10.9.3 The Measurement of Traumatic-Schemata

There are a number of concerns regarding the assessment of trauma-schemata in the present study. Firstly, the measurement of active trauma-schemata did not derive from a formal procedure of construct development. Instead, two existing, yet unrelated scales were employed to assess various trauma-related perceptions and beliefs that were deemed appropriate for portraying active *trauma-schemata.* Consequently *trauma-schemata*, as defined by posttraumatic vulnerability perceptions and control beliefs, may have been inaccurately represented. Insufficient coverage of the beliefs and perceptions that constitute active traumatic-schemata might have contributed to the statistical variance that was unaccounted for, when determining the mediating role of trauma-related beliefs on the stressor-PTSD relationship. This may have resulted in an underestimation of the degree that active traumatic-schemata impact on PTSD in all of the analyses.

An additional concern regarding the measurement of *traumatic-schemata* is that participants were required to directly recognize and report the extent of their own beliefs. As with fragmented traumatic memories, any associated anxiety-ridden perceptions may have been pushed out of full conscious awareness in attempts to prevent anxiety. Expecting participants to fully acknowledge and divulge the extent of their own trauma-related perceptions may have been unrealistic. Unlike direct reporting, which requires a conscious acknowledgement of specific beliefs, indirect assessment involving the outcomes of selected information-processing tasks may more accurately identify a person's most current influential cognitive schemata. Comparing perceptions of

ambiguous material between groups with and without clinically significant levels of PTSD provides an example of how clusters of trauma-related perceptions may be identified and subsequently classified.

To summarise, employing two unrelated tests to evaluate aspects of the same concept was a rudimentary attempt to measure active trauma-schemata in the present study. Any results regarding posttraumatic vulnerability and sense of control in relation to PTSD, therefore, can only be speculative. Further research needs to develop trauma-schemata as a scientific construct that can be defined and measured efficaciously. The present research provides a useful starting point from which to move forward in this quest.

10.9.4 The Measurement of Physical Health

The self-rated health item provided an appropriate option as a brief measure of physical health for the present study. Although self-rated health is established as a reliable predictor of other physical health indicators (e.g., Fillenbaum, 1979; Liang, 1986; Liang et al., 1991; Wan, 1982), as a uni-dimensional measure on health perception, it provided little practical information on the specific health-related influences of traumatic-stress in older people.

Use of the self-rated health item in the present research may explain why small associations between traumatic events and physical health were revealed. This is in contrast to other research findings indicating that people with trauma-histories are especially vulnerable to health problems as they age (e.g., Joffe et al., 2003; Solomon & Ginzburg, 1998). It is probable that certain dimensions of physical health are more strongly affected by trauma than others. For example, somatic symptoms are especially widespread during later life, especially in traumatised individuals (e.g., Lipton & Schaffer, 1986; Nichols & Czirr, 1990). Employing a one-item health rating did not capture the multidimensionality of physical health and possibly deflated the trauma-health association.

Longitudinal evaluations in the present investigation also showed that recent trauma had little impact on physical health ratings over a year. Again, these results conflict with

research that profile older people as vulnerable to the immediate deterioration of physical health in response to traumatic events (Stroebe et al., 1993; Wan, 1982). In the present study, scores from one physical-health item as a longitudinal measure may have been too small in scope to detect or assess substantive change from baseline. For example, physical health decline over one year would not be statistically detected for respondents who had poor health initially. Factors such as state-of-mind and mood may have also influenced immediate perceptions of physical health and, thereby, influenced the reliability of physical health ratings. These factors are particularly problematic when only very small differences in scores are required to show important changes in health status over time.

To conclude, any longitudinal investigation regarding physical health changes over time is probably more reliable and informative when objective, multidimensional levels of physical-health assessment (e.g., physical ailments; chronic illness; doctors visits) are used. The unprocessed data on chronic health disorders and ADL problems that were assembled in the data-collection phase of the present study provides the necessary information for further, more specific analyses on the primary health needs of older traumatised adults

10.9.5 Generalizability

External validity is defined as the extent that research results can be generalized across people, places and time (Coolican, 1999). As previously noted, it is possible that respondents who showed an interest in the present investigation constituted a self-selected sample that was not truly representative of NZ's older population. The words "...impact of lifetime trauma and stress..." within advertising, may have recruited more individuals who had either extensive trauma-histories or recent traumatic experiences. In terms of baseline data, a sample that has experienced high exposure to trauma and stress may have started the study with increased levels of physical impairment and PTSD, which could have impinged on the range and degree of change in the longitudinal assessment.

Cohort effects may be present in the sample. Respondents were born between 1914 and 1949. While some of the younger participants were born after World War II (WWII), some of the older participants would have fought in WWII as teenagers and many would have experienced the effects of the war as children. Dealing with the long-term separation or death of one's father and other male family members, in combination with anxiety and uncertainty about the circumstances surrounding war, may have influenced this cohort in a number of ways, including the manner of responding to stressful and traumatic events in the present. Although it would not be feasible to try and measure this effect, childhood anxieties associated with a major world war may have impacted on the development of specific trauma-schemata that manifest readily in response to stressors. Consequently, the results that implicate traumatic beliefs in the etiology of PTSD in response to lifetime trauma and late-life stressors must be generalised with caution when being applied to different cohorts in the future.

A critical challenge of any large-scale study involves drawing samples that accurately represent the diversity of the population (Norris & Slone, 2007). The ethnic composition of the sample in the present case was not representative of NZ's population. Data collection methods failed to attract the attention of NZ's largest ethnic minority groups: NZ Maori (3.2%) and NZ Pacific Island (0.3%). Even though the large response rate made it possible to initially take advantage of randomly selecting a more balanced sample, the total number of Maori (T1: $N = 47$; T2: $N = 26$) and NZ Pacific Island respondents (T1: $N = 5$; T2: $N = 2$) would have produced inadequate statistical power (Cohen, 1988). Caution should be used when applying the findings of the current investigations to ethnic groups that are not NZ European. The NZ health-care sector would benefit from further research founded on the meticulous planning of culturally sensitive research for the accurate sampling of NZ's largest minority groups. Perhaps research based on the cultural perspectives and world-views of each ethnic group would not only appeal more to ethnic minority older adults, but also provide information for the establishment of culturally sensitive treatment goals for the management of posttraumatic-stress in older NZ Maori, NZ Pacific Island and NZ Asian adults.

10.9.6 Internal Validity

Much of the data in the present research was assessed using a correlational-based statistic. Tabachnick and Fidell (2007) caution against making assumptions of a causal nature between two variables that are related in regression. Satisfaction of three criteria contribute to the internal validity of causal inferences:

1 - A statistical association between variables

2 - The 'cause' precedes the 'effect' in time

3 - There are no plausible alternative explanations for the observed covariation (Shadish, Cook, & Campbell, 2002)

With reference to the first criterion involving covariance, although the present study established a number of significant relationships between variables, many correlations from the cross-sectional data group predicted negligible variance in the DVs. This came about because the optimum number of cases, in relation to the number of IVs, was exceeded (Tabachnick & Fidell, 2007). Only where a statistical association between variables showed a medium or large effect-size, was the relationship between variables considered consequential.

Regarding the second criterion involving temporal precedence, some variables (assumed to be causal) did precede the variables they were alleged to have impacted. For both the cross-sectional and longitudinal data groups, these precursor variables included lifetime trauma, recent trauma and recent late-life stressors. Although causal relationships cannot be assumed, regressions that used longitudinal statistics with base-line data are more persuasive.

Assessment of the ideas behind Trauma-Schema Theory involving the elicitation and maintenance of trauma-schemata as impacting on PTSD symptomatology did not support the temporal precedence criterion. Instead, current trauma-related beliefs and PTSD symptoms were both measured at the same time. Although a small relationship was found between trauma-related beliefs as measured one year previously and current PTSD symptoms, Trauma-Schema Theory maintains that the triggering of trauma-related beliefs immediately activates PTSD symptoms. It is the theorized immediacy of the

cause-effect process that makes meeting the temporal precedence criterion difficult when investigating the validity of Trauma-Schema Theory. Results of the MR analyses in the present research cannot prove that PTSD symptoms are not the cause of, rather than the consequence of, trauma-related beliefs. Nevertheless, results from clinical studies on the efficaciousness of cognitive therapy for PTSD, including cognitive processing therapy (Resick & Schnicke, 1992) and prolonged exposure (Foa, Dancu, Hembree, et al., 1999 review literature), show that the success of such therapies are related to both the direct and indirect modification of threat-related schemas (Gray et al., 2007). In light of the various questionnaires and analytical techniques used among the reviewed studies, the convergence of these findings is compelling. It may be assumed, therefore, that just as therapeutic alleviation of trauma-related beliefs assist with the mitigation of PTSD symptoms, activation of trauma-related beliefs facilitate the enhancement of PTSD symptoms. Nevertheless, sufficient evidence that trauma-related beliefs are the precursor to PTSD symptoms was not provided in the present study.

The third criterion necessary to demonstrate internal validity for causal inferences is the exclusion of alternative explanations for the observed covariations (Shadish et al., 2002). Concerning the main effects of the present study, several alternative rival hypotheses need to be discounted before inferences can be made. One rival explanation is that psychological responses other than PTSD, such as guilt, depression, obsessive-compulsive tendencies, generalized anxiety and dissociation are responsible for the observed relationships between trauma-related beliefs and PTSD. For example, certain trauma-related beliefs may trigger psychological maladaptions such as depression, which are highly comorbid with PTSD in older populations (Conn, Clarke, & van Reekum, 2000). Several researchers have highlighted an overlap in the symptom criteria between depression and PTSD, including emotional numbing, decreased activity, negative automatic thoughts and avoidance (e.g., Brewin et al., 1993). Consequently, while posttraumatic vulnerability perceptions and decreased control beliefs appear to activate PTSD symptoms, some of these beliefs may elicit other syndromes that have symptom criteria that overlap with PTSD.

Another explanation for the apparent cause-effect association between PTSD symptoms and physical-health is the prospect of confounding variables. These include other

psychological symptom types. Depression, for example, is not only robustly correlated with PTSD in older populations (Conn et al., 2000), but is associated with physical health decline in older populations (Ford, 2004). Any covariance between a possible confound and each variable in an apparent cause-effect relationship needs to be controlled for before causal inferences can be made.

Mortality and differential attrition of T1 participants who did not partake at T2 may have affected the overall outcome of investigations. Some cases of attrition and mortality may have been caused by physical or mental deterioration that was generated by recent trauma. If this was the case, a significant number of trauma-impacted individuals may have been unaccounted-for, causing the true effects of recent trauma to be underestimated. Overcoming this problem within any longitudinal study is difficult when dealing with a large pool of participants whose identities are anonymous. Again, research involving a smaller number of participants each monitored more frequently could provide more precise and comprehensive data regarding the psychological, physical and contextual precursors of trauma-related deterioration.

10.9.7 Issues Related to Statistical Analysis

The power of a statistical test and, therefore, the ability to detect an actual effect is partially dependent on sample size. It is possible to exceed the optimum number of cases so that correlations that predict negligible variance in the DVs depart significantly from zero (Tabachnick & Fidell, 2007). A problem with the present study was the excessive number of participants in the sample, which generated high risk of Type I error. Although data analyses frequently resulted in statistically significant effects, many relationships were actually inconsequential. This problem was addressed by emphasizing the ES of each relationship and setting the alpha level to .001 when sample sizes were large. Furthermore, each MR was repeated with a smaller subset of the sample to determine if results remained the same. In all cases results did not differ from the original data with the full data set.

10.10 Ideas for Future Research

A number of ideas for future research have been proposed throughout the discussion so far. These ideas were generated in response to a) acknowledging that some exclusive findings of the present study can be elaborated on through additional research and b) recognising the weaknesses and limitations of the present study and how they might be overcome. Following is a brief integration of these ideas and some additional proposals in relation to the present findings.

10.10.1 Common Late-Life Traumatic Events

Three late-life traumas stood out as requiring further investigation. Being diagnosed with a life-threatening illness and spousal bereavement were not only the most frequently declared lifetime traumas, but were reported most frequently in response to the question, *What was the worst traumatic event you ever experienced?* Considering that spousal bereavement and being diagnosed with a life-threatening illness are common 'on-time' late-life events (Hyer & Sohnle, 2001), further research to ascertain the specific impact of such events in the lives of older people is critical.

While reports of emotional abuse were common in those with a PTSD diagnostic status, emotional abuse was just as common in the non-PTSD group. The potential impact of emotional abuse on NZ's older population needs to be addressed. Further research is required to test potential theories relating to the development, maintenance and psychological impact of emotional abuse in NZs older population, especially as it relates to trauma-related symptomatology.

10.10.2 Gender Differences and Late-Life PTSD

While older males with PTSD reported more irritability and anger, older females with PTSD reported more behavioural avoidance, jumpiness and being easily startled. Reasons for such differences between older traumatised males and females requires further exploration. The nature of past exposure to trauma may be an avenue for exploration. For example, the present study found that males were more likely to report

traumas associated with violence (e.g., war-trauma). Irritability and angry outbursts may be typical reactions to the traumatic reliving of past violent experiences. In contrast, females were more likely to report abusive interpersonal trauma. Behavioural avoidance may be a common strategy learned by females while enduring chronic interpersonal trauma, and startle responses may be typical anxiety reactions conditioned by interpersonal abuse. These ideas and other hypotheses regarding gender differences in trauma-related symptoms of the aged are worthy of further research to elaborate on the limited knowledge that clinicians have of PTSD symptoms in older men and women.

10.10.3 The Manifestation of Traumatisation During Later Life

A high proportion of participants met minimum criteria for subthreshold PTSD (T1: 12.9%; T2: 10.9%). The literature does not provide information about the impact of subthreshold PTSD levels on susceptibility to physical, cognitive and emotional deterioration in response to late-life stressors. However, the present study's findings suggest that late-life stressors enhance susceptibility to full-PTSD while increasing the risk of accelerated physical decline. Since posttraumatic symptoms such as intrusive memories, anxiety and sleep problems are often misconstrued as the degenerative process of aging (Aarts & Op den Velde, 1996), further research is required to ascertain the extent to which subthreshold levels of PTSD impact on functioning and emotional well-being during later life.

10.10.4 Advancing Trauma-Schema Theory

As discussed previously in this chapter, before any other research can be performed on Trauma-Schema Theory, the trauma-schema construct requires development and validation through rigorous scientific procedures so that its measurement becomes more reliable. Once assessment of active trauma-schemata is possible, research can further test the major ideas of the theory.

Advancing Trauma-Schema Theory as a more sophisticated scientific philosophy would benefit from investigation into the theory's two major themes of posttraumatic ill being. The first major theme of Trauma-Schema Theory is that pre-established trauma-schemata

are the cause of PTSD during later life. Central to this idea and requiring validation is that once trauma-schemata are developed, they remain in place for life, becoming activated or deactivated to varying degrees depending on the presence of risk-factors. This idea is central to explaining delayed PTSD reactions and why PTSD can last for up to 50 years after trauma exposure (Ruskin & Talbott, 1996). Moreover, it explains some of the findings of the present study. For example, the triggering of PTSD symptoms in response to late-life stressors can be explained by pre-existing cognitive structures that originated from past trauma. By investigating the consistency of trauma-related schemata in people over time, the steadfast nature of trauma-schemata may be revealed, supporting the crux of Trauma-Schema Theory's philosophy on PTSD development.

Research is also needed to distinguish the variables that help to trigger and maintain trauma-schemata and the variables that influence their deactivation. As structures that affect cognitive processing, the influence of trauma-schemata on general functions of cognition requires elucidation. Such information is relevant to older adults since aging is associated with a general decline of cognitive functioning in areas such as memory, processing speed and attention (Craik & McDowd, 1987; Davis, Small, Stern, et al., 2003; Leonards, Ibanez, & Giannakopoulos, 2002).

Proposed in Chapter Four was a second major theme of Trauma-Schema Theory that has received scant attention in the present undertaking. This includes the proposal that there is a temporary loss in 'self-coherence' (integration of the self into the here and now) or 'self-continuity' (a stable sense-of-self in relation to lifetime memories) (Aarts & Op den Velde, 1996) as trauma-schemata become activated and the switch to 'survival mode' occurs. Consistent with this idea is research showing that successful treatment of older trauma victims typically emphasise restoring the broken sense-of-self by encouraging the retelling of trauma until the trauma-narrative is fully coherent (Krystal, 1987; McCann & Pearlman, 1990; Ornstein, 1986; Ulman & Brothers, 1988). A temporary loss of self-coherence and discontinuous event-narratives are proposed to occur in relation to both past trauma and any present day activity that triggers trauma-schemata. Testing this relationship, however, would be difficult.

One possibility would be to examine the verbal daily memories of traumatised older adults for coherence and continuity. This sort of analysis has been performed in previous research on attachment theory (see Collins, Guichard, Ford, & Feeney, 2004). For example, the Adult Attachment Interview (AAI) designed by George, Kaplan, and Main (1984, 1985, 1986, cited by Lopez, 2008) can be rated to yield an overall *coherence-of-narrative* score, which is assessed through a standardized procedure of discourse analysis (Kobak, 1989, cited by Lopez, 2008). The less coherent a narrative about early childhood relationships is, the stronger likelihood of insecure or disorganized attachment. Research on coherence in older traumatised adults could use a similar scoring system in relation to daily narratives and analyse the association between narrative-coherence and active traumatic-schemata.

Furthermore, because insecure or disorganized attachment during childhood is proposed to be the first type of *trauma* that can initiate the development of trauma-schemata (see Chapter Four), the AAI itself may also be the ultimate tool for advancing Trauma-Schema Theory. Not only could the *coherence-of-narrative* scale be used in research on the association between self-continuity and trauma-schemata, but contents of the AAI could help to elaborate on the types of early attachment experiences and current adult attachment types that create risk for PTSD. If future research can show that low levels of coherence-of-narrative is associated with trauma-schemata activation, then trauma-schemata may be revealed as the crux of many problems related to traumatisation, both during later life and at other life stages. Although future research such as this seems promising, a great deal of work is still required to have Trauma-Schema Theory established as a suitable framework for clinical practice.

10.10.5 The Progression of PTSD During the Aging Process

A design-weakness of the present study was that PTSD symptom fluctuations might have occurred within short durations throughout the year. Assessments 12-months apart, therefore, may have been too distant to detect the full extent of symptom variability within individuals. As mentioned previously, a non-experimental repeated-measures design that applied multiple assessments within shorter durations (e.g., monthly) might track the trajectory of PTSD symptoms more closely. Rigorous monitoring of

specifically selected respondents, such as those with histories of chronic PTSD problems, could assist with identifying specific factors that encourage or hamper symptom augmentation. Although not without potential problems (e.g., practice effects, test familiarity), the benefits from this line of investigation might be worthy of the effort to expand knowledge of traumatisation in old age.

10.10.6 Physical-Health and Trauma

As mentioned previously in this chapter, use of a one-item self-rated physical health measure in the present study provided little scope for the precise detection of change over time. To generate a reliable investigation of physical health changes during later life, the objective measurement of a range of physical health components, including chronic health disorders and ADL functioning, is necessary. Increased understanding of the relationship between trauma-related problems and declining health of older people is critical. Such information can help with the design and facilitation of care problems that cater for both the immediate and long-term physical needs of older traumatised adults.

10.10.7 Improved Statistical Procedures

The present study measured multiple variables and investigated their relationships with correlational-based analyses. Physical, psychological and cognitive factors often work together in multifaceted ways, however, and capturing these complex associations may require more than simple correlational-based statistical techniques. Use of advanced statistical procedures such as path analysis and structural equation modelling should be considered for the future validation and progression of Trauma-Schema Theory. Advancing knowledge could begin with evaluating all of the data collected within the current undertaking.

10.11 Practical Implications for the Assessment and Treatment of Older Adults From the Study Outcomes

The following section discusses the practical implications of the present research for the assessment and treatment of older adults in a clinical setting. There are two general sections: Clinical assessment and clinical treatment.

10.11.1 Clinical Assessment

PTSD Symptoms

As reported previously in this chapter, the present study demonstrated that over 10% of NZ's older population might currently meet either subclinical- or full-PTSD criteria. Furthermore, PTSD symptom levels in older people seem to shift gradually, rather than fluctuate sharply from near-zero scores. As a result, a significant number of older adults who fall short of a PTSD diagnosis may not only be experiencing high levels of distress and functional impairment due to symptoms, but be at subsequent risk of full-blown PTSD in the future.

Consequently, advocating the employment of screening and assessment procedures that detect subthreshold levels of PTSD in older adults is an important implication of the present study. Screening procedures need not be complicated. Of the anxiety disorders, emotional numbing, flashbacks and nightmares have been identified as unique to PTSD (Foa & Rothbaum, 2001). As reported previously in this chapter, the present research verified these findings. Screening for the presence of one of these symptoms, therefore, would be a simple procedure; basic enough to apply in a medical setting, which is often the first place a traumatised older adult visits for help (Hyer & Sohnle, 2001). The necessity for introducing screening procedures of trauma-related syndromes in general medical settings was shown in the present study which revealed strong associations between poor physical health and PTSD scores.

Traumatic-Schemata

There is already a universal acceptance that cognitions lie behind psychopathological disorders (Costello, 1993). The present findings revealed that posttraumatic vulnerability perceptions and control beliefs played a strong mediating role in the relationship between recent stressors and PTSD (in both cross-sectional and longitudinal analyses). When research can confidently identify and measure active traumatic-schemata, assessing trauma-related beliefs and perceptions may also be an effective addition to screening for traumatisation in older adults.

Traumatic and Stressful Events

Although DSM-IV states that the occurrence of a specific recent trauma is the hallmark of PTSD (APA, 1994), the present findings showed that past-year stressors, not recent trauma, were strongly predictive of PTSD symptom exacerbation over twelve months. Furthermore, lifetime trauma, particularly lifetime exposure to abuse, was significantly associated with late-life PTSD symptom levels. These data challenge the prerequisite of a recent *traumatic* event when considering PTSD as a potential diagnosis, while implicating the value of assessing all recent and past experiences of the older adult.

10.11.2 The Practical and Therapeutic Treatment of Older Adults

Treatment paradigms for older adults with PTSD have not been well formulated or studied. Research on psychotherapy for older adults is limited, existing mainly in the form of uncontrolled case studies and anecdotal reports, primarily with veterans (Cook & Niederehe, 2007). There are a number of integrative treatment models for PTSD that incorporate a range of therapeutic techniques to alleviate symptoms. When components of these models are placed in the context of the present research for the treatment of traumatised older people, some conclusions can be drawn.

van der Kolk, McFarlane, and van der Hart (1996) devised an integrated treatment model for PTSD that represents the therapeutic goals of most treatment models. The five phases include 1) stabilizing the patient, 2) deconditioning the traumatic memories, 3) reconstructing trauma-related schemas, 4) re-establishing secure social connections and interpersonal efficacy and, 5) restoring positive emotional experience.

Phase one, stabilizing the patient, involves assisting patients with emotional stabilization and conquering the fear of trauma-related emotions. Results of the present study imply that the immediate care of a traumatised older person should involve the redemption of beliefs and perceptions that oppose the activated trauma-schemata. This should involve appraising the patient's direct living environment, including ongoing stressors that may be keeping trauma-schemata active. Indeed, identifying the best way to incorporate safety-enhancing schemata into the lives of older people, both immediately and over the long-term, is worthy of further investigation.

Phase two involves deconditioning traumatic memories by encouraging their verbalisation into fully coherent narratives. Limited research has documented repeated-exposure techniques (e.g., prolonged exposure therapy) as successfully alleviating PTSD symptoms in older people (Thorp, 2009). The strong physiological reactions of forced exposure techniques though, may exacerbate existing health conditions in older adults (Coleman, 1996; Hyer, Woods, & Follette, 1998; Schmitt, Kruse, & Re, 1999). Nevertheless, the present research indicated that cumulative lifetime trauma is the basis of late-life PTSD and, therefore, strongly supports the reconstruction of past trauma into coherent narratives. Life-review therapy (LRT) may be a suitable alternative to forced exposure techniques. LRT encourages exploration of the past and encourages past memories to be reconstructed into a positive and coherent life history that accentuates personal strengths and accomplishments (Hyer & Sohnle, 2001). As coping skills are identified and meanings explored in relation to one's existence, a focus on past mastery emerges and self-continuity is gradually established (Hyer & Sohnle, 2001). In light of the present research, which showed that trauma-related beliefs play a central role in PTSD exacerbation, LRT may assist with deactivating traumatic-schemata in older individuals by enhancing beliefs that verify one's sense mastery and control.

The third phase involves reconstructing trauma-related schemata. Cognitive-behavioural therapy (CBT) is particularly helpful in identifying and modifying irrational beliefs in older PTSD survivors (Hyer, Swanson, & Lefkowitz, 1990). Encouraging the exploration of trauma-schemata through CBT may create insight regarding factors that enhance PTSD symptoms. If patients can discover the specific factors that trigger or exacerbate their own trauma-schemata, they can be taught strategies that help to prevent

or reduce their strength. Future research would benefit from determining the best way to help older people explore and evaluate their own trauma-related perceptions within a therapeutic setting.

Phase four of the model is the reestablishment of secure social connections and interpersonal efficacy. Fostering emotional attachments of older traumatised adults is supported by research showing that secure attachment bonds serve as the primary defence against trauma-induced psychopathology in both children and adults (Finkelhor & Browne, 1984). In contrast, interpersonal trauma, which is associated with signs of insecure attachment, such as problems trusting others and difficulties functioning independently within relationships (Cole & Putnam, 1992), was strongly related to PTSD in the present study. PTSD in adults after any traumatic event is associated with perceptions of the self and others that represent insecure attachment (Passmore, 2000). In line with Trauma-Schema Theory, fostering the emotional attachments of older traumatised adults is likely to enhance safety-schemata and increase resiliency towards future stressors. Improving interpersonal skills, assisting with intimacy issues in current relationships and fostering new social relationships with peers may not only be beneficial, but critical, for the older adult with clinically significant levels of PTSD.

The final phase of the treatment model is restoring positive emotional experiences, including feelings of mastery and pleasure. In the present study about 65% of those who met PTSD criteria at both T1 and T2 reported loss of interest in once-enjoyed activities, feeling distant and cut-off from others and/or emotional numbness. The most common avoidance symptom reported by at least 75% of those meeting PTSD criteria at both T1 and T2 was avoiding thinking, talking or having feelings relating to a past stressful experience. These results suggest that traumatised older adults often engage in behaviours that obstruct the healthy processing of a full range of emotions. The restoration of positive affect, then, should be a natural progression upon recovery from elevated PTSD symptoms. Because older adults have less breadth for new experiences that elicit joy, fostering emotional attachment as recommended in phase four, should have the added benefit of assisting with the restoration of positive emotional experiences.

Successful therapeutic treatment of PTSD requires active contribution from the patient (Hyer & Sohnle, 2001). When an older person is unaware or unwilling to disclose past trauma, or when frailty limits the capacity for active involvement in therapy, treatment goals should shift to rehabilitation and the alleviation of present-day distress. Replacing curative techniques with treatment rehabilitation goals has also been recommended for older adults with chronic PTSD (Hyer & Sohnle, 2001). In light of the present findings, which indicated that trauma-related beliefs are accountable for much of the stressor-PTSD association, rehabilitation should focus on strengthening safety-schemata by actively managing present day concerns.

Some features of stress inoculation training and anxiety management training shown to be clinically effective in improving PTSD symptoms (Foa, Feske, Murdock, Kozak, & McCarthy, 1991) may assist with the rehabilitation of older traumatised adults (Hyer & Sohnle, 2001). Educating older adults to foresee future stressors and to manage anxiety may also be essential in preventing trauma-schemata activation, and the reactivation of PTSD, during later life.

When psychotherapy is not viable, the care of older traumatised adults within their living environments must involve procedures that are consistent with maintaining basic perceptions that enhance a sense of safety, invulnerability and control. The literature would benefit from further research based on Trauma-Schema Theory that demonstrates how to improve guidelines for the general care of older traumatised adults in long-term residential care settings and hospitals.

10.11.3 Summary of Practical Implications of the Present Findings

To summarise, the present research provides a number of practical implications for the assessment and therapeutic treatment of older people. Firstly, evidence of a recent traumatic experience should not be a prerequisite for PTSD assessment. General practitioners and mental-health professionals need to inquire about recent stressors, lifetime trauma history and lifetime abuse before ruling out traumatic-stress as a possible cause of psychological distress.

Furthermore, a disproportionately large number of older adults in NZ seem to be suffering from clinically significant levels of PTSD. This indicates a failure of the health-system to detect and treat trauma-related problems during later life. As a result, simple screening and assessment procedures for detecting PTSD symptoms in older adults need to be implemented within the health-care system.

Regarding the general care and therapeutic treatment of older people, guidelines should embrace Trauma-Schema Theory. Promoting a sense of safety, control and invulnerability within both the immediate and ongoing physical environments of the traumatised older person seems crucial for counteracting trauma-schemata. Educational methods that enforce psychological strategies for managing current or future activation of trauma-schemata may be helpful for older individuals recovering from elevated levels of PTSD.

A combination of both LRT and CBT for the treatment of PTSD symptoms should help older people with processing traumatic memories, establishing coherent lifetime narratives, detecting trauma-related beliefs and identifying internal resources and coping skills. Dealing with irreversible, ongoing late-life stressors in trauma-based therapy should maintain a strong focus on identifying and reinforcing coping strategies, thus reinforcing the safety-schemata essential for living with a sense of security in the world.

10.12 Conclusion

The present study has provided a comprehensive descriptive account of the nature of lifetime trauma, late-life stressors and past-year traumatic occurrences in the lives of older people in NZ. Data analyses assessed the extent that such events are the source of traumatic-stress during later life and in the process provided useful information for those involved in the lives of older people.

The identification of general and specific trauma-related symptoms that manifest in older people, in addition to the development of profiles for the presentation of PTSD as a clinical disorder, has practical significance for health providers. This information

provides effective guidelines for the simple screening and assessment of PTSD in older people for primary care physicians and mental-health professionals.

There is value in knowing the number of older people who may be suffering from PTSD symptoms. The present study's estimate of the prevalence of full- and subclinical-PTSD in NZ's older population documents that the major mental-health needs of some older adults are not being adequately met. This emphasizes the importance of future research regarding older adults' access and use of mental-health services.

The present research offers encouraging support for Trauma-Schema Theory, which explains that PTSD manifests through the activation of trauma-schemata, often as a result of stressful events. Although further research is necessary to refine Trauma Schema Theory, a number of practical implications of the present research assist with establishing guidelines for the procedures of any organisation dealing with traumatised older adults.

Given the projected future population increase of adults over 60 years old (Statistics New Zealand, 2007), NZ must make a commitment to facilitate ongoing research that fully captures the mental-health needs of older adults who have fallen victim to traumatisation. The high frequency of lifetime trauma and the potentially traumatic nature of late-life stressors, as revealed in the present study, implicates that further advancing Trauma-Schema Theory and its application to the care and treatment of PTSD during later life would be advantageous. It is hoped that the near future will see older traumatised adults receiving the appropriate acknowledgement and therapeutic care necessary to significantly enhance the quality of their lives.

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Information Sheet, T1

Massey University
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

SCHOOL OF PSYCHOLOGY
Private Bag 11 222
Palmerston North
New Zealand
T 64 6 350 5799 extn 2040
F 64 6 350 5673
www.massey.ac.nz

Information Sheet

The impact of life-time trauma on psychological and physical health during later life: A longitudinal study.

My name is Teesha Passmore and I am conducting research as a requirement for a Doctorate in Psychology through Massey University. My supervisors are Dr. Patrick Dulin & Professor Kevin Ronan, lecturers and clinical workers in the School of Psychology.

What is this research about?
This research is studying the effects of life-time trauma and recent stressful life experiences on behaviours, emotions, perceptions, thoughts and physical health during later life.

Eligibility
You are eligible to take part in the study if you are *60 years of age or older*.

What you will be asked to do
You will be asked to complete a comprehensive questionnaire about your psychological and emotional wellbeing, your physical health and the types of stressful or traumatic events that you may have encountered. Most answers will require one word answers: You will be given a choice and asked to select the best one. *You do not have to answer all of the questions in one sitting* - you may wish to answer the questions over a number of days for example, completing a few pages at a time. The questionnaire should take about 35 minutes to fill out. You may ask someone to help you with the questionnaire due to difficulties with reading or being able to write. In one year's time we will recontact you to ask if you will once again fill out a similar questionnaire. You will have the right to refuse to give out information again.

Your rights as participants

All participants:

- have the right to contact the researcher or supervisors of the project at any time during the research to discuss any aspects of the study. We can be contacted on 0800 877 833. Should you like any further information or to discuss any part of this study please leave a message and we will be get back to you.

- have the right to choose not to answer certain questions, and you may withdraw from the study at any time. Completing the questionnaire is voluntary. Because some questions ask about past and recent trauma and distressing experiences please be aware of how you are feeling. If you feel distressed please stop and seek support.

- recognize that any information provided is in complete confidence to the researcher and will be used for research purposes only. Your participation will be confidential. Your personal details will be separated from your questionnaire immediately and kept only to recontact you in a year's time. It will not be possible to identify individuals in any reports of the results.

- have the right to access results of the study at the end of the research. The end of the questionnaire allows you to receive a summary of the results of the study.

Please note that return and completion of this questionnaire implies that you have consented to participate in this study.

It is hoped that the information gained from this research will help to create a deeper understanding regarding how life-time trauma and recent stress impacts on physical health and psychological well-being during the later years.

*** IMPORTANT NOTE:**

Some of the questions in the questionnaire are of a sensitive nature. If you feel unduly overwhelmed or upset while filling out the questionnaire please ***STOP*** answering any questions and contact a support person.

If no support person is available or you require additional help the options on the attached 'LIST OF SERVICES' are available. The 'LIST OF SERVICES' also lists other free services available to help alleviate stressors and assist with well-being during later life. You may detach this list and keep for your knowledge now and in the future. If you live outside the areas listed, your local ***GP or Doctor*** and ***Citizen's Advice Bureau*** will have information about services that can provide the help and support you require.

Thank you for your participation,

Teesha Passmore

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Application 04/156. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Human Ethics Committee: Palmerston North, telephone 06 350 5249, email humanethicspn@massey.ac.nz

Questionnaire One, T1

Massey University
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

SCHOOL OF PSYCHOLOGY
Private Bag 11 222
Palmerston North
New Zealand
T 64 6 350 5799 extn 2040
F 64 6 350 5673
www.massey.ac.nz

QUESTIONNAIRE

General Information

1) **How old are you?** _____ years

2) **What is your gender?** (Please tick)

Male ☐
Female ☐

3) **What is your present marital status?** (Please tick)

Never married ☐
Married (including defacto) ☐
Separated or divorced ☐
Widowed ☐

4) **What ethnic group(s) do you identify most with?** (Please tick)

New Zealander of Maori descent ☐
New Zealander of European descent ☐
New Zealander of Pacific Island descent ☐
Other, please specify _____ ☐

5) **What is your highest educational qualification?** (Please tick)

No school qualification ☐
School certificate passes ☐
School qualifications, university entrance and above ☐
Trade certificate, professional certificate or diploma ☐
University degree or diploma ☐

Physical Health

1 - Compared to a person your own age with good health how would you rate your health at the present time? (Please circle a number)

Excellent..... 7

Very good..... 6

Good..... 5

Fair..... 4

Poor..... 3

Very poor..... 2

Terrible..... 1

2 - Please tick to indicate if a doctor, nurse or other health care worker has told you that you have any of the following long-term health problems

Cancer ☐ Diabetes ☐ Epilepsy ☐

Asthma ☐ Other respiratory conditions (e.g. bronchitis) ☐

Hepatitis ☐ High blood pressure or hypertension ☐

Stomach ulcer or duodenal ulcer ☐ Hernia or rupture ☐

Chronic liver trouble (e.g. cirrhosis) ☐ Arthritis or rheumatism ☐

Bowel disorders (e.g. colitis or polyps) ☐

Chronic kidney or urinary tract conditions ☐

Chronic skin conditions (e.g. dermatitis or psoriasis) ☐

Heart trouble (e.g angina) ☐

Hearing impairment or loss ☐

Sight impairment or loss ☐

Other_____ ☐

Activities of Daily Living

Here are a list of activities of daily living that people sometimes have trouble with. Do you have trouble with any of these things at the current time? (Please circle)

Bathing.....Yes No

Dressing.....Yes No

Getting out of bed.....Yes No

Toileting.....Yes No

Meal preparation.....Yes No

Shopping.....Yes No

Light housework.....Yes No

Heavy housework.....Yes No

Managing money.....Yes No

Using the telephone.....Yes No

Eating.....Yes No

Walking half a kilometer (about one-quarter mile)...Yes No

Walking up 10 steps without rest.....Yes No

Standing or being on your feet for two hours.....Yes No

Stooping, crouching or kneeling.....Yes No

Lifting or carrying 10 kilos (22lbs).....Yes No

Sitting for two hours.....Yes No

Reaching up over your head.....Yes No

Reaching out as if to shake hands.....Yes No

Using fingers to grasp objects.....Yes No

Emotional Well-Being

Please circle YES or NO for each question. Remember to be honest. You are not being judged. There are no right or wrong answers.

1 - Are you basically satisfied with your life? (Please circle)
YES NO

2 - Have you dropped many of your activities and interests?
YES NO

3 - Do you feel that your life is empty? YES NO

4 - Are you afraid that something bad is going to happen to you?
YES NO

5 - Do you feel happy most of the time? YES NO

6 - Do you often feel helpless? YES NO

7 - Do you feel you have more problems with memory than most?
YES NO

8 - Do you feel full of energy? YES NO

9 - Do you feel that your situation is hopeless? YES NO

10 - Do you think that most persons are better off than you are?
YES NO

Responses to Stressful Life Experiences

Please read each statement carefully, then circle one of the numbers to indicate how much you have been bothered by that problem in the past month.

1 - Repeated, disturbing memories, thoughts or images of a stressful experience from the recent or distant past

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

2 - Repeated, disturbing dreams of a stressful experience from the recent or distant past

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

3 - Suddenly acting or feeling as if a stressful experience from the recent or distant past were happening again (like you were reliving it)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

4 - Feeling very upset when something reminded you of a stressful experience from the recent or distant past?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

5 - Having physical reactions (e.g. heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the recent or distant past?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

6 - Avoiding thinking or talking about a past stressful experience or avoiding having feelings related to it?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

7 - Avoiding activities or situations because they remind you of a stressful experience from the past?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

8 - Trouble remembering important parts of a stressful experience from the past?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

9 - Loss of interest in activities that you used to enjoy?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

10 - Feeling distant or cut off from other people?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

11 - Feeling emotionally numb or being unable to have loving feelings for those close to you?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

12 - Feeling as if your future will be cut short somehow?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

13 - Trouble falling or staying asleep?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

14 - Feeling irritable or having angry outbursts?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

15 - Having difficulty concentrating?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

16 - Being 'superalert' or watchful or on guard?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

17 - Feeling jumpy or easily startled?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

18 - Is there a particular event/situation that may have triggered any of the above problems?

(Please circle) YES NO NOT SURE

If yes please describe_____

_____

_____

_____

_____

Anxiety

How have you been during the last month? Please answer the following questions by circling the number that best applies to you.

1 - I have had difficulty falling or staying asleep (due to worry or anxiety)

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

2 - I have felt restless

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

3 - I have been jumping in surprise at the slightest thing

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

4 - I have felt hypervigilant or "on edge"

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

5 - I have felt irritable or had outbursts of anger

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

6 - I have had difficulty concentrating (due to worry/anxiety)

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

Experiences in Daily Life

How often do you have these experiences when you are <u>not</u> under the influence of alcohol or drugs? Please <u>circle the number</u> that best applies to you.

1 - Felt as though I was standing next to myself, or watching myself as if I were looking at a different person

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

2 - Had the experience of looking in a mirror and not recognizing myself

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

3 - Had the experience of feeling that other people, objects, and the world around me were not real

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

4 - Had the experience of feeling that my body did not belong to me

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

5 - Had the experience of remembering a past event so vividly that it felt like I was reliving that event

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

6 - Had the experience of not being sure if things I remember happening really did happen or whether I just dreamed them

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

7 - Had the experience of being in a familiar place but finding it strange and unfamiliar

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

8 - Found that I became so involved in a fantasy or daydream that it felt like it was really happening to me

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

9 - Find that I sometimes sit staring off in space, thinking of nothing, and am not aware of the passage of time

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

10 - Find that in one situation I act so differently from when I'm in another situation that I feel almost as if I were two different people

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

11 - Find that in certain situations I am able to do things with amazing ease and spontaneity that would usually be difficult for me.

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

12 - Found that I could not remember whether I had done something or had just thought about doing that thing.

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

13 - Found evidence of doing things that I did not remember doing

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

14 - Found that I heard voices inside my head that told me to do things or that commented on things that I was doing

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

15 - Felt as though I was looking at the world through a fog so that people or objects appeared far away or unclear

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

16 - Felt like I was dreaming when I was awake

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

17 - Felt like I was disconnected from my body

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

18 - Regarding the last 17 questions: Could any of the above experiences be due to medication (if you are taking it)?

(Please Circle) **YES** **NO** **NOT SURE**

Personal Control Beliefs

Please indicate how much you agree or disagree with the following statements by circling the answer that best applies to you.

1 - I have little control over things that happen to me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

2 - There is really no way I can solve some of the problems I have

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

3 - There is little I can do to change many of the important things in my life

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

4 - I often feel helpless in dealing with the problems of life

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

5 - Sometimes I feel that I'm being pushed around in life

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

6 - What happens to me in the future mostly depends on me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

7 - I can do just about anything I really set my mind to

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

Vulnerability Scale

Instructions: Please circle if you believe the statements below are either True or False. Please be honest about how you feel. Remember there are no right or wrong answers.

1 - I have had many narrow escapes in life and feel as though my "nine lives" are almost used up

(Please circle) TRUE FALSE

2 - I feel as though there is punishment "hanging over my head" ready to drop at any time

TRUE FALSE

3 - If something terrible is going to happen, it will happen to me

TRUE FALSE

4 - Taking chances for the thrill of it makes life exciting for me

TRUE FALSE

5 - Regarding disappointment and tragedy, I am no longer sure that it will happen to the other person and not me

TRUE FALSE

6 - I am confident I will be spared terrible misfortunes

TRUE FALSE

7 - It seems that almost everywhere I look I see danger

TRUE FALSE

8 - Usually, I feel as safe when I am alone as when I am with someone

TRUE FALSE

9 - I feel I have more than my share of bad luck

TRUE FALSE

10 - Frequently when the telephone rings or I receive a letter I become frightened that it will be bad news

TRUE FALSE

11 - I can handle most dangers in the world

TRUE FALSE

12 - I often worry that the people I love will get hurt or taken away from me

TRUE FALSE

13 - The world seems harsh and hurtful - not helpful

TRUE FALSE

14 - I often feel something terrible is going to happen to someone close to me

TRUE FALSE

15 - I used to feel safe, but now I feel horrible things can happen to nice people, me included

TRUE FALSE

16 - I control my well-being

TRUE FALSE

17 - I welcome challenges

TRUE FALSE

18 - Sometimes I feel "exposed" and unprotected and that I could easily be hurt (either physically or emotionally)

TRUE FALSE

19 - I feel it is important to always keep my guard up and to be alert to possible threats

TRUE FALSE

20 - I feel there are many very real threats to my safety that I cannot handle

TRUE FALSE

21 - Sometimes I can't stand being alone

TRUE FALSE

22 - Evil and pain are very real to me

TRUE FALSE

23 - Taking risks feels good to me

TRUE FALSE

Recent Stressors

For each item, if you have experienced the stressor within the last 12 months, circle "YES" and complete the item that follows. If you have not experienced the stressor circle "NO" and go to the next question.

1 - During the last 12 months I have had serious problems with my eye-sight and/or hearing

(Please circle) NO YES

Problems with my eye-sight and/or hearing caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

2 - During the last 12 months I have had problems with my health

(Please circle) NO YES

Health problems have caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

3 - During the last 12 months I have had to undergo stressful medical procedures

(Please circle) NO YES

Experiencing these medical procedures caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

4 - During the last 12 months I have had a serious fall or accident

(Please circle) NO YES

Having a serious fall/accident caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

5 - During the last 12 months I have been hospitalized

(Please circle) NO YES

Hospitalization caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

6 - During the last 12 months I have had problems carrying out everyday tasks for myself (e.g. housework)

(Please circle) NO YES

Problems carrying out everyday tasks has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

7 - During the last 12 months I have had problems with my marriage or de facto relationship

(Please circle) NO YES

Problems with my marriage or de facto relationship caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

8 - During the last 12 months I have had conflict or problems with close family members or friends (not including marital/de facto)

(Please circle) NO YES

Having problems with these people caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

9 - During the last 12 months I have changed my place of residence (moved house)

(Please circle) NO YES

Change of residence has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

10 - During the last 12 months I have had a close family member or friend with very ill health

(Please circle) NO YES

Very ill health of some-one close to me has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

11 - During the last 12 months someone close to me passed away

(Please circle) NO YES

The passing away of someone close to me caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

12 - During the last 12 months I have been troubled about someone close to me passing away (although they passed away longer than 12 months ago)

(Please circle) NO YES

Being troubled about this person/s passing away has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

13 - During the last 12 months I have noticed a drastic change in my physical appearance (how I look)

(Please circle) NO YES

Noticing this change in my physical appearance has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

14 - During the last 12 months I have had financial problems

(Please circle) NO YES

Financial problems has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

15 - During the last 12 months I have had to be a care-giver for my dependant family member or friend

(Please circle) NO YES

Being a care-giver has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

16 - During the last 12 months I have retired from work

(Please circle) NO YES

Retiring has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

17 - During the last 12 months my spouse/partner retired from work

(Please circle) NO YES

My spouse/partner retiring has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

18 - Please list any other stressful experiences/situations you have had in the last 12 months

a - _____ This has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

b - _____ This has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

c - _____ This has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

Traumatic Experiences Questionnaire

For each question please circle either NO and move on to the next numbered question; or circle YES and answer the items that follow.

1 - Have you ever had a spouse die?

(Please circle) **NO (Go to next question)** **YES**

a) How many times? **(Please tick)** **Once** ☐ **Twice** ☐ **Three +** ☐

b) How old were you at the time(s)? **1st** _____ **2nd** _____ **3rd** _____

2 - Have you ever had a child die?

(Please circle) **NO (Go to next question)** **YES**

a) How many times? **(Please tick)** **Once** ☐ **Twice** ☐ **Three +** ☐

b) How old were you at the time(s)? **1st** _____ **2nd** _____ **3rd** _____

3 - Have you ever been divorced?

(Please circle) **NO (Go to next question)** **YES**

a) How many times? **(Please tick)** **Once** ☐ **Twice** ☐ **Three +** ☐

b) How old were you at the time(s)? **1st** _____ **2nd** _____ **3rd** _____

4 - Have you ever *been in* or *witnessed* a serious industrial farm accident, or vehicle accident, or a large fire or explosion?

(Please circle) **NO (Go to next question)** **YES**

a) How many times? **(Please tick)** **Once** ☐ **Twice** ☐ **Three +** ☐

b) How old were you at the time(s)? **1st** _____ **2nd** _____ **3rd** _____

5 - Have you ever been in a major natural disaster such as a tornado, hurricane, flood or major earthquake?

(Please circle) **NO (Go to next question)** **YES**

a) How many times? **(Please tick)** **Once** ☐ **Twice** ☐ **Three +** ☐

b) How old were you at the time(s)? **1st** _____ **2nd** _____ **3rd** _____

6 - As an adult have you had any unwanted sexual experiences that involved threat or the use of force (e.g. rape)?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

7 - As an adult have you ever been a victim of a violent crime such as robbery or assault?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

8 - As an adult have you ever been in a relationship in which you were physically mistreated (e.g. punched, hit, shoved, kicked).

(Please circle) NO (Go to next question) YES

a) By how many people? **(Please tick)** One ☐ Two ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

9 - As an adult have you ever been in a relationship in which you were mentally/emotionally mistreated (e.g. criticized, put down, intimidated, made to feel worthless etc...)

(Please circle) NO (Go to next question) YES

a) By how many people? **(Please tick)** One ☐ Two ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

10 - Have you ever witnessed someone who was mutilated, seriously injured or violently killed?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

11 - Has your spouse ever had a life-threatening illness?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

12 - Has your child ever had a life-threatening illness?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

13 - Has your spouse ever had a near-fatal accident or injury?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

14 - Has your child ever had a near-fatal accident or injury?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

15 - Have you ever had a life-threatening illness?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

16 - Have you ever had a near fatal accident or injury?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

17 - Have you ever fired a weapon in combat or been fired upon in combat?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

18 - Before you were 18 years old, were you ever sent to a foster home or somewhere else to live away from your family?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

19 - Before you were 18 years old, did either of your parents ever drink or use drugs so often that it caused family problems?

(Please circle) NO (Go to next question) YES

a) From and to what ages (e.g. 8-10 years)

1st _____ 2nd _____ 3rd _____

20 - Before you were 18 years old, were you ever physically mistreated on a regular basis (hit, pushed, punched, kicked, shoved etc...) by any of your parents or caregivers?

(Please circle) NO (Go to next question) YES

a) From and to what ages? (e.g. 8-10 years)

1st _____ 2nd _____ 3rd _____

21 - Before you were 18 were you the victim of ongoing sexual abuse (i.e. forced or coerced sexual contact *more than once* by the same person)

(Please circle) NO (Go to next question) YES

a) From and to what ages (for example., 8-10 years)?

1st _____ 2nd _____ 3rd _____

22 - <u>As a child or adolescent</u>, did you ever experience a <u>one-off sexual abuse incident</u> (i.e. one incident of coerced or forced sexual contact by a person)

a) How many times? **(Please tick)** **Once** ☐ **Twice** ☐ **Three+** ☐

b) How old were you at the time(s)? **1st** _____ **2nd** _____ **3rd** _____

23 - Before you were 20 years old, did one of your <u>parents/caregivers die</u>?

(Please circle) **NO (Go to next question)** **YES**

a) How many times? **(Please tick)** **Once** ☐ **Twice** ☐ **Three+** ☐

b) How old were you at the time(s)? **1st** _____ **2nd** _____ **3rd** _____

24 - Did you ever have any <u>other very traumatic events</u> like these happen in your life?

(Please circle) **NO (Go to next question)** **YES**

a) How many times? **(Please tick)** **Once** ☐ **Twice** ☐ **Three +** ☐

b) How old were you at the time(s)? **1st** _____ **2nd** _____ **3rd** _____

c) What were the events?

1st _____

2nd _____

3rd _____

Trauma Questions

1 - What was the worst trauma in your life?

_____

How old were you at the time?_____

2 - Regarding the most traumatic thing that you've ever experienced in your life - have you ever talked about this to anybody else? (Please circle a number)

Never talked about it	Only mentioned it once or twice	Talked about it a little	Talked about it a lot
0	1	2	3

3 - Regarding the traumatic experiences throughout your life - have you been able to talk about and reflect on the event/s and your reactions to them? (Please circle a number)

Never	A little	Moderately	A lot
0	1	2	3

4 - Have you ever talked to a mental health professional (e.g Psychologist, Therapist) about the traumatic event/s you have experienced?

a. Never
b. Yes - but it didn't help
c. Yes - it helped somewhat
d. Yes - it helped a lot

5 - When a traumatic thing has happened to you in the past, you have:

a. Tried to forget about it and just moved on.
b. Wanted to talk about it, but felt uncomfortable.
c. Told your closest friend/confidant, but nobody else.
d. Talked about it to whoever would listen.

YOU HAVE REACHED THE END
THANK YOU VERY MUCH

I would like a copy of the results **YES** ☐ **NO** ☐

An important part of this study is to find out how you are later on. Can we send you another similar questionnaire in ONE YEAR'S TIME? (You will not be obliged to fill out the questionnaire and have the right to change your mind).

You may send me another questionnaire in a year's time

YES ☐ **NO** ☐

My details, so that I can be sent a copy of the results and/or a similar questionnaire in one year's time are... (Remember your details are completely confidential, used only to contact you and will immediately be detached from the information in this questionnaire)

NAME (optional) _____

POSTAL ADDRESS_____

_____

_____

EMAIL_____

Please post this questionnaire away in the free-post envelope provided by 30th August (or send to FREEPOST 86, School of Psychology, Attention Dr. Patrick Dulin, Massey University, Turitea, PALMERSTON NORTH)

Please note:
This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Application 04/156. If you have any concerns about the ethics of this research, please contact Professor Sylvia Rumball, Chair, Massey University Campus Human Ethics Committee: PN, telephone (06) 350-5249, email *humanethicspn@massey.ac.nz.*

THANK YOU AGAIN AND ALL THE BEST

APPENDIX A-4

List of Services

List of Services

If you are outside the regions listed, calling your local **Citizen's Advice Bureau** can put you in touch with the nearest appropriate agency.

-Your **local GP** or **doctor** can offer support and refer you to appropriate services

- **Psychiatric emergencies** provides 24 hour emergency psychiatric assessment and short-term intervention for people of all ages. Often people are referred on to other agencies if they need more than 2-3 weeks input. Any member of the public can make referrals.
Christchurch: (03) 3640-640
Central Auckland: (09) 0800 800 717
West Auckland: (09) 837 6603
North Shore: (09) 486 1491
South Auckland: (09) 270 4742
Palmerston North: 0800 653 357

- **Life-Line** is a 24 hour telephone counselling service for adults of all ages in need of support. Life-line can also refer you to appropriate services.
Christchurch/South Island: 0800 543 354
Auckland: (09) 426 9105

- **Mental Health Services for Older People**
Auckland: (09) 623 6474
North Shore: (09) 486 8900
West Auckland: (09) 837 9100
Canterbury DHB. (03) 337 7783

- **Presbyterian Support Services** is a support service providing assessment for health funded services for older people and counselling services for the elderly.
Christchurch: (03) 366 5472
Palmerston North: (06) 350 2080
Auckland: (09) 520 8600

- **Maori Mental Health and Support Services**
Provides a cultural mental health service for all Tangata Whaiora (people seeking wellness) and their whanau.
Canterbury DHB. Te Korowai Atawhai: (03) 339 2864
Canterbury Rehua Marae Social Services: (03) 355-5615
Canterbury Maori Disabilities and Resource Centre: (03) 338 8013
Canterbury He Oranga Pounamu: (03) 353-4370
Maori Mental Health Services Auckland: (09) 845 3084
Maori Mental Health Services West Auckland: (09) 838 9960

- **Victim Support** is a support service made of volunteers for individuals suffering from the effects of being a victim of crime. Christchurch: (03) 379-6767
Palmerston North: (06) 351 3873
Auckland Central: (09) 302 6977

- **Age Concern** provide services, information, advocacy and advice to assist older people to remain in their own homes. A community health service is available to support older people and their carers. Support, eduction and information is provided for victims of elderly abuse. Also provide a wide range of home-care services: gardening, tradesmen, home-help.
Christchurch: (03) 366 0903
Palmerston North: (06) 355 2832
Auckland: (09) 623 0184
North Shore: (09) 489 4975

- **St John Caring Callers** provided by the Order of St John provides daily friendship via telephone contact with a supportive person who is available to listen and check on your safety and wellbeing. The service is good for older people who feel lonely or have limited contact with caring, supportive people.
Nationwide: 0800 780 780

APPENDIX B-1

Cover Letter, T2

Massey University
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

SCHOOL OF PSYCHOLOGY
Te Kura Hinengaro Tangata
Private Bag 11 222
Palmerston North
New Zealand
T 64 6 356 9099 extn 2040
F 64 6 350 5673
www.massey.ac.nz
http://psychology.massey.ac.

The impact of life-time trauma and stress on psychological and physical health during later life: A longitudinal study.

Dear_____ ID No. _____

Twelve months ago you participated in the Massey University Trauma and Health Study by completing a questionnaire about your health, psychological status, beliefs, recent stressors and life-time traumatic experiences. I was very grateful for your participation and would like to thank you once again for taking the time to complete and send back the questionnaire. In total, 1489 completed questionnaires were returned for use in the study, giving the study much credibility and reliability.

It is now time to complete and send back the second questionnaire which is enclosed in this envelope. The questionnaire will assess stressful and traumatic events encountered during the last 12 months; your physical and psychological well-being and certain beliefs you have. The information in this questionnaire will be compared with the information you provided during the first questionnaire to determine any changes that may have occurred. Once you have completed the questionnaire, please send it back by January 1st in the FREEPOST envelope provided or to the following address: FREEPOST 86, Trauma, Stress and Later Life, School of Psychology, Massey University, Turitea, PALMERSTON NORTH.

Once again, the information you provide is completely confidential and any personal details you provide will be immediately detached from the questionnaire. Your rights as a participant are listed in the Information Sheet provided.

You will be sent a copy of the full results when the study is completed. Thank you again for your participation.

Kind Regards,

Teesha Passmore

Information Sheet, T2

Massey University
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

SCHOOL OF PSYCHOLOGY
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New Zealand
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F 64 6 350 5673
www.massey.ac.nz
http://psychology.massey.ac.

Information Sheet

The impact of trauma and stress on psychological and physical health during later life: A longitudinal study.

My name is Teesha Passmore and I am now conducting the second phase of Doctoral research on the impact of trauma and stress during later life. My supervisors are Dr. Patrick Dulin & Dr John Podd, lecturers and clinical workers in the School of Psychology, Massey University.

What is this research about?

This research is studying the effects of trauma and recent stressful life experiences on behaviours, emotions, perceptions, thoughts and physical health during later life.

Eligibility

You are eligible to take part in this second phase of the study if you filled out a questionnaire last year and have been sent a second questionnaire to complete.

What you will be asked to do

You will be asked to complete a comprehensive questionnaire about your psychological and emotional wellbeing, your physical health and the types of stressful or traumatic events you have recently encountered. Most answers will require one word responses: You will be given a choice and asked to select the best one. *You do not have to answer all of the questions in one sitting* - you may wish to answer the questions over a number of days for example, completing a few pages at a time. The questionnaire should take about 20 minutes to complete. You may ask someone to help you fill out the questionnaire due to difficulties with reading or being able to write. It is possible that this study will continue for many years and we may recontact you to ask if you will once again fill out a similar questionnaire. You have the right to refuse to give out information again.

Your rights as a participant

All participants:

- have the right to contact the researcher or supervisors of the project at any time to discuss any aspects of the study. You may leave a message at this number: (06) 356 9099, extension 2040. Should you like any further information or to discuss any part of this study please leave a message and myself or my supervisor will get back to you as soon as possible.

- have the right to choose not to answer certain questions, and you may withdraw from the study at any time. Completing the questionnaire is voluntary. Because some questions ask about recent trauma and distressing experiences please be aware of how you are feeling. If you feel distressed please stop and seek support.

- recognize that any information provided is in complete confidence to the researcher and will be used for research purposes only. Your participation will be confidential. Your personal details will be separated from your questionnaire immediately and kept only to recontact you if the study is continued. It will not be possible to identify individuals in any reports of the results.

- have the right to access results of the study at the end of the research. You have already given details for receiving results of the study. If you have changed your mind please let us know.

Please note that return and completion of this questionnaire implies that you have consented to participate in this study.
It is hoped that the information gained from this research will help to create a deeper understanding regarding how trauma and stress impacts on physical health and psychological well-being during the later years.

*** IMPORTANT NOTE:**

Some of the questions in the questionnaire are of a sensitive nature.
If you feel unduly overwhelmed or upset while filling out the questionnaire please ***STOP*** answering any questions and contact a support person.

If no support person is available or you require additional help the options on the attached 'LIST OF SERVICES' are available. The 'LIST OF SERVICES' also lists other free services available to help alleviate stressors and assist with well-being during later life. You may detach this list and keep for your knowledge now and in the future. If you live outside the areas listed, your local ***GP or Doctor*** and ***Citizen's Advice Bureau*** will have information about services that can provide the help and support you require.

Thank you for your participation,
Teesha Passmore

APPENDIX B-3

Questionnaire Two, T2

Massey University
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

SCHOOL OF PSYCHOLOGY
Te Kura Hinengaro Tangata
Private Bag 11 222
Palmerston North
New Zealand
T 64 6 356 9099 extn 2040
F 64 6 350 5673
www.massey.ac.nz
http://psychology.massey.ac.n

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Application 04/156. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Human Ethics Committee: Palmerston North, telephone 06 350 5249, email humanethicspn@massey.ac.nz

QUESTIONNAIRE (TIME 2)

General Information

1) How old are you? _____ years

2) What is your gender?
(Please tick)

Male ☐ Female ☐

Physical Health

1 - Compared to a person your own age with good health how would you rate your health at the present time? (Please circle a number)

Excellent..... 7

Very good..... 6

Good..... 5

Fair..... 4

Poor..... 3

Very poor..... 2

Terrible..... 1

2 - Please tick to indicate if a doctor, nurse or other health care worker has told you that you have any of the following long-term health problems

Cancer ☐ Diabetes ☐ Epilepsy ☐

Asthma ☐ Other respiratory conditions (e.g. bronchitis) ☐

Hepatitis ☐ High blood pressure or hypertension ☐

Stomach ulcer or duodenal ulcer ☐ Hernia or rupture ☐

Chronic liver trouble (e.g. cirrhosis) ☐ Arthritis or rheumatism ☐

Bowel disorders (e.g. colitis or polyps) ☐

Chronic kidney or urinary tract conditions ☐

Chronic skin conditions (e.g. dermatitis or psoriasis) ☐

Heart trouble (e.g angina) ☐

Hearing impairment or loss ☐

Sight impairment or loss ☐

Other_____ ☐

Activities of Daily Living

Here are a list of activities of daily living that people sometimes have trouble with. Do you have trouble with any of these things at the current time? (Please circle)

Bathing.....Yes No

Dressing.....Yes No

Getting out of bed.....Yes No

Toileting.....Yes No

Meal preparation.....Yes No

Shopping.....Yes No

Light housework.....Yes No

Heavy housework.....Yes No

Managing money.....Yes No

Using the telephone.....Yes No

Eating.....Yes No

Walking half a kilometer (about one-quarter mile)...Yes No

Walking up 10 steps without rest.....Yes No

Standing or being on your feet for two hours.....Yes No

Stooping, crouching or kneeling.....Yes No

Lifting or carrying 10 kilos (22lbs).....Yes No

Sitting for two hours.....Yes No

Reaching up over your head.....Yes No

Reaching out as if to shake hands.....Yes No

Using fingers to grasp objects.....Yes No

Feelings Questionnaire

Please circle YES or NO for each question. Remember to be honest. You are not being judged. There are no right or wrong answers.

1 - Are you basically satisfied with your life? (Please circle)
YES NO

2 - Have you dropped many of your activities and interests?
YES NO

3 - Do you feel that your life is empty? **YES NO**

4 - Are you afraid that something bad is going to happen to you?
YES NO

5 - Do you feel happy most of the time? **YES NO**

6 - Do you often feel helpless? **YES NO**

7 - Do you feel you have more problems with memory than most?
YES NO

8 - Do you feel full of energy? **YES NO**

9 - Do you feel that your situation is hopeless? **YES NO**

10 - Do you think that most persons are better off than you are?
YES NO

Responses to Stressful Life Experiences

Please read each statement carefully, then circle one of the numbers to indicate how much you have been bothered by that problem in the past month.

1 - Repeated, disturbing memories, thoughts or images of a stressful experience from the recent or distant past

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

2 - Repeated, disturbing dreams of a stressful experience from the recent or distant past

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

3 - Suddenly acting or feeling as if a stressful experience from the recent or distant past were happening again (like you were reliving it)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

4 - Feeling very upset when something reminded you of a stressful experience from the recent or distant past?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

5 - Having physical reactions (e.g. heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the recent or distant past?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

6 - Avoiding thinking or talking about a past stressful experience or avoiding having feelings related to it?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

7 - Avoiding activities or situations because they remind you of a stressful experience from the past?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

8 - Trouble remembering important parts of a stressful experience from the past?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

9 - Loss of interest in activities that you used to enjoy?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

10 - Feeling distant or cut off from other people?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

11 - Feeling emotionally numb or being unable to have loving feelings for those close to you?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

12 - Feeling as if your future will be cut short somehow?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

13 - Trouble falling or staying asleep?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

14 - Feeling irritable or having angry outbursts?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

15 - Having difficulty concentrating?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

16 - Being 'superalert' or watchful or on guard?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

17 - Feeling jumpy or easily startled?

Not at all	A little bit	Moderately	Quite a bit	Extremely
1	2	3	4	5

18 - Is there a particular event/situation that may have triggered any of the above problems?

(Please circle) YES NO NOT SURE

If yes please describe_____

_____

_____

_____

_____

Anxiety

How have you been during the last month? Please answer the following questions by circling the number that best applies to you.

1 - I have had difficulty falling or staying asleep (due to worry or anxiety)

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

2 - I have felt restless

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

3 - I have been jumping in surprise at the slightest thing

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

4 - I have felt hypervigilant or "on edge"

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

5 - I have felt irritable or had outbursts of anger

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

6 - I have had difficulty concentrating (due to worry/anxiety)

Not at All	Very Rarely	Rarely	Sometimes	Often	Very Often
0	1	2	3	4	5

Experiences in Daily Life

At the present time, how often do you have these experiences when you are <u>not</u> under the influence of alcohol or drugs? Please <u>circle the number</u> that best applies to you.

1 - Felt as though I was standing next to myself, or watching myself as if I were looking at a different person

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

2 - Had the experience of looking in a mirror and not recognizing myself

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

3 - Had the experience of feeling that other people, objects, and the world around me were not real

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

4 - Had the experience of feeling that my body did not belong to me

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

5 - Had the experience of remembering a past event so vividly that it felt like I was reliving that event

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

6 - Had the experience of not being sure if things I remember happening really did happen or whether I just dreamed them

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

7 - Had the experience of being in a familiar place but finding it strange and unfamiliar

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

8 - Found that I became so involved in a fantasy or daydream that it felt like it was really happening to me

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

9 - Find that I sometimes sit staring off in space, thinking of nothing, and am not aware of the passage of time

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

10 - Find that in one situation I act so differently from when I'm in another situation that I feel almost as if I were two different people

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

11 - Find that in certain situations I am able to do things with amazing ease and spontaneity that would usually be difficult for me.

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

12 - Found that I could not remember whether I had done something or had just thought about doing that thing.

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

13 - Found evidence of doing things that I did not remember doing

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

14 - Found that I heard voices inside my head that told me to do things or that commented on things that I was doing

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

15 - Felt as though I was looking at the world through a fog so that people or objects appeared far away or unclear

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

16 - Felt like I was dreaming when I was awake

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

17 - Felt like I was disconnected from my body

Never Happens	Occasionally Happens	Sometimes Happens	Frequently Happens	Almost Always Happens
0	1	2	3	4

18 - Regarding the last 17 questions: Could any of the above experiences be due to medication (if you are taking it)?

(Please Circle) **YES** **NO** **NOT SURE**

Personal Control Beliefs

Please indicate how much you agree or disagree with the following statements by circling the answer that best applies to you.

1 - I have little control over things that happen to me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

2 - There is really no way I can solve some of the problems I have

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

3 - There is little I can do to change many of the important things in my life

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

4 - I often feel helpless in dealing with the problems of life

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

5 - Sometimes I feel that I'm being pushed around in life

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

6 - What happens to me in the future mostly depends on me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

7 - I can do just about anything I really set my mind to

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

Vulnerability Scale

Please indicate how much you agree or disagree with the following statements by circling the answer that best applies to you.

1 - I have had many narrow escapes in life and feel as though my "nine lives" are almost used up

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

2 - I feel as though there is punishment "hanging over my head" ready to drop at any time

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

3 - If something terrible is going to happen, it will happen to me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

4 - Taking chances for the thrill of it makes life exciting for me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

5 - Regarding disappointment and tragedy, I am no longer sure that it will happen to the other person and not me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

6 - I am confident I will be spared terrible misfortunes

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

7 - It seems that almost everywhere I look I see danger

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

8 - Usually, I feel as safe when I am alone as when I am with someone

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

9 - I feel I have more than my share of bad luck

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

10 - Frequently when the telephone rings or I receive a letter I become frightened that it will be bad news

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

11 - I can handle (mentally) most dangers in the world

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

12 - I often worry that the people I love will get hurt or taken away from me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

13 - The world seems harsh and hurtful - not helpful

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

14 - I often feel something terrible is going to happen to someone close to me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

15 - I used to feel safe, but now I feel horrible things can happen to nice people, me included

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

16 - I control my well-being

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

17 - I welcome challenges

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

18 - Sometimes I feel "exposed" and unprotected and that I could easily be hurt (either physically or emotionally)

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

19 - I feel it is important to always keep my guard up and to be alert to possible threats

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

20 - I feel there are many very real threats to my safety that I cannot handle

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

21 - Sometimes I can't stand being alone

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

22 - Evil and pain are very real to me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

23 - Taking risks feels good to me

Strongly Agree	Agree	Disagree	Strongly Disagree
1	2	3	4

- PLEASE GO TO THE NEXT PAGE -

Recent Events

For each item, if you have experienced the stressor within the last 12 months, circle "YES" and complete the item that follows. If you have not experienced the stressor, circle "NO" and go to the next question.

1 - During the last 12 months I have had serious problems with my eye-sight and/or hearing

(Please circle) NO YES

Problems with my eye-sight and/or hearing caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

2 - During the last 12 months I have had problems with my health

(Please circle) NO YES

Health problems have caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

3 - During the last 12 months I have had to undergo stressful medical procedures

(Please circle) NO YES

Experiencing these medical procedures caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

4 - During the last 12 months I have had a serious fall or accident

(Please circle) NO YES

Having a serious fall/accident caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

5 - During the last 12 months I have been hospitalized

(Please circle) NO YES

Hospitalization caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

6 - During the last 12 months I have had problems carrying out everyday tasks for myself (e.g. housework)

(Please circle) NO YES

Problems carrying out everyday tasks has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

7 - During the last 12 months I have had problems with my marriage or de facto relationship

(Please circle) NO YES

Problems with my marriage or de facto relationship caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

8 - During the last 12 months I have had conflict or problems with close family members or friends (not including marital/de facto)

(Please circle) NO YES

Having problems with these people caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

9 - During the last 12 months I have changed my place of residence (moved house)

(Please circle) NO YES

Change of residence has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

10 - During the last 12 months I have had a close family member or friend with very ill health

(Please circle) NO YES

Very ill health of some-one close to me has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

11 - During the last 12 months someone close to me passed away

(Please circle) NO YES

The passing away of someone close to me caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

12 - During the last 12 months I have been troubled about someone close to me passing away (although they passed away longer than 12 months ago)

(Please circle) NO YES

Being troubled about this person/s passing away has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

13 - During the last 12 months I have noticed a drastic change in my physical appearance (how I look)

(Please circle) NO YES

Noticing this change in my physical appearance has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

14 - During the last 12 months I have had financial problems

(Please circle) NO YES

Financial problems has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

15 - During the last 12 months I have had to be a care-giver for my dependant family member or friend

(Please circle) NO YES

Being a care-giver has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

16 - During the last 12 months I have retired from work

(Please circle) NO YES

Retiring has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

17 - During the last 12 months my spouse/partner retired from work

(Please circle) NO YES

My spouse/partner retiring has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

18 - During the last 12 months I have had extreme worry or concern about a child or grandchild of mine

(Please circle) NO YES

Stress about my child/ren or grandchild/ren has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

19 - Please list any other stressful experiences/situations you have had in the last 12 months

a - _____ This has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

b - _____ This has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

c - _____ This has caused...

No Distress	A Little Distress	Some Distress	Lots of Distress
0	1	2	3

Stressors Questions

1 - What was the worst stressor you experienced during the last 12 months (if you experienced more than one)

_____

2 - Regarding the stressful events that you have experienced during the last 12 months - have you ever talked about them to anybody else? (Please circle a number)

Never talked about it	Only mentioned it once or twice	Talked about it a little	Talked about it a lot
0	1	2	3

3 - Regarding the stressful events that you have experienced during the last 12 months - have you been able to talk about and reflect on the event/s and your reactions to them? (Please circle a number)

Never	A little	Moderately	A lot
0	1	2	3

4 - Have you ever talked to a mental health professional (e.g Psychologist, Therapist) about the stressful event/s you have experienced over the last 12 months?

a. Never
b. Yes - but it didn't help
c. Yes - it helped somewhat
d. Yes - it helped a lot

5 - When stressful events happened to you in the past 12 months you... (please tick the one that most closely applies to you)

a. Tried to forget about them and just moved on.
b. Wanted to talk about them, but felt uncomfortable.
c. Told your closest friend/confidant, but nobody else.
d. Talked about it them to whoever would listen.

Traumatic Experiences Questionnaire

This questionnaire will determine if you have had any traumatic experiences during the last year. For each question please circle either NO and move on to the next numbered question; or circle YES and answer the item that follows.

1 - During the last 12 months, have you had a spouse/partner die?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

2 - During the last 12 months, have you had a child die?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

3 - During the last 12 months, have you been divorced?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

4 - During the last 12 months, have you ever *been in* or *witnessed* a serious industrial farm accident, or vehicle accident, or a large fire or explosion?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

5 - During the last 12 months, have you ever been in a major natural disaster such as a tornado, hurricane, flood or major earthquake?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

6 - During the last 12 months, have you had any unwanted sexual experiences that involved threat or the use of force (e.g. rape)?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

7 - During the last twelve months, have you ever been a victim of a violent crime such as robbery or assault?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

8 - During the last twelve months, have you ever been in a relationship in which you were physically mistreated (e.g. punched, hit, shoved, kicked).

(Please circle) NO (Go to next question) YES

a) By how many people? **(Please tick)** One ☐ Two ☐ Three + ☐

9 - During the last twelve months, have you ever been in a relationship in which you were mentally/emotionally mistreated (e.g. criticized, put down, intimidated, made to feel worthless etc...)

(Please circle) NO (Go to next question) YES

a) By how many people? **(Please tick)** One ☐ Two ☐ Three + ☐

10 - During the last twelve months, have you ever witnessed someone who was mutilated, seriously injured or violently killed?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

11 - During the last twelve months, has your spouse been diagnosed with a life-threatening illness?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

12 - During the last 12 months, has your child been diagnosed with a life-threatening illness?

(Please circle) NO (Go to next question) YES

a) How many illnesses? **(Please tick)** Once ☐ Twice ☐ Three + ☐

13 - During the last 12 months, has your spouse had a near-fatal accident or injury?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

14 - During the last 12 months, has your child had a near-fatal accident or injury?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

15 - During the last 12 months, have you been diagnosed with a life-threatening illness?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

16 - During the last 12 months, have you had a near fatal accident or injury?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

17 - During the last twelve months, have you fired a weapon in combat or been fired upon in combat?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

18 - In the past 12 months, did you ever have any other very traumatic events like these happen in your life?

(Please circle) NO (Go to next question) YES

a) How many times? **(Please tick)** Once ☐ Twice ☐ Three + ☐

b) How old were you at the time(s)? 1st _____ 2nd _____ 3rd _____

c) What were the events?

1st _____

2nd _____

3rd _____

Trauma Questions

1 - What was the worst trauma you experienced over the last 12 months (if you experienced more than one)

_____

2 - Regarding any traumas experienced during the last 12 months have you ever talked about them to anybody else? (Please circle a number)

Never talked about it	Only mentioned it once or twice	Talked about it a little	Talked about it a lot
0	1	2	3

3 - Regarding any traumas experienced during the last 12 months have you been able to talk about and reflect on the event/s and your reactions to them? (Please circle a number)

Never	A little	Moderately	A lot
0	1	2	3

4 - Have you ever talked to a mental health professional (e.g Psychologist, Therapist) about any traumas you have experienced over the last 12 months?

a. Never
b. Yes - but it didn't help
c. Yes - it helped somewhat
d. Yes - it helped a lot

5 - When a traumatic thing happened to you over the past 12 months you... (please tick only one - the one that most closely applies to you)

a. Tried to forget about it and just moved on.
b. Wanted to talk about it, but felt uncomfortable.
c. Told your closest friend/confidant, but nobody else.
d. Talked about it to whoever would listen.

YOU HAVE REACHED THE END - THANK YOU

I would like a copy of the results **YES** ☐ **NO** ☐

It is possible that this study will continue. If it does, can we send you another similar questionnaire in ONE YEAR'S TIME (approximately). If you tick YES, you will not be obliged to fill out the questionnaire and have the right to change your mind.

You may send me another questionnaire in a year's time

YES ☐ **NO** ☐

My details, so that I can be sent a copy of the results and/or a similar questionnaire in one year's time are... (Remember your details are completely confidential, used only to contact you and will immediately be detached from the information in this questionnaire)

NAME (optional) _____

POSTAL ADDRESS _____

_____

_____

EMAIL _____

Please post this questionnaire away in the free-post envelope provided by January 1st (or send to FREEPOST 86, Trauma, Stress and Later Life, School of Psychology, Massey University, Turitea, PALMERSTON NORTH)

Please note:
This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Application 04/156. If you have any concerns about the ethics of this research, please contact Professor Sylvia Rumball, Chair, Massey University Campus Human Ethics Committee: PN, telephone (06) 350-5249, email *humanethicspn@massey.ac.nz*.

THANK YOU AGAIN AND ALL THE BEST

APPENDIX C

Advertisement Used to Recruit Participants

600 VOLUNTEERS FOR UNIVERSITY STUDY NEEDED

Are you 60 years or older?

Do you know someone who is 60 years or older?

If you answered yes to one of the above questions, you may be able to help. My name is Teesha Passmore and I am conducting Doctoral research about the impact of life-time trauma and stress on health during later life. The research is being conducted through the School of Psychology at Massey University.

Male and female volunteers, 60 years and older, are needed to fill out a comprehensive questionnaire. The questionnaire takes about 35 minutes to complete and asks about life-time trauma, recent stressful events, beliefs, physical health and emotional well-being. Most items only require respondents to tick or circle the best answer. All information given will remain confidential.

Please note that any person 60 years or older, of any ethnicity, qualifies to participate in this research.

Research in this area is important, yet limited, so your help is greatly appreciated and will help health practitioners to understand how traumatic and stressful life events impact on people during later life.

If you would like to receive further information and a questionnaire, because you or someone you know may be interested in participating, then please contact me by phone on 0800877833 or by email on Teesha@netaccess.co.nz.

Thank you,
Teesha Passmore

APPENDIX D-1

Procedure for Principal Components Analysis (PCA)

Procedure for Principal Component Analysis

A principal components analysis (PCA) was applied to 47 collective items of the four measures that assessed psychological symptoms: The Geriatric Depression Scale (GDS-SF), Curious Experiences Scale (CES-SF), SASRQ Anxiety Scale and PTSD Checklist - Civilian (PCL-C). The goal was to extract a logical set of underlying components that would reveal how various symptoms manifest during later life and how they relate to lifetime and recent trauma variables.

Before the PCA was performed and as a requirement for later determining new scales based on the loaded components, the original scales were transformed so that all variables contained the same scoring system. Scores for each scale were placed on a five-point scale with a range of 0 - 4 (not at all - very often). Table 33 shows the transformations.

Table 33: *Transformation of the symptom measures scales for the principal components analysis*

	0	1	2	3	4
	Not at all	A little	Sometimes	Often	Very Often
ORIGINAL MEASURES					
PTSD	1	2	3	4	5
PCL-C	Not at all	A Little	Moderately	Quite a Bit	Extremely
ANXIETY	0	1 2	3	4	5
SASRQ-ANX	Not at all	Very	Sometimes	Often	Very Often
DISSOCIATION	0	1	2	3	4
CES-SF	Not at all	Occasionally	Sometimes	Frequently	Almost
DEPRESSION	0	0	1	1	1
GDS-SF	Not at all	Rarely	Sometimes	Mostly	Almost

Data were then assessed for suitability for factor-analysis. The correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Oklin value was .94 and exceeded the recommended value of .6. The Barlett's Test of Sphericity reached statistical significance ($p < .001$). These results supported the factorability of the correlation matrix (Pallant, 2005).

Items loading at .40 or greater were selected (Tabachnick & Fidell, 2001). The PCA components analysis revealed the presence of 10 components with eigenvalues exceeding one. Table 34 shows that the first component explained the most variance (28.4%), while the second, third, fourth and fifth components explained 6.3%, 4.6%, 3.8% and 2.9% respectively. An inspection of the screeplot revealed a clear break after the first component and three subsequent smaller breaks before the line became horizontal. This suggested that four components might be ideal.

Table 34

Initial eigenvalues from principal components analysis of psychological symptom measures

Component	Total	% of Variance	% Cumulative
1	14.18	28.37	28.37
2	3.16	6.33	34.70
3	2.30	4.61	39.31
4	1.88	3.77	43.08
5	1.42	2.86	45.94
6	1.29	2.58	48.52
7	1.26	2.52	51.04
8	1.16	2.33	53.37
9	1.10	2.21	55.58

Because Kaiser's criterion and Cattell's scree test tend to overestimate the ideal number of components required (Hubbard & Allen, 1987; Zwick & Velicer, 1986), parallel analysis (PA) was also performed. Table 35 shows the output from the PA as compared to the eigenvalues from the PCA. Six components with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (46 variables x 1489 respondents) were revealed. These results implied that six components would be ideal. Combining the PA results, the eigenvalues and the screeplot, a five factor solution was decided on for rotation.

Table 35

Comparison of eigenvalues from principal components analysis and the corresponding criterion values from parallel analysis

Component Number	Actual Eigenvalue from PCA	Criterion Value from Parallel Analysis
1	14.18*	1.35
2	3.16*	1.32
3	2.30*	1.29
4	1.89*	1.27
5	1.42*	1.25
6	1.29*	1.23
7	1.26	1.21
8	1.16	1.20
9	1.10	1.18
10	1.07	1.16

** PCA eigenvalues greater than criterion values from the Parallel Analysis*

While some components were moderately related, others had weak correlations, complicating the choice for best solution to rotation. Orthogonal rotation assumes that factors are uncorrelated and oblique rotation assumes that factors are correlated. Consequently PCA employing both Varimax (orthogonal) and Direct Oblimin (oblique) rotations were carried out and compared. The resulting factor solutions of both orthogonal and oblique rotations were the same. Therefore results from the Varimax rotation, being easiest to interpret and report, were used for the current study.

The rotated solution revealed the presence of a simple structure (Thurstone, 1947) with all five components showing a number of strong loadings and all but one variable loading substantially on only one component.

The five component solution, which explained a total of 45.9% of the variance, translated into the following:

1 - anxiety/hypervigilance

2 - depression/numbing,

3 - dissociation/depersonalization,

4 - avoidance/reliving

5 - cognitive problems.

REFERENCES

Hubbard, R., & Allen, S. J. (1987). An empirical comparison of alternative methods for principal components extraction. *Journal of Business Research, 15*, 173-190.

Pallant, J. (2005). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows* (2nd ed.). Sydney: Allen & Unwin.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (5th ed). Boston: Allyn & Bacon.

Thurstone, L. L. (1947). *Multiple-factor analysis: A development and expansion of the vectors of the mind.* Chicago, Ill: University of Chicago.

Zwick, W. R., & Velicer W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin, 99*, 432-442.

APPENDIX D-2

Rotated Loadings with Varimax Solution of 5-Component Principal Components

Rotated Loadings with Varimax Solution of 5-Component PCA

NOTE: ANX = item from anxiety measure; PTSD = item from PTSD measure; DEP = item from depression measure; and DISS = item from dissociative symptom measure. Numbers after each abbreviation refers to the item number from each original inventory.

Component 1: ANXIETY-HYPERAROUSAL

Item	Item Content	Rotated Loading
ANX4	Hypervigilance	.71
ANX3	Jumping in surprise at the slightest thing	.70
ANX1	Problems falling asleep due to worry or anxiety	.65
PTSD17	Feeling jumpy and easily startled	.64
ANX5	Irritable or anger outbursts	.63
ANX 2	Restless	.62
PTSD14	Feeling irritable, having angry outbursts	.58
PTSD13	Trouble falling/staying asleep	.55
ANX6	Difficulty concentrating due to anxiety or worry	.54
PTSD12	Feeling like the future will be cut short	.40

Component 2: DEPRESSION - NUMBING

Item	Item Content	Rotated Loading
DEP1	Dissatisfied with life	.73
DEP3	Feel that life is empty	.72
DEP9	Feel one's current situation is hopeless	.68
DEP5	Feel unhappy most of the time	.65
DEP6	Feel helpless often	.62
PTSD10	Feel distant or cut off from others	.58
PTSD9	Loss of interest in activities one used to enjoy	.50
DEP2	Dropped activities/interests one used to enjoy	.49
DEP10	Think most are better off than one's self	.48
DEP4	Afraid something bad will happen	.40
PTSD11	Feel emotionally numb	.41

Component 3: DISSOCIATION - DEPERSONALIZATION

Item	Item Content	Rotated Loading
DISS3	Surroundings seeming unreal	.72
DISS4	Sense of not owning body	.71
DISS17	Felt disconnected from one's body	.65
DISS1	Outer body experiences	.64
DISS15	Perceived the world like it was through a fog	.61
DISS2	Not recognized self when looked in the mirror	.55
DISS16	Felt like dreaming when awake	.54
DISS8	Fantasy/daydream felt real	.49
DISS10	Feel like two different people	.49
DISS14	Heard voice commenting or commanding	.45
DISS7	Familiar place felt strange/unfamiliar	.45

Component 4: REEXPERIENCING - AVOIDANCE

Item	Item Content	Rotated Loading
PTSD1	Intrusive memories, thoughts, images of past stressor	.74
PTSD4	Feeling upset when reminded of a past stressor	.74
PTSD3	Acting or feeling as if past stressor happening	.73
PTSD2	Disturbing dreams of a past stressor	.61
PTSD5	Physical reactions when reminded of a past stressor	.60
PTSD6	Avoiding thinking or talking about past stressor	.58
PTSD7	Avoiding activities because they remind of a past stressor	.57
DISS5	Reliving past event	.55

Component 5: COGNITIVE PROBLEMS

Item	Item Content	Rotated Loading
DISS12	Can't remember if had done something or only thought about it	.71
DISS13	Found evidence of doing things can't remember doing	.67
PTSD15	Having difficulty concentrating	.58
DEP7	Feel that one has more problems with memory than most	.52
DISS6	Not sure if actual experience was a dream	.45
DISS9	Staring off in space as time passes	.41