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Combat-related Posttraumatic Stress Disorder and Interpersonal Functioning in Veterans of the Vietnam War

A thesis presented in partial fulfilment
of the requirements for the degree
of Doctor of Philosophy in Psychology
at Massey University

Carol Margaret Vincent

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■ Abstract

Data reported in this thesis was collected as part of a national survey investigating the mental health of a community sample of New Zealand Vietnam War veterans. This thesis investigates the relationship between combat-related PTSD, interpersonal functioning and coping in these veterans.

The results of this study confirm findings from previous research showing that a significant proportion of Vietnam War veterans are likely to have PTSD and that these veterans are likely to be presenting, some twenty years after their combat experiences, with a complex set of psychological, social, and interpersonal problems. The results also confirm studies showing that PTSD veterans, compared to non-PTSD veterans, are more likely to utilise coping strategies related to denial and disengagement in their attempts to deal with ongoing stress.

In the present study, the poorer interpersonal functioning of veterans with PTSD was revealed primarily in increased interpersonal problem severity, rather than in poorer family functioning or lower dyadic adjustment. These results support a mediating model which proposes that PTSD is related to a range of problems which these veterans encounter when initiating and maintaining interpersonal relationships and that these problems are manifested in lower levels of family functioning and poorer dyadic adjustment.

The strength of the relationship between PTSD and interpersonal problems appears not to be affected by variables such as initial combat experience, other

dimensions of interpersonal functioning (family functioning and dyadic adjustment), concurrent diagnoses of anxiety and or depression, and the characteristic coping styles of the veterans. These results are consistent with the inclusion, in the DSM-III-R definition of PTSD, of symptoms of diminished interest in significant activities, detachment or estrangement from others, and constricted affect.

The interpersonal problems reported by these veterans and the apparent link to poorer family functioning and dyadic adjustment suggests that it is important to develop a comprehensive treatment plan that includes attempts to improve individual interpersonal skills as well as attempts to reduce the interactional problems in the family and dyadic relationships of the veterans.

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■ Thesis overview

Over the past fifteen years an extensive literature has emerged relating to the condition known as posttraumatic stress disorder (PTSD). A great deal has been written about the history, etiology, epidemiology, effects and treatment of the disorder, and although PTSD may develop following a range of traumatic events, much of the work has been concerned with the disorder in combat veterans.

This thesis focuses on PTSD as it pertains to combat veterans, and investigates the relationship between combat-related PTSD and interpersonal functioning and coping, aspects of the disorder which have received little attention to date. The data utilised in this study was collected from a community sample of New Zealand Vietnam War veterans.

Prior to examining potential outcomes of PTSD, it is important to have an understanding of the definition and diagnostic criteria of PTSD, and of what distinguishes PTSD from other mental health disorders. The definition and model of PTSD most commonly utilised is that outlined by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV: American Psychiatric Association, 1994). The fourth edition of this manual was published in recent months and was not available when the research reported in this thesis was undertaken. This research utilises the definition and diagnostic criteria for PTSD as outlined in the previous edition, DSM-III-R (American Psychiatric Association, 1987). The first chapter of the theis presents an overview of the method for classifying mental disorders as presented in the manual and discusses the definition and diagnostic criteria for PTSD specified in DSM-III-R.

While the concept of PTSD is relatively new, the concept of psychological trauma arising from battle is not. The first part of chapter two considers early conceptualisations of combat trauma and the subsequent development of the concept of combat-related PTSD. Recent literature and research concerned with combat-related PTSD is then reviewed, with a focus on the prevalence and etiology of the disorder, concurrent diagnoses, and the association between combat-related PTSD and interpersonal functioning and coping.

The data utilised in the study was collected by mailed questionnaire. The full research methodology is detailed in the third chapter. This includes sample selection, research procedure, and questionnaire development.

Data analyses focus on the relationship between PTSD, coping, and three dimensions of interpersonal functioning; interpersonal problems, family functioning, and dyadic/marital adjustment. The results of analyses, together with a sample description, are presented in chapter four.

In the fifth and final chapter, the major findings from this study are discussed in relation to previous research on interpersonal functioning and coping in combat veterans. Methodological limitations of the study, and possible research and treatment implications suggested by the results are also discussed.

Chapter contents

1.1 Chapter overview

The diagnostic classification of PTSD was first introduced with the publication of the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III)(American Psychiatric Association, 1980). The model of PTSD presented in DSM-III and the subsequent DSM-III-R, has become central to much of the work undertaken in the area of trauma-related stress. In order to place the concept of PTSD within a diagnostic and theoretical context, the first section of this chapter includes a discussion of the DSM-III-R classification system of mental disorders. The chapter proceeds to a more detailed presentation of the diagnostic criteria for PTSD, as contained in DSM-III-R, including a discussion of the more unique aspects of this classification. This chapter also addresses issues concerning the recent publication of DSM-IV and changes in the diagnostic criteria for PTSD.

1.2 DSM-III-R classification of mental health disorders

Classification of mental disorders has been outlined and defined by the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1987). Successive editions have attempted to refine the diagnostic criteria of classified disorders, resolve inconsistencies, and clarify ambiguities. The publication in 1980 of the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) and subsequent revisions (DSM-III-R; DSM-IV) reflect the trend towards a growing emphasis upon preciseness in diagnostic criteria for mental disorders (Silver & Iacono, 1984).

DSM-III and DSM-III-R have had a widespread and significant impact in clinical and research settings both within the United States and internationally. In Europe the official classification of mental disorder used is the International Classification of Diseases (ICD-10) published by the World Health Organisation (1992). The mental health section of the ICD-10 incorporates many of the basic features of DSM-III-R, such as the inclusion of specified diagnostic criteria.

The purpose of DSM-III-R is to provide clear descriptions of diagnostic categories to enable clinicians and researchers to diagnose, communicate about, study, and treat the mental disorders encountered in their various professions. In terms of etiology, DSM-III-R has an atheoretical approach. Attempts to account for how conditions are brought about are only made in cases where the etiology is well established. Definitions of the disorders are generally limited to descriptions of the clinical manifestations. Specified diagnostic criteria are provided for each mental disorder and include a list of essential features which must be present for a diagnosis to be made. The manual systematically describes each disorder in terms of the essential features and associated features of the disorder and includes brief comments on factors such as age of onset, course, impairment, complications, predisposing factors, prevalence, sex ratio, familial patterns, and differential diagnosis.

The multiaxial diagnostic system in DSM-III-R requires that every case be assessed on each of five "axes". The axes refer to different dimensions of information and include:

Axis I	Clinical syndromes and conditions not attributable to a mental disorder (V codes)
Axis II	Developmental disorders and personality disorders
Axis III	Physical disorders and conditions
Axis IV	Severity of psychological stressors
Axis V	Global assessment of functioning

(American Psychiatric Association, 1987; p.15).

Together axes I, II and III contain the official DSM-III-R diagnostic assessment and axes IV and V provide information which supplements the diagnoses for use in special clinical or research settings.

1.2.1 Axis I: Clinical syndromes and conditions not attributable to a mental disorder (V Codes)

Axis I consists of 19 major classifications of mental disorders, including a number of conditions, although not attributable to a mental disorder, are the focus of attention or treatment (V codes). Multiple diagnoses should be made on Axis I when necessary to describe the current condition. When a multiple diagnosis is made, the ***principal*** diagnosis is the condition which was chiefly responsible for occasioning the evaluation. A combat veteran, for example, might be diagnosed as having PTSD with a secondary diagnosis of substance abuse.

1.2.2 Axis II: Developmental disorders and personality disorders

Axis II consists of developmental and personality disorders. Developmental disorders are usually first evident in infancy, childhood, or adolescence and persist in a stable form into adult life. Axis II may also be used to indicate specific personality traits or the habitual use of particular psychological defence mechanisms. Multiple diagnoses are also possible on Axis II and frequently disorders will be diagnosed from both Axis I and Axis II. As well as having diagnoses for PTSD and substance abuse, for example, a combat veteran might also be diagnosed with antisocial personality.

1.2.3 Axis III: Physical disorders and conditions

Throughout DSM-III-R a distinction is made between mental and physical disorders. Axis III lists any physical disorder or condition present in addition to a mental disorder. Multiple diagnoses may be made on Axis III. Disorders from Axis III may be relevant to the understanding or management of a case, and may be etiologically significant, the result of the mental disorder, or unrelated to the mental disorder. For example, a combat veterans with PTSD might also be an amputee and suffer serious hearing impairment in addition to any other disorders diagnosed on Axes I and II.

1.2.4 Axis IV: Severity of psychological stressors

Axis IV consists of the Severity of Psychological Stressors Scale for coding the overall severity of a psychological stressor(s). The stressor(s) must have occurred in the year preceding the current evaluation and may have contributed to the development of a new mental disorder, the recurrence of a prior mental

disorder, or the exacerbation of an already existing mental disorder (American Psychiatric Association, 1987).

The rating of the severity of the stressor is based on the clinician's judgment of the stress of an "average" person in a similar situation. The judgment should include a consideration of the amount of change in a person's life caused by the stressor, the degree to which the event is desired and under the person's control, and the number of stressors. The specific psychological stressor(s) are also specified as either ***predominately acute*** (duration less than six months) or ***predominately enduring circumstance*** (duration greater than six months). A significant exception to the requirement that the stressor occur within a year prior to evaluation is the case of PTSD.

1.2.5 Axis V: Global assessment of functioning

Axis V permits an indication of a clinicians' judgment of a person's psychological, social, and occupational functioning on the Global Assessment of Functioning Scale, which assesses mental health/illness (American Psychiatric Association, 1987). Ratings on the scale are made for two time frames; ***current*** (level of functioning at time of evaluation), and ***past year*** (highest level of functioning for at least a few months during the past year).

1.2.6 DSM-IV criteria

Following the tradition of continual refinement, a fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) was published in recent months (American Psychiatric Association, 1994). A number of subcommittees

were assembled to review DSM-III-R and make recommendations for inclusion of criteria in DSM-IV. Amendments appearing in DSM-IV affecting the diagnosis of PTSD are considered following the discussion of PTSD diagnostic criteria.

1.3 Diagnosing posttraumatic stress disorder

Since the introduction of the DSM-III diagnosis of PTSD (American Psychiatric Association, 1980), usage of the diagnosis has increased and PTSD has now become the subject of an extensive literature. Despite the ongoing debate as to the appropriateness of the DSM-III, and later DSM-III-R criteria for the disorder (Brett, Spitzer & Williams, 1988; Davidson & Foa, 1991a; Davidson & Foa, 1991b; Green, Lindy & Grace, 1985; Solomon & Canino, 1990), the DSM-III-R definition and diagnostic criteria for PTSD continue to be the most commonly utilised in trauma-related research.

PTSD is a disorder which develops in persons who have experienced a psychologically distressing event that would be extremely traumatic for any person. The three major features of the disorder involve re-experiencing of the trauma through intrusive memories, dreams, or associations; emotional numbing to other life experiences; and associated symptoms of autonomic instability, depression, and cognitive difficulties. For a diagnosis of PTSD the symptoms must persist for more than one month after the traumatic event. Specific diagnostic criteria for PTSD are discussed in detail in sections 1.3.1 to 1.3.6. The DSM-III-R diagnostic criteria for PTSD are detailed in Table 1 (American Psychiatric Association, 1987).

Table 1: Diagnostic criteria for PTSD (American Psychiatric Association, 1987).

A The person has experienced an event that is outside the range of usual human experience and that would be markedly distressing to almost anyone, eg, serious threat to one's life or physical integrity; serious threat or harm to one's children, spouse or other close relatives and friends; sudden destruction of one's home or community; or seeing another person who has recently been, or is being, seriously injured or killed as a result of an accident or physical violence.

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

(1) recurrent and intrusive distressing recollections of the event (in young children, repetitive play in which themes or aspects of the trauma are expressed)

(2) recurrent distressing dreams of the event

(3) sudden acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative [flashback] episodes, even those that occur upon awakening or when intoxicated)

(4) intense psychological distress at exposure to events that symbolize or resemble an aspect of the traumatic event, including anniversaries of the trauma

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

(1) efforts to avoid thoughts or feelings associated with the trauma

(2) efforts to avoid activities or situations that arouse recollections of the trauma

(3) inability to recall an important aspect of the trauma (psychogenic amnesia)

(4) markedly diminished interest in significant activities (in young children, loss of recently acquired developmental skills such as toilet training or language skills)

(5) feeling of detachment or estrangement from others

(6) restricted range of affect, eg, unable to have love feelings

(7) sense of foreshortened future, eg, does not expect to have a career, marriage, or children, or a long life

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

(6) physiologic reactivity upon exposure to events that symbolize or resemble an aspect of the traumatic event (eg, a woman who was raped in an elevator breaks out in a sweat when entering any elevator) an

E Duration of disturbance (symptoms in B, C, and D) of at least one month.

Specific delayed onset if the onset of symptoms was at least six months after the trauma.

Within the DSM-III-R classification system PTSD is listed as an anxiety disorder on Axis I along-side disorders such as Panic Disorder, Agrophobia, and Generalised Anxiety Disorder. The classification of PTSD, however, incorporates three unique elements. First, PTSD is the only classification in DSM-III-R which has multiple components in the essential criteria required for a diagnosis. Second, PTSD is the only diagnosis which is exempt the requirement that the specific psychological stressor(s) occur within a year prior to evaluation. A diagnosis of PTSD may be made years after the psychologically distressing event. Third, the approach in DSM-III-R is generally descriptive, rarely are attempts made to account for how the disorders come about. In the case of PTSD, however, an etiological component is made explicit in the diagnosis with the inclusion of the pivotal diagnostic criteria of the experience of an extreme stressor.

While the primary features of DSM-III-R are the same as those of DSM-III, there are four significant differences. First, DSM-III-R places a greater emphasis on the cluster of symptoms associated with the numbing of general responsiveness by adding three more criteria to this cluster. Second, the expansion of the avoidance criteria, and the inclusion of increased detail of criteria related to symbolic representation, indicate an increased appreciation of the importance of symbolic representation in the cognitive views of PTSD. Third, in DSM-III-R, the description of PTSD as it pertains to children is greatly elaborated. Finally, "survivor guilt", included in the criteria list in DSM-III is dropped and now becomes an associated symptom in the revised manual. While this thesis utilises the diagnostic criteria outlined in DSM-III-R, it should be noted that work

published prior to 1987 utilised the criteria of DSM-III. Many of the existing assessment instruments were also developed using DSM-III criteria, and as such, assess aspects such as guilt, which are no longer considered to be essential diagnostic criteria, and they may not assess symptoms introduced in the revised manual.

1.3.1 Criterion A: The stressor

The definition of criterion A, the stressor, is central to the diagnosis of PTSD. A diagnosis can not be made in the absence of a precipitating traumatic event, even if all other symptoms from criteria B, C, and D are exhibited. Guidelines outlined in DSM-III-R, as defined by criterion A (see Table 1), require that the stressor be "outside the range of usual human experience" and "markedly distressing to almost anyone". Examples of such situations or events, given as part of the criterion definition, include military combat, rape or assault, natural disasters (eg, floods or earthquakes); accidental disasters (eg, airplane crashes, large fires, vehicle accidents with serious injury etc); deliberate disasters (eg, bombing, torture, deathcamps).

Although much of the research on PTSD has been concerned with combat (Card, 1987; Fairbank, Keane, & Malloy, 1983; Solomon, Mikulincer, & Waysman, 1991; Tennant, Streimer, & Temperly, 1990), and war-related experiences such as being a prisoner-of-war (Arthur & McKenna, 1983; Singer, 1981), and being interned in concentration camps (Kinzie, Fredrickson, Ben, et al., 1984; Leon, Butcher, Kleinman, et al., 1981), there has been an increasing interest in the effects of civilian traumas. A wide range of situations or events, considered to

be outside the realm of usual human experience, have become the focus of PTSD related investigation, including natural disasters such as bush fires (McFarlane & Papay, 1992), volcanic eruptions (Shore, Tatum & Vollmer, 1986) and floods (Tichener & Kapp, 1976); accidental disasters such as building collapses (Wilkinson, 1983), and nuclear accidents (Baum, Gratchel, & Schaeffer, 1983); violent acts such as kidnapping (Terr, 1983), being a victim of crime (Kilpatrick, Saunders, Amick-Mcmullan, et al., 1989), or torture (Mollica, & Caspi-Yavin, 1991) and suffering abuse, sexual assault or incest (Goodman, Koss & Russo, 1993; Nadelson, Notman, Zackson & Gornick, 1982). The recently published volume by Wilson and Raphael (1993) presents a extensive review of work in many of these areas.

The traumatic stressor is the major criterion which distinguishes PTSD from other anxiety disorders. Establishing the nature of the stressor is also one of the most controversial aspects of the PTSD diagnosis. Debate has centred on what can be considered a "traumatic stressor" and the need to refine the concept (Breslau & Davis, 1987a; Davidson & Foa, 1991a; Green et al., 1985; March, 1993). Several issues have arisen which are central to this debate. First is the question of what constitutes an event outside usual experience and markedly distressing to almost anyone. In defining "usualness", Davidson and Foa (1991b) argue that it is important to distinguish between societal and individual perspectives. It could be argued from a societal perspective that war is always with us, and that armies are in constant preparation for war, yet actual individual experiences of war may be unusually traumatic (Davidson & Foa, 1991b). The requirement also assumes, perhaps wrongly, the availability of normative information about the

prevalence of stressor events and about how stressful people find them (March, 1993).

Second, it maybe unjustified to exclude individuals from a PTSD diagnosis if they have developed symptoms of the disorder as defined by criteria B, C, and D after low magnitude or more common events. Little is known about the prevalence of PTSD in individuals who have been exposed to traumatic events which do meet the current requirements of criterion A (Davidson & Foa, 1991b; March, 1993). There is also concern, however, about the problems inherent in broadening the stressor criterion, in particular the risk of trivializing of PTSD as a disorder, and possible forensic consequences (Davidson & Foa, 1991a; March, 1993).

Third, not all individuals who are exposed to extreme stress develop PTSD. So what are the characteristics of the stressor which give rise to PTSD? A recent review (March, 1993), demonstrated that stressor magnitude, determined by such factors as life threat, physical injury, object loss, and grotesqueness, is the major factor in the risk of developing PTSD. With respect to the subjective perception of victims, the most crucial determinants appear to be perception of life threat, perceived physical violence, experience of extreme fear, and a sense of helplessness (Davidson & Foa, 1991b).

Throughout the review of DSM-III-R it seemed likely that the definition of criterion A will appear in a revised form in DSM-IV. Suggested revisions to the definition ranged from an elimination of criterion A altogether, to minor revisions of the

stressor criterion (March, 1993). Generally the proposed definitions attempted to address the issues of whether the stressor should be defined primarily in terms of stressor properties, or whether it should also include the victim's appraisal and response to the event and the question of whether or not qualifying events must be restricted to high magnitude and uncommon stressors (Davidson & Foa, 1991a; Kilpatrick & Resnick, 1993; March 1993).

The DSM-IV PTSD criteria includes a two-part definition of the stressor criterion which requires that "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", and that "the person's response involved intense fear, helplessness, or horror" (American Psychiatric Association, 1994). This two-part definition incorporates an objective and a subjective component and eliminates the requirement that the event be "outside the range of usual human experience" (American Psychiatric Association, 1987). Full details of the DSM-IV PTSD diagnostic criteria are presented in Appendix S.

1.3.2 Criterion B: Re-experiencing the trauma

The second major clinical feature of PTSD includes symptoms relating to the persistent re-experiencing of the original traumatic stressor. The traumatic event must be re-experienced in at least one of four ways.

Most commonly the original stressor is involuntarily re-experienced through ***recurrent and intrusive distressing recollections***. Specific aspects of the event, or the individual's reaction to it, are repeated in intrusive thoughts, feelings,

images and memories. Due to their intrusive and involuntary nature, these recollections are difficult if not impossible to suppress (Peterson, Prout & Schwarz, 1991).

The trauma is also commonly experienced through ***recurrent distressing dreams*** which may continue for years or even decades after the event (Peterson, et al., 1991). In these dreams events or aspects of the event are usually repeated as they originally occurred, although the dreams may also be elaborated, producing more generalised feelings of stress and anxiety.

Less frequently occurring but more disruptive and serious forms of intrusive re-experiencing are ***dissociative reactions.*** Dissociative episodes occur where the trauma is relived in such forms as illusions, hallucinations, and flashbacks. These episodes are more commonly reported by those who have experienced multiple traumas or extreme traumatisation such as Vietnam veterans (Bremner, Southwick, Brett, et al., 1992; Mellman & Davis, 1985). Dissociative states may last for several minutes to several hours, even years in some cases, and frequently culminate in fear, panic, and loss of control (Hendin, Pollinger, Singer, et al., 1984).

Finally, the trauma may be re-experienced through ***exposure to events symbolizing or resembling the traumatic event***, such as anniversaries of the event. In this way everyday stimuli may bring about intense psychological distress and prompt intrusive recall episodes. Vietnam veterans, for example, have reported the triggering of memories of the war zone from helicopters flying

overhead, the smell of urine, the smell of diesel, green tree lines, and the sound of popcorn popping (Goodwin, 1980).

1.3.3 Criterion C: Avoidance behaviour and numbing of responsiveness

The third major diagnostic criteria of PTSD relates to the persistent avoidance of stimuli associated with the trauma and a general numbing of responsiveness which was not present before the trauma. DSM-III-R lists six avoidance or numbing symptoms of which at least three must be present for a PTSD diagnosis to be made.

Three of these symptoms relate to the ***persistent avoidance*** of stimuli associated with the trauma. Avoidance behaviours may take the form of efforts to avoid thoughts and feelings associated with the trauma or efforts to avoid activities or situations likely to arouse recollections of the trauma. The avoidance of reminders of the trauma may also include psychogenic amnesia, the inability to recall an important aspect of the trauma.

In addition to the avoidance behaviour symptoms in criterion C are three symptoms related to diminished responsiveness to the external world. This "psychic numbing" (Lifton, 1967), "denial and numbing" (Horowitz, 1974), or "emotional anaesthesia" (Shatan, 1978), may occur in various forms and frequently begins soon after the traumatic event. First, there may be ***diminished interest in significant activities***, a loss of interest in activities in which individuals were previously engaged. In children this may take the form of the loss of recently acquired developmental skills such as language or toilet training.

Second, there may be ***feelings of detachment or estrangement*** from others. Feelings of detachment may also result from, or be confounded by, the lack of support in a victim's environment. The social demand for victims to feel and behave in manners which conflict with their true emotions may contribute to their sense of estrangement (Peterson, et al., 1991). The pressures placed on returning Vietnam veterans, especially the negative labels attached to them, is a well documented example of the problems of victims being ignored, shunned, and devalued (Brende & Parsons, 1985; Goodwin, 1980).

Third, following a traumatic event a degree of ***emotional numbing*** is likely (Litz, 1992; Penk et al., 1981), in which the individual's ability to feel emotions associated with intimacy, tenderness, and sexuality is severely diminished. An individual's range of affect can become severely restricted even to the point were they could be described as "emotionally dead" (Shatan, 1973). Situations in which the normal grieving process is inhibited, such as on the battlefield, are particularly likely to give rise to restricted affect. These situations, in which mourning is extremely restricted, may result in a condition Shatan (1973, 1978) refers to as "impacted grief". A feature of emotional numbing, specific to children who have experienced extreme traumatisation, is a ***sense of foreshortened future***. Children demonstrating this symptom do not hold the normal expectations of their future life. They are likely to hold pessimistic expectations, such as a short life span, or a future disaster, and they are unable to envisage being married, having children, or having a career (Terr, 1983).

1.3.4 Criterion D: Increased arousal

The fourth major clinical feature of PTSD includes symptoms relating to persistent symptoms of increased arousal which were not present before the trauma. For a PTSD diagnosis, at least two of the six types of symptoms must be present. The first of these relate to ***sleep disturbances*** including difficulty falling or staying asleep, and recurrent nightmares. Sleep disturbances have been reported in PTSD population groups including concentration camp survivors (Krystal & Neiderland, 1968)and Vietnam veterans (Penk et al., 1981; Ross, Ball, Sullivan & Caroff, 1989). These disturbances frequently affect the "architecture" of sleep (less REM sleep, longer sleep latencies etc), and may persist for years, even after recurrent nightmares have ceased (Lavie, Hefez, Halpen & Enoch, 1979).

Second, PTSD individuals frequently report feelings of irritability, rage, ***hostility, and outbursts of anger*** (Kinzie, 1986; Wilkinson, 1983). Horowitz, Wilner, Kaltreider, et al., (1980) note that over 80% of subjects with stress response syndromes reported feeling easily annoyed or irritated. These problems have frequently been reported in Vietnam veteran populations (Carroll, Rueger, Foy, et al., 1985; Penk et al., 1981; Goodwin, 1980).

The third symptom of criterion D relates to ***cognitive impairment***. A number of studies have reported cognitive changes, including trouble concentrating, impaired memory, and difficulties making decisions, in PTSD population groups (Davidson & Baum, 1986; Horowitz, Wilner, et al., 1980). The fourth symptom in this cluster, ***hypervigilance or hyperalertness*** overlaps with the symptoms of

anger and hostility. An extreme form frequently found in veterans, the "paranoid adaptation to posttraumatic stress" includes: persistent vigilance in interactions with others; a determination to react violently to perceived threat; a belief that an argument is a prelude to a fight; and the feeling that it is best to strike first in a powerful way (Hendin, 1984).

Symptoms of increased arousal may also be present in the form of ***physiological reactivity*** or an ***exaggerated startle response***. Increased physiological reactivity to events and thoughts relating to the trauma in PTSD individuals have been widely researched (Butler, Braff, Rausch, et al., 1990). In Vietnam veterans psychophysical arousal, as a specific reaction to combat-related stimuli, can occur in terms of heart rate, skin resistance, EMG, finger temperature, and blood pressure (Foy, Sipprelle, Rueger, et al., 1984; Malloy, Fairbank & Keane, 1983; Pitman, Orr, Pitman, et al., 1990). Physiological responses to images of past combat experiences have been shown to successfully discriminate between PTSD cases and non-cases in samples of Vietnam veterans (Orr et al., 1993; Pallmeyer, Blanchard & Kolb, 1986; Pitman et al., 1990). Such findings have lead to suggestions that physiological evaluation components should be included in the assessment of PTSD (Davidson & Baum, 1986; Wolfe & Charney, 1991).

1.3.5 Criterion E: Duration of the disorder

The final PTSD diagnostic criterion refers to the duration of the disorder. For a diagnosis of PTSD the symptoms outlined in criterion B, C and D must persist for more than one month after the traumatic event. The delay between experiencing the trauma and onset of the disorder may be as little as one week or many years.

Symptoms may fluctuate over time and may be more intense during periods of stress. If the onset of symptoms is at least six months after the trauma, it is appropriate to make a diagnosis of delayed onset PTSD (American Psychiatric Association, 1987).

1.3.6 Associated features

In addition to the specific criteria listed above, the PTSD patient commonly presents with an extensive array of overlapping symptoms which may complicate the diagnostic process. Symptoms of other disorders, such as anxiety and depression, are common and in some instances may be severe enough to warrant multiple diagnoses on one or more of DSM-III-R Axes I, II, or III (see sections 1.2.1 - 1.2.3). Reviews of studies examining the prevalence of disorders co-occurring with PTSD have confirmed that, regardless of the nature of the trauma, PTSD is associated with high rates of other major psychological disorders (Keane & Wolfe, 1990; McFarlane & Papay, 1992; Roszell, McFall & Malas, 1991). The most frequently co-occurring diagnoses include major depression or manic disorders, anxiety disorders, and substance abuse (Behar, 1987; Breslau & Davis, 1987a; Davidson, Kudler, Saunders, et al., 1990; Green, Lindy, Grace, et al., 1989; Helzer, Robins & McEvoy, 1987; Hryvniak & Rosse, 1989; Roszell, et al., 1991). Somatic complaints (Axis III conditions) are also commonly reported in conjunction with PTSD diagnoses (Centers for Disease Control, 1988b; White & Faustman, 1989; Hryvniak & Rosse, 1989; Shalev, Bleich & Ursano, 1990; Solomon & Mikulincer, 1987).

High frequency of co-occurring diagnoses in PTSD populations presents researchers and clinicians with a number of difficulties relating to the assessment, treatment, and investigations of the disorder. Reports of comorbid diagnoses in Vietnam War veteran populations are considered in detail in section 2.41, and results from analyses relating to co-occurring conditions in the current sample are presented in section 4.9.

1.4 PTSD in DSM-IV

When reviewing the DSM-III-R guidelines the DSM-IV PTSD sub-committee focused on four aspects of PTSD diagnosis: definition of stressor in criterion A; placement of PTSD within the diagnostic classification; subtyping; and construct validity (Davidson & Foa, 1991a). The PTSD diagnostic criteria as defined in DSM-IV (American Psychiatric Association, 1994) are essentially unaltered from those in DSM-III-R with the exception of Criterion A, the stressor (see section 1.3.1).

In DSM-IV PTSD continues to be listed as an anxiety disorder and is defined by four major criterion; the stressor, re-experiencing, avoidance and numbing, and symptoms of increased arousal. Physiologic reactivity has been transferred from Criterion D to Criterion B. The remaining criteria are fundamentally unaltered. A sixth criterion (F) has been added which states that "the disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning" (American Psychiatric Association, 1994). In addition to allowing a diagnosis of delayed onset PTSD, a distinction is also drawn between acute and chronic forms of the disorder.

1.5 Chapter summary

This chapter has presented a particular model of PTSD as outlined by DSM-III-R. The general classification system of the manual has been presented as well as the specific criteria to be met for a PTSD diagnosis. To this point discussions have referred to PTSD in a general sense. The following chapter will focus specifically on combat-related PTSD.

Chapter contents

2.1 Chapter overview

As the character of successive wars has altered, so has the diagnosis and treatment of psychiatric casualties. The first part of this chapter traces the evolution of the concept of combat-related PTSD, from early formulations of combat reactions during the first and second World Wars, through to the Vietnam War and its aftermath.

The chapter proceeds to a consideration of the nature of combat-related PTSD, including prevalence and etiological factors. Particular attention is paid to the role of combat stressors in the development of the disorder. The third section of the chapter reviews recent work with combat veterans with PTSD. The review focuses on the areas of concurrent diagnoses, interpersonal functioning and coping among PTSD veterans. Finally, hypotheses are presented which emerged from the review and which form the basis of the data analyses in this study.

2.2 From shell shock to PTSD

2.2.1 World War I to Korea

As long as men have been asked to risk their lives in combat it is likely that there have been many who were unable to cope with the task, or the conditions of battle. While recorded descriptions of persistent, adverse combat reactions date back to before the American Civil War, systematic investigations of their causes and consequences are of relatively recent origin (Foy, Carroll & Donahue, 1987; Glass, 1969; Weber, 1990).

Prior to World War I military personnel displaying adverse combat reactions were believed to be lacking the military discipline found in normal soldiers (Figley, 1978; Parsons, 1988), and were not regarded as legitimate casualties of war. Their failure to cope with the demands of combat was regarded as abnormal, and as evidence of weakness, malingering, or cowardice (Glass, 1969).

During World War I the term *shell shock* was used to describe the many psychiatric casualties which were believed to be the result of protracted enemy shelling. The explanation offered at the time was that the airblast of high explosives caused temporary or persistent neural damage. It became evident that shell shock was a psychological rather than a physical disorder (Glass, 1969) and major changes in the treatment of combat stress reactions were initiated. As soon as possible after a psychiatric casualty occurred, treatment was begun with the clear expectation that the soldier would return to the unit as an active combatant. To facilitate the speedy return to units, soldiers were treated as close to the front and their units as possible. When applied to shell shock these principles of immediacy, proximity, and expectancy, proved to be very effective in the rapid treatment and return of men to combat (Kentsmith, 1986).

Following the First World War it became clear that a large number of veterans continued to suffer physical and emotional symptoms. These persistent postwar symptoms were defined as *war neuroses* and were regarded as an emotional disorder, rather than an organic disturbance (Brende & Parson, 1985). Although it was recognised that such symptoms were precipitated by combat, it was believed that they stemmed from predisposing character or personality defects

which resulted in the individual's inability to deal effectively with combat stress (Glass, 1969).

With the onset of World War II, emphasis was placed on a screening programme to exclude from military service those with physical and mental disabilities. Despite a psychiatric rejection rate of three to four times that of World War I, the incidence of psychiatric disorders in 1943 was three times that of World War I (Glass, 1969). The primary terminology utilised during the period, *psychoneurosis*, reflected the belief that the casualties were the result of personality defects which the screening programme had failed to detect.

As a result of a 1944 United States commission on war-stress a new terminology *exhaustion*, was officially established. While this new diagnostic category reflected the important role fatigue was perceived to have in the development of stress symptoms, the traumatic effects of battle continued to be minimised in explanations of persistent, long-term psychological problems (Weber, 1990). An interaction between predisposing and precipitating events in the psychic life and environment of the individual continued to be viewed as the primary cause of combat stress reactions (Weber, 1990).

The Korean War saw a significantly reduced rate of psychiatric evacuations (6% compared with 23% in World War I) which was in part attributed to the nine month rotation period employed, and the immediate pragmatic approach for dealing with combat stress (Figley, 1978). In Korea, and later in Vietnam, the principles of immediacy, proximity, and expectancy, were again employed and

expanded. As a consequence 85% to 90% of combat exhaustion cases were returned to active duty (Mareth and Booker, 1985). The success of this policy led to the view that situational stressors of the combatant were the primary factors leading to a psychiatric casualty (Goodwin, 1980).

With a growing emphasis on the situational and social determinants of combat adjustment, a distinction emerged between *exhaustion* and *combat exhaustion*, thus avoiding confusion with the notion of physical fatigue and its implication for the cause of psychiatric breakdown. Later the term *combat fatigue* was adopted by Navy and marine personnel and then accepted into general usage (Glass, 1969).

2.2.2 Vietnam and beyond

With the onset of the Vietnam War, military psychiatrists relied primarily on preventative measures to minimise psychiatric casualties. This policy appeared to be relatively successful, with remarkably low rates of psychiatric casualty in Vietnam compared to previous wars (Brende & Parsons, 1985; Glass, 1969; Kentsmith, 1986). Factors which are thought to have contributed to the low psychiatric casualty rate include; the policy of limiting the tour of duty to 12 or 13 months, the provision of periods of rest and recreation (R & R), the return of combatants to battle as soon as possible and an emphasis on maintaining troop morale (Brende & Parsons, 1985; Kentsmith, 1986).

The apparently low psychiatric attrition rate in Vietnam may be misleading, however, as the true rate is likely to have been higher than official reports

indicate (Brende & Parsons, 1985; Figley, 1978; Weber, 1990). Diagnoses of combat exhaustion did not include character and behavioral disorders, soldiers with a history of pre-military service adjustment problems, or those treated by unit medics and rapidly returned to combat (Boman, 1982). The potential masking effect of substance abuse, and violence toward comrades has also been noted (Boman, 1982; Brende & Parson, 1985). These unconventional forms of psychopathology (drug abuse, fragging, insubordination) reached levels never before attained by United States military personnel (Glass, 1969), yet were not regarded as evidence of psychiatric casualties of combat.

Not only was the incidence of reported psychiatric casualty lower for the Vietnam War than for earlier conflicts, but the pattern of reporting also differed. For World War II and the Korean War the incidence of psychiatric casualty increased with the intensity of battle. With Vietnam there was a sudden unexpected rise in the incidence of combat-related psychiatric disorders towards the end of the war as the conflict was winding down (Goodwin, 1980). More surprising was the increase over a decade later in the number of veterans who turned to the Veterans Administration (VA) Hospital system for assistance (Taylor, 1989). This pattern could not be accounted for by the prevailing concept of combat exhaustion, and did not support the belief that the lower incidence of combat psychiatric casualty was due to the preventative and treatment measures implemented by the military psychiatrists.

It is also likely that many veterans who sought help in VA hospitals following the Vietnam War were misdiagnosed. Straker (1976) reported, for example, that

77% of Vietnam veterans admitted to VA hospitals received the wrong diagnosis of schizophrenia. Many others, estimated as high as 60% (Brende & Parsons, 1985), were admitted for substance abuse problems. The inadequacy of the existing DSM-II diagnostic categories and the problem of misdiagnosis was eventually remedied in 1980 with the introduction of the diagnostic category of PTSD in DSM-III. Similarities had been noted between the symptoms found in combat veterans and those of civilian survivors of mass disasters and the disorder was assigned the comprehensive diagnostic label PTSD (Kentsmith, 1986). The diagnostic criteria for the disorder are presented in section 1.3.

PTSD has continued to be utilised as the primary diagnostic category for psychiatric casualties of war, and most recently attention has turned to veterans of the Falklands and Persian Gulf conflicts. Although early reports suggested that there were few psychiatric casualties among the British veterans of the Falklands (Price, 1984), reports of cases of delayed onset PTSD indicate that the rate may in fact be higher (Jones & Lovett, 1987). It is also apparent that a significant proportion of Persian Gulf War veterans are likely to be affected by PTSD (Litz et al., 1993; Millar, Martin & Jay, 1991).

Since the formulation of the diagnostic category of PTSD there has been a proliferation of research concerned with the disorder. The large body of literature on combat-related PTSD continues to increase, and covers an expansive range of issues, including diagnosis, etiology, treatment, assessment, psychosocial effects, and mediating factors. Several of these issues will be addressed in detail

in the following sections which consider factors contributing to the development of PTSD and specific outcomes of PTSD.

2.3 The nature of combat-related PTSD

2.3.1 Prevalence of combat-related PTSD

Few researchers would contradict the view that the battlefield is a stressful environment. Despite the early recognition of combat stress reactions, systematic research into psychological disorders arising from combat has expanded significantly in response to the aftermath of the Vietnam War. Literature regarding the epidemiology and etiology of combat-related PTSD and the postwar adjustment of Vietnam War veterans will be reviewed in the remainder of this chapter.

Although PTSD was not a diagnostic entity until several years after the end of the Vietnam War, soldiers who participated in that conflict have been shown to be at risk of developing PTSD. It is difficult to accurately determine the number of veterans with the disorder as prevalence rates vary according to sampling methods and assessment instruments used. Community surveys of Vietnam veterans have reported current PTSD prevalence rates of between 12% and 19% (Card, 1987; Centers for Disease Control, 1988a; Goldberg, True, Eisen et al., 1990; Green, Grace, Lindy et al., 1990a; Long, Chamberlain & Vincent, 1992; Kulka, Schlenger, Fairbank et al., 1990). The Vietnam Experience Study reported that about 15% of Vietnam veterans experienced combat-related PTSD at some time during or after military service, and 2% had the disorder during the month prior to examination (Centers for Disease Control, 1988a). In a later

epidemiological study of Vietnam veterans, Kulka et al. estimated the current PTSD prevalence rate at 15% and the lifetime rate at 31% (Kulka, Schlenger, Fairbank et al., 1990). In a co-twin control study, Eisen et al. (1991) found that 17% of Vietnam veterans had current PTSD, the same rate reported by Green and her colleagues (Green et al., 1990a). In a national cohort of Vietnam veterans, Card (1987) reported that 19% of the veterans had PTSD. In a New Zealand community survey of Vietnam veterans 12% of the sample had the disorder (Long et al., 1992).

The prevalence rates reported for community samples are lower than the rates reported for veterans with high combat exposure and lower than rates reported for clinical samples of veterans. These rates range from 25% to 70% for veterans exposed to high levels of combat (Kulka et al., 1990; Oei et al., 1990) and between 30% and 68% for clinical samples of veterans (Blake, Keane, Wine et al., 1989; Breslau & Davis, 1987b; Foy et al., 1987; Green et al., 1990a).

While there is an extensive literature on PTSD for clinical samples of military populations there has been little research examining the prevalence of PTSD in the general population (McCaffery, Hickling & Marrazo, 1989). One of the earliest US surveys of PTSD in the general population estimated the PTSD lifetime prevalence rate to be 1% (Helzer, Robins, & McEvoy, 1987). Other community studies have reported PTSD lifetime prevalence rates of 2.6% (Shore, Tatum & Vollmer, 1986), 1.3% (Davidson, Hughes, Blazer & George, 1991), and 2.9% for males and 3.3% for females (Shore, Vollmer & Tatum, 1989). In a recent study, Norris (1992) examined a sample of 1000 adults and found that 69% had been

exposed to a traumatic event during their lifetime. The PTSD prevalence rate for the sample was 5.1% and lifetime frequencies ranged from 4.4% for sexual assault to 30.2% for tragic death.

These studies demonstrate that PTSD prevalence rates are higher among combat veteran samples than non-combat samples (Goldberg, True, Eisen et al., 1990; Kulka et al., 1990; Oei et al., 1990), and higher than estimates of the prevalence of PTSD, in the general population.

2.3.2 Combat stressors

For a PTSD diagnosis, DSM-III-R diagnostic criteria requires the existence of a precipitating traumatic event. Researchers report that the primary factor in the development of combat-related PTSD is combat stress (Green et al., 1990a; Cordray, Polk & Britton, 1992; Foy et al., 1984; Foy & Card, 1987; Penk et al., 1981). In particular, the duration and intensity of combat exposure appears to be most consistently associated with PTSD symptoms (Green et al., 1990a; Cordray et al., 1992; Foy et al., 1984; Foy & Card, 1987; Penk et al., 1981; Boman, 1982; Boulanger & Kadushin, 1986; Buydens-Branchey, Noumair & Branchey, 1990; Frye & Stockton 1982).

Other aspects of military service, closely related to combat exposure have also been associated with the development of PTSD. Soldiers at greater risk of developing the disorder include those who were engaged on special assignment duties, such as reconnaissance behind enemy lines (Green et al., 1989), those in tactical military occupational specialties, such as infantrymen and artillery

crewmen (Centers for Disease Control, 1988a; Vincent, Chamberlain & Long, 1994a), those who assisted with casualty treatment (O'Brien & Hughes, 1991) and those who had friends killed or missing in action (Chemtob, Bauer, Neller et al., 1990; O'Brien & Hughes, 1991).

Levels of PTSD have also been associated with having been physically wounded (Buydens-Branchey et al., 1990), including the number of times wounded, and being wounded shortly after return from R&R (Chemtob et al., 1990). The degree of officer support for soldiers suffering initial combat stress reactions (Solomon, Mikulincer & Hobfoll, 1986), authority problems, lack of service promotion, and disciplinary actions (Worthington, 1977), have also been associated with the post-military adjustment of combat veterans.

The most common approach to understanding war stressors has been to utilise measures of combat which are specified as objectively as possible (Fontana, Rosenheck & Brett, 1992). Combat scales generally measure the extent of life threat and the range of veterans' combat-related experiences. Typically they consist of questions such as "Were you part of a unit that received sniper or sapper fire? (Boulanger & Kadushin, 1986) or "Were you ever under enemy fire? (Keane, Caddell & Taylor, 1989).

In addition to this objective assessment, researchers have begun to introduce subjective meaning into the conceptualisation and measurement of combat trauma. Wilson & Krauss (1985) had veterans rate combat events in terms of fear of being killed and had them consider the dangerousness of the events.

Laufer, Brett and Gallops (1985) contend that the understanding of PTSD will be substantially increased by expanding the range of traumatic experience beyond exposure to combat in its traditional form to include exposure to abusive violence. In support of Laufer's contention, a number of studies have reported that elevated levels of PTSD are associated with witnessing or participating in abusive violence (Breslau & Davis, 1987b; Gallers, Foy, Donahue & Goldfarb, 1988; Laufer, Gallops & Frey-Wouters, 1984), including the killing of civilians (Foy et al., 1984).

Green and her colleagues incorporated notions of threat, loss, and grotesqueness nto the conception of trauma (Green, 1993; Green et al., 1990a). They found, :hat in terms of predicting type and persistence of symptoms, there was some differentiation among the stressor experiences. Extent of injury, loss, life threat, and injuring or killing Vietnamese, predicted the development of PTSD, but not he persistence of symptoms over an extended period of time. Special ıssignment and exposure to grotesque death, on the other hand, were more ıredictive of persistent symptoms (Green et al., 1990a).

here also appears to be different patterns of relationships between traumatic xperiences and stress symptoms (Fontana et al., 1992; Laufer et al., 1985). indings from Laufer et al. (1985) suggest that witnessing abusive violence is ignificantly related to reexperiencing symptoms of PTSD (criterion B), whereas articipation in such events is related to PTSD symptoms of denial and cognitive ifficulties (criterion D). Fontana et al. (1992) found that having been a target of thers attempts to kill or injure appears to be related more closely with PTSD

symptoms and diagnosis than any other category of traumatic experience. On the other hand, having been an agent of killing, or failing to prevent killing, appears to be related strongly to suicidal behaviour and general psychiatric distress as well as to PTSD (Fontana et al., 1992).

These findings show that the risk for PTSD increases with more intense levels of combat exposure and with exposure to extreme violence or grotesque situations. The findings support results from studies of civilian trauma which demonstrate that the more extreme or intense the stressor, the higher the risk of developing and maintaining PTSD (Gleser, Green & Winget, 1981; Green, Grace, & Gleser, 1985; Taylor & Frazer , 1982).

2.3.3 Non-combat variables

Combat exposure is clearly a critical variable in the development of PTSD, however it does not account for all incidence of the disorder. A number of studies have examined the role of pre-military and post-military factors in the development of combat-related PTSD. Factors such as ethnicity (Egendorf, Kadushin, Laufer et al., 1981; Green et al., 1990b), family characteristics (Carroll et al., 1991), age and education level at entry into military service (Green et al., 1989; Green et al., 1990c; Worthington, 1977), and the period of conflict engaged in (Centers for Disease Control, 1988a), are related in varying degrees to PTSD symptomatology.

In a study of Special Forces veterans preservice factors accounted for a greater proportion of variance in levels of PTSD than did Vietnam experience or

postservice adjustment (Chemtob et al., 1990). Consistent with previous research, (Wilson & Krauss, 1985; Helzer et al., 1987), Chemtob et al. (1990) found that veterans who reported having poorer social relationships with people, especially family members, prior to service were more likely to develop PTSD. In that sample, PTSD was also associated with the lack of emotional preparedness to leave the unit or service and failure to discuss feelings upon return from Vietnam. Nace, O'Brien, Mintz et al. (1978) also reported that preservice adjustment variables were predictive of postwar adjustment and Worthington (1977) found that earlier age and lower education at service entry and authority problems were the strongest predictors of poor adjustment.

Results from a number of national studies have shown that Vietnam veterans who are members of minority groups, such as Hispanics and Blacks, are more at risk of psychological maladjustment than their white counterparts, with nonwhite veterans reporting significantly higher levels of postwar stress (Centers for Disease Control, 1988; Egendorf et al., 1981; Green et al. 1990b; Laufer et al., 1985; Kulka, Schlenger, Fairbank et al., 1990). In addition, Black veterans who had been engaged in heavy combat appear to be more seriously impacted by their war experiences than other groups (Egendorf et al., 1981; Penk, Robinowitz, Black et al., 1989).

It has been argued factors such as ethnicity, age, and preservice adjustment have an indirect effect on the development of PTSD through their relationship with war stressors (Cordray et al., 1992; Green et al., 1990c). When factors such as exposure to war-zone stressors (Green et al., 1990c; Kulka et al., 1988),

or social class factors (Harris, 1980; Neff, 1984) were controlled, the differences between ethnic groups usually disappeared. For example, it has been suggested that those with poorer educational attainment were more likely to enter military service and be sent to Vietnam (Cordray et al., 1992), and that younger, less educated men were placed in more severe combat situations, accounting for the higher rate of combat-related psychological dysfunction in this group (Green et al., 1989; Green et al., 1990c). Kulka et al. (1988) did find, however, that when potential predisposing factors and exposure to war-zone stress were controlled, significant differences in levels of war stress and psychological problems remained for Hispanic veterans, compared to black or white veterans.

In terms of postcombat transition, findings from Frye and Stockton (1982) indicate that the perceived helpfulness of veterans' families on return from Vietnam was a critical factor. Similarly, Egendorf et al. (1981) found that veterans with poorer family stability were more vulnerable to PTSD and that veterans with PTSD were generally unwilling to talk about their experiences and perceived their families as unhelpful. Findings from Wilson & Krauss (1985) suggest that, in addition to combat exposure, isolation at homecoming strongly predicted the severity of PTSD. The immediate nature of military discharge is also important, with PTSD veterans experiencing a more immediate release following combat (Frye & Stockton, 1982).

Studies which have examined the relative importance of preservice, combat, and postservice variables in explaining the development and persistence of PTSD have demonstrated that while non-combat factors may be important, current

PTSD symptomatology is most strongly related to combat stressors (Card, 1987; Foy et al., 1984; 1987). The research reviewed in this section has established that PTSD is a significant long-term outcome of combat exposure for a substantial number of Vietnam veterans. Numerous studies have also been undertaken which investigate the effects of PTSD in veterans samples. The following sections review some of the recent work concerned with the mental health, physical health, and interpersonal functioning of Vietnam War veterans with PTSD.

2.4 PTSD and the Vietnam War veteran

2.4.1 Concurrent diagnoses

The complexity of PTSD and its high association with concurrent diagnoses is most clearly evidenced in those affected by the Vietnam War. Veterans with PTSD frequently have other mental health, physical health, or social adjustment problems. Veterans rarely have PTSD alone, as few as 4% (Green et al., 1990c) and 6% (Roszell et al., 1991) of veteran samples have been reported as having PTSD as their only diagnosis. Behar (1987) reported that all but 2 of 37 veteran patients referred for PTSD had co-existing mental disorders.

Recent studies confirm that the incidence of diagnoses co-occurring with PTSD is high (Behar, 1987; Jordan et al., 1991; Sierles et al., 1983; 1986). Sierles and associates found that 28% of a sample of inpatient Vietnam veterans with PTSD (Sierles et al., 1983) and 52% of outpatient Vietnam veterans (Sierles et al., 1986) had more than one concurrent diagnosis. In both samples 84% of the PTSD veterans met the criteria for another diagnosis. Similarly, Jordan et al.

(1991) reported that 41% of a sample of Vietnam veterans had two or more concurrent diagnoses, and Hryvniak & Rosse (1989) reported that the mean number of concurrent diagnoses in Vietnam veterans was 2.9 for the PTSD group, compared to 1.4 for the non-PTSD group. In a sample of Hispanic veterans, PTSD patients averaged 3.5 Axis I diagnoses (Escobar, Randolph, Puente et al., 1983). This finding was replicated by Keane & Wolfe (1990) who found that the average number of diagnoses among PTSD patients was 3.8. In a comprehensive epidemiological study of Vietnam veterans, lifetime rates of concurrent diagnoses were found to be as high as 98.9% (Kulka et al., 1990).

Those diagnoses which appear to occur most often with PTSD are major depression or manic disorder, anxiety disorders and substance abuse (Breslau & Davis, 1987b; Green et al., 1990c; Jordon et al., 1991; Kulka et al., 1990). Anxiety and affective disorders are frequently reported and were the most common co-occurring diagnoses reported by Green et al. (1989) and Helzer et al. (1987). The frequency of anxiety disorders, including panic disorders, reported for PTSD samples ranges from 5% to 20% (Centers for Disease Control, 1988a; Davidson et al., 1985; Escobar et al., 1986; Green, at al., 1990c; Jordon et al., 1991; Kulka et al., 1990).

Concurrent levels of depression have been reported at between 3% and 20% in PTSD samples (Centers for Disease Control, 1988a; Green, at al., 1990c; Hryvniak & Rosse, 1989; Jordon et al., 1991; Kulka et al., 1990). Breslau and Davis (1987b), reported exceptionally high levels of affective disorder, with 80% of subjects having major depression and 44% having mania. Other affective

diagnoses which have been associated with PTSD include panic disorder (Bleich, Siegel & Kilts, 1986; Green et al., 1990c; Mcfarlane & Papay, 1992), antisocial personality (Escobar et al., 1983; Sierles et al., 1983; 1986), phobic disorder (Green et al., 1990c), atypical psychoses, and intermittent explosive disorder (Hryvniak & Rosse, 1989).

Drug and alcohol abuse have been reported in a number of studies (Centers for Disease Control, 1988a; Green et al., 1990c; Hryvniak & Rosse , 1989) and were frequently the most common co-occuring diagnosis (Behar, 1987; Davidson, Swartz, Storck et al., 1985; Escobar et al., 1983; Keane & Wolfe, 1990; Sierles, 1983; 1986). Reported levels of alcohol abuse in these studies ranged from 39% (Centers for Disease Control, 1988a) to 76% (Sierles et al., 1986) whilst drug abuse was reported at levels from 20% to 44% (Keane, Geraldi, Lyons & Wolfe, 1988; Sierles et al., 1983).

Individuals with PTSD are also likely to have poor physical health (Shalev et al., 1990). In general, combat veterans are more likely than non-veterans to report more illness, hospitalisations, medication use, minor disabilities, and are more likely to engage in negative health behaviours (Centers for Disease Control, 1988a; Long et al., 1992; Vincent, Chamberlain & Long, 1994b; Waigandt, Evans & Davis, 1986). The prevalence of somatic symptoms among Israeli soldiers one year after combat was higher for PTSD than non-PTSD veterans (Solomon & Mikulincer, 1987a) and the Centers for Disease Control Vietnam Experience Study (1988b) found that Vietnam veterans reported more health problems than did controls. Shalev et al. (1990) reported that PTSD subjects

reported significantly more illness symptoms than non-PTSD veterans, and that PTSD veterans engaged in more adverse health practices. Benedikt and Kolb (1986) reported that 10% of veterans attending an outpatient pain clinic also met the DSM-III criteria for PTSD. Among a sample of PTSD veterans, 60% had an identifiable medical problem and 42% had multiple medical problems (White & Faustman, 1989). In a New Zealand sample, Vietnam veterans with PTSD reported more illness symptoms, chronic illnesses, disability days, contact with health care providers and rated their overall health as very much poorer than veterans without the disorder (Long et al., 1992).

In addition to psychiatric and physical conditions, PTSD frequently occurs concurrently with a range of social adjustment problems (Kulka et al., 1990), including marital and family dysfunction (Carroll et al., 1985; Jordon, Marmar, Fairbank et al., 1992; Kulka et al., 1990; Silver & Iacono, 1986; Solomon, Mikulincer, Freid, & Wosner, 1987) interpersonal relationship and sociability problems (Nezu & Carnevale, 1987; Roberts, Penk, Gearing et al., 1982), violent behaviour (Carroll et al., 1985; Jordon et al., 1992; Kulka et al., 1990; Roberts et al., 1982) and employment difficulties (Kulka et al., 1990). In a clinical sample of Australian Vietnam veterans, Boman (1985; 1986) reported a high rate of violence, alcoholism, unemployment, marital and sexual dysfunction, suicide attempts, anxiety, and depression, but found that these associated features occurred with equal frequency among veterans with and without PTSD.

Research concerned with the occurrence of concurrent diagnoses in PTSD samples highlights the complex nature of the disorder and shows that veterans

with PTSD are likely to have a number of other mental health, physical health or social adjustment problems. Much of this research has been concerned with the relationship between PTSD and concurrent psychiatric and physical health symptoms, few studies have investigated how PTSD impacts on the interpersonal relationships of those with the disorder. The following section reviews research which has investigated various interpersonal aspects of PTSD.

2.4.2 Interpersonal functioning

There have been few studies which have investigated the relationship between PTSD and interpersonal functioning among combat veterans. Generally, Vietnam combat veterans have been found to have more difficulty with intimacy and social conflict than control groups (Wilson, 1978) and have reported greater hostility and social isolation than other groups of Vietnam-era veterans (Egendorf et al., 1981). Penk et al. (1981) found that combat veterans, compared to non-combat veterans, reported more marital problems and more difficulties with emotional expressiveness, sociability, anger control, trust.

Studies comparing veterans with PTSD to veterans without the disorder have found significant differences in terms of interpersonal functioning. In a sample of treatment-seeking veterans, Carroll et al. (1985) found that PTSD veterans reported significantly more problems than other groups with; self-disclosure and expressiveness to their partners, physical aggression toward their partners, and relationship adjustment in general. In another clinical sample, Roberts et al. (1982) compared PTSD and non-PTSD veterans and found that PTSD veterans scored significantly higher on clusters of problems dealing with intimacy and

sociability, and scored higher on the MMPI scales of paranoia, psychopathic deviate, social introversion, social maladjustment, and manifest hostility. In an Israeli sample, Solomon and Mikulincer (1987b) found that PTSD veterans, compared to non-PTSD veterans and non-combat veterans reported more problems related to their social, sexual, family, and work functioning.

PTSD veterans have also been shown to have less effective interpersonal problem solving skills than non-PTSD veterans (Nezu & Carnevale, 1987). Streimer, Cosstick and Tennant (1985) found that 29% of a sample of Australian Vietnam veterans inpatients reported having severe problems in interpersonal relationships. In another sample of Australian Vietnam veterans, Boman (1985; 1986) did not find significant differences between PTSD and non-PTSD veterans in terms of marital disruption, marital stability, and sexual dysfunction. In a community sample of New Zealand Vietnam veterans, Vincent, Long and Chamberlain (1991) found that veterans with PTSD were more likely to be divorced than those without PTSD.

Researchers have also begun to investigate the impact of war-induced psychopathology on the veteran's partner and family system. Results from a community study of Vietnam veteran families (Jordon et al., 1992) indicate that there are severe problems in families of veterans with PTSD. These families showed elevated levels of violence, decreased levels of marital and family adjustment, and poorer parenting skills. These results were consistent with an earlier study of Israeli combat veterans in which Solomon et al., (1987) found that higher rates of PTSD were associated with low expressiveness, low

cohesiveness, and high conflict in the casualties families. Solomon et al., (1987) also reported that married soldiers had higher rates of PTSD than unmarried soldiers. Silver and Iacono (1986) also reported that marital and family variables were significantly related to level of PTSD in Vietnam War veterans, and that, after the combat experience itself, accounted for the greatest amount of variance the disorder.

As a result of the psychiatric and behavioral changes that PTSD veterans undergo, the partners may experience immense stress (Coughlan & Parkin, 1987; Herndon & Law, 1986; Maloney, 1988) and may be at risk of psychiatric disturbance themselves (Solomon, Waysman, Avitzur & Enoch, 1991). Women partners of PTSD veterans may present with symptoms mimicking the PTSD symptomatology (Coughlan & Parkin, 1987; Maloney, 1988). In troubled families of Vietnam veterans, the partner is frequently the primary and financial provider, meeting the demands of childrearing and household duties alone (Verbosky & Ryan, 1988). They may feel overwhelmed by the pressures of dealing with family responsibilities and their partner's dysfunctional behaviour, and may feel trapped, defeated, lonely, isolated (Coughlan & Parkin, 1987; Matsakis, 1988). Feelings of a loss of identity and loss of control as well as guilt, or blame for the veteran's behaviour are also common (Harris & Fisher, 1985; Matsakis, 1988).

In a study of female partners of Vietnam veterans, Verbosky and Ryan (1988) found that the effects of the veterans PTSD symptoms on the partners were extensive and profound. The women reported increased levels of stress in attempts to cope with the veterans' isolation, rage, apathy, and inability to

contribute towards the responsibilities of daily living (Verbosky & Ryan, 1988). The partners tended to overcompensate for the veterans' shortcomings and to have dysfunctional ways of coping with their partners' symptoms. Similarly, Solomon et al. (1991) found that wives living with a veteran suffering combat stress reaction or PTSD frequently had higher levels of psychopathology and social dysfunction. The relationship with the veteran husband was the only relationship which was consistently related to wives mental health, and the degree of expressiveness in that relationship was significantly related to positive psychological adjustment among the wives (Solomon et al., 1991b).

Previous research investigating the interpersonal aspects of PTSD has been largely exploratory and marred by a number of methodological problems. Many of these previous studies have used measures which are more suited to the identification of personal rather than interpersonal maladjustment (such as the MMPI) and the study by Roberts et al. (1982) is the only study which has attempted to identify a range of specific interpersonal problems of veterans with PTSD. Apart from the studies by Egendorf et al. (1981) and Jordon et al. (1992), most of these studies have utilised clinical samples of treatment-seeking veterans rather than more representative community samples. Several studies also investigated differences between groups based on combat exposure, rather than the level of PTSD. While a clear link has been established between the level of combat exposure and the development of PTSD, for a better understanding of the relationship between PTSD and interpersonal functioning, PTSD caseness is a more appropriate basis for comparison. Most studies, including the present study, have relied on self-report data, few have been able to support veterans'

reports with reports from secondary sources, as in the study by Jordon et al. (1992).

Research investigating the impact of PTSD on interpersonal relationships among Vietnam War veterans has demonstrated that veterans with the disorder experience a range of interpersonal difficulties. The aim of this thesis is to investigate the association between PTSD and interpersonal relationships among Vietnam War veterans. This thesis will also examine the relationship between PTSD, coping and interpersonal functioning in the veterans. The following section reviews research which has investigated coping in combat veterans.

2.4.3 Combat veterans coping with stress

Research findings have clearly linked combat exposure and the subsequent development of PTSD in veterans (see section 2.3.2). Little is known, however, about how veterans cope with the traumatic memories and long-term negative effects of the trauma. Coping has not been widely studied in relation to traumatic stressors or the psychological outcomes associated such stressors.

Coping consists of the strategies (thoughts and behaviours) which individuals use to assess and reduce the impact of stressors and to moderate the internal tension that accompanies stress (Fairbank, Hansen, & Fitterling, 1991; Solomon, Mikulincer & Avitzur, 1988). Lazarus and his colleagues developed a theory of psychological stress and coping which identifies two processes, cognitive appraisal and coping, as critical mediators of stressful person-environment relationships and their immediate and longterm outcome (Folkman, Lazarus,

Dunkel-Schetter, DeLongis & Gruen, 1986a; Folkman, Lazarus, Gruen & DeLongis, 1986b). Cognitive appraisal refers to the process through which an individual evaluates the relevance of a particular encounter in the environment to his or her wellbeing. In primary appraisal the person evaluates what may be at stake for them in the encounter, such as potential harm or benefit to self-esteem. In secondary appraisal the individual evaluates what, if anything, can be done to prevent or overcome harm or to improve the prospects of benefit. In this model, coping refers to the person's cognitive and behavioral efforts to manage the internal and external demands of the person-environment transaction that is appraised as taxing or exceeding the person's resources (Folkman et al., 1986a; 1986b).

Coping strategies may be considered as two broad categories; problem-focused strategies and emotion-focused strategies (Folkman & Lazarus, 1980). Problem-focused strategies aim to modify or eliminate the source of the stress, while emotion-focused strategies aim to reduce or manage the internal tension associated with stress (Carver, Scheier & Weintraub, 1989; Folkman & Lazarus, 1980). Coping responses are not mutually exclusive, a single action may serve both functions (Solomon, Mikulincer & Benbenishty, 1989) and be combined in accordance with the context and specific stressor encountered (Folkman & Lazarus, 1986a; Pearlin & Schooler, 1978). Indeed, it has been proposed that the optimal coping style consists of the largest possible range of coping responses (Folkman, 1984; Mitchell, Cronkite, & Moos, 1983).

Folkman et al. (1986a) suggest that variability in coping is, at least partially, a function of individual's judgments about what is at stake (primary appraisal) in specific stressful encounters, and what they view as options for coping (secondary appraisal). As a general rule, although most stressors elicit both types of coping, problem-focused coping tends to dominate when people feel that something constructive can be done, whereas emotion-focused coping tends to predominate when people perceive that their control over stressful events is low and feel that the stressor is something that must be endured (Billings & Moos, 1985; Folkman & Lazarus, 1980).

In the case of an individual diagnosed with PTSD the stressful event is technically past, it is not possible, therefore, to eliminate or reduce the original stressor. By definition one of the criteria of PTSD involves intrusive recollections or reexperiencing of the event (APA - criterion C, see section 1.3.3). While the traumatic event may be temporally distant, it continues to exist in the active memory of the trauma survivor. In this manner the stressful reminders of the event are in themselves a source of stress which requires ongoing coping effort on the part of trauma survivors (Fairbank et al., 1991; Green et al., 1988). As Blake, Cook and Keane (1992) point out, coping style may be an important factor related to PTSD because, it may predispose individuals towards PTSD, it may be an associated feature of the disorder, or symptoms of PTSD may produce differences in coping style.

Solomon and her colleagues examined coping styles among Israeli veterans of the Yom Kippur War and reported an inverse relationship between number of current

PTSD symptoms and the use of problem-focused coping strategies for resolving recent negative life events (Solomon, Mikulincer, & Flum, 1988). In these veterans, problem-focused coping was found to be related to less severe PTSD and soldiers who reported using more distancing and emotion-focused coping displayed more PTSD symptoms than those who reported less frequent use of these strategies.

In another sample of Israeli combat stress reaction casualties (Solomon, Mikulincer & Avitzur, 1988) longitudinal analyses revealed that decreased emotion-focused coping and distancing were significant predictors of decreasing PTSD intensity. Differences have also been reported between Israeli combat veterans with delayed and immediate onset PTSD with regard to how they dealt with stress (Solomon, Mikulincer & Waysman, 1991). As a whole, PTSD cases used emotion-focused and distancing coping strategies than did controls. Delayed onset cases, on the other hand, reported less frequent use of emotion-focused and distancing coping and more problem-focused coping than immediate PTSD cases (Solomon, Mikulincer & Waysman, 1991). Compared to immediate PTSD cases, delayed onset cases appeared to deal with stress in more active and problem solving ways.

Similar findings have been reported for Vietnam veteran samples. Nezu and Carnevale (1987) reported that Vietnam veterans with PTSD were more likely to use emotion-focused coping strategies to manage interpersonal problems than were Vietnam veterans without the disorder. In a study of Vietnam combat veterans, Green et al. (1988) reported that the coping styles most associated

with combat intensity were the same as those associated with increased PTSD symptomatology and a current PTSD diagnosis. These styles included event processing, time out for reflection, religious belief, and denial. Veterans who had recovered, particularly following psychotherapy, made greater use of emotional expression and sublimation coping strategies (Green et al., 1988).

In a more recent study of treatment-seeking veterans, Blake et al. (1992) reported that emotion-focused coping strategies of accepting responsibility and escape-avoidance were used predominately by combat veterans with PTSD and those seeking mental health treatment. PTSD veterans were found to rely more heavily on these coping strategies than their non-PTSD counterparts. In the scale used by Blake et al. (1992), acceptance included the notion of self-blame, which is consistent with associated features of PTSD, especially guilt (see section 1.3). Use of escape-avoidance coping is also consistent with the formally recognised features of the disorder (see section 1.3.3). In a sample of nontreatment-seeking veterans, Wolfe et al. (1993) reported that coping style was a better predictor of current adjustment than combat exposure. Veterans with high levels of PTSD relied more on externalisation, mental escapism, and extreme behavioral avoidance than on more active forms of coping. Well-adjusted veterans, on the other hand, were characterised by the use of nonavoidant coping styles.

In a sample of repatriated World War II prisoners of War, Fairbank et al. (1991) reported that prisoners of war with PTSD used a greater range of coping behaviours and used these more frequently than did those without PTSD. More specifically, prisoners of war with PTSD reported more frequent use of self-

isolation, wishful thinking, self-blame, and social support than did those without the disorder.

Most research into coping in combat veterans has considered the role of coping style in the development of PTSD, few studies have examined the impact of these differences on subsequent health or mental health outcomes. Solomon, Mikulincer and Habershaim (1990) examined the relationship of life-events, coping strategies, and social resources with self-reported somatic complaints. Level of perceived social resources was the only variable which significantly contributed to level of somatisation. In an earlier study of Israeli combat veterans with mental health problems (although not PTSD) Solomon, Avitzur and Mikulincer (1989), reported that decreased use of problem-focused coping and increased emotion-focused coping were correlates of social dysfunction. Use of emotion-focused coping was the only coping strategy that was related to social dysfunction over time. Furthermore, emotion-focused coping both predicted and was predicted by functioning, suggesting a circular relationship between the two variables (Solomon, Avitzur and Mikulincer, 1989).

It is clear from investigations with combat veterans that there are significant differences in coping style between PTSD veterans and non-PTSD veterans. Combat veterans with PTSD are likely to utilise more emotion-focused coping strategies and less likely to use problem-focused coping strategies than their non-PTSD counterparts. This thesis will examine differences in coping styles between Vietnam veterans with PTSD and those without the disorder. It will also examine the relationship between PTSD, coping and interpersonal functioning in the

veterans. The following section outlines the general hypotheses which will be examined in this study.

2.5 Hypotheses

Previous research indicates that veterans with PTSD experience interpersonal difficulties in the areas of intimacy, sociability, hostility, family and marital problems. These findings appear to be consistent with several of the DSM-III-R diagnostic criteria for PTSD which suggest that the disorder is likely to impact on interpersonal functioning. These criteria include, diminished interest in significant activities, feelings of estrangement or detachment, a restricted range of affect, and irritability or outbursts of anger (section 1.3). The manual also states that interference with interpersonal relationships, such as marriage or family life, are a possible complication arising from the phobic avoidance of situations that resemble or symbolize the original trauma (American Psychiatric Association, 1987).

The primary aim of this study is to investigate the relationship between PTSD and interpersonal functioning in a sample of New Zealand Vietnam War veterans. The dimensions of interpersonal functioning which will be assessed include interpersonal problems, perceptions of family functioning, and marital/dyadic relationship adjustment. The thesis also aims to explore the relationship between PTSD, coping and interpersonal functioning in Vietnam veterans. The following hypotheses form the basis of this investigation.

1. That increased level of PTSD will be significantly related to increased severity of interpersonal problems in Vietnam War veterans.

2. That increased level of PTSD will be significantly related to decreased level of family functioning in Vietnam War veterans.

3. That increased level of PTSD will be significantly related to decreased level of marital/dyadic adjustment in Vietnam War veterans.

4. That increased level of PTSD will be significantly associated with interpersonal problems relating to intimacy difficulties and sociability difficulties.

5. That increased level of PTSD will be significantly associated with family functioning problems relating to expressiveness, cohesiveness, and conflict.

6. That PTSD subscale scores will be significantly related to interpersonal problem subscale scores.

7. That PTSD subscale scores will be significantly related to family functioning subscale scores.

8. That level of PTSD will continue to predict level of interpersonal problem severity in an analysis which controls for the effects of anxiety and depression.

9. That PTSD cases will report greater use of emotion-focused coping strategies and less use of problem-focused coping strategies than non-PTSD cases.

2.3 Chapter summary

This chapter has presented a brief history of the development of the concept of combat-related PTSD and has reviewed recent research on Vietnam veterans with PTSD. The review revealed that a significant proportion of Vietnam War veterans are likely to have PTSD as a consequence of their combat experiences.

It also revealed that veterans with PTSD are likely to have other psychiatric, physical health, or interpersonal problems and that they are likely to use different strategies than non-PTSD veterans in their attempts to deal with ongoing stress. The hypotheses which emerged from this review, and which inform the data analyses, were also presented.

Chapter contents

3.1 Chapter overview

Data reported in this thesis was collected as part of a national survey undertaken by Massey University researchers investigating the health and mental health of Vietnam War veterans. Utilising a cross-sectional design, the study incorporated a single self-report questionnaire mailed to a sample of New Zealand Vietnam War veterans. Details of the sample selection, research procedure, and questionnaire development are presented in the following sections of this chapter.

3.2 Sample

There is no national register of the 2,500 to 3,000 New Zealand service personnel who served in Vietnam. The current sample pool was generated from a list of New Zealand Vietnam veterans supplied by the New Zealand Department of Defence. As part of a previous study on the health and well-being of Vietnam veterans (Vincent et al., 1991), this list was verified and amended with information from various ex-service associations and public sources, such as telephone directories and electoral rolls. Overseas addresses were removed from the sample because of the cost and practical difficulties involved in verifying these addresses. Incomplete addresses, and obviously incorrect addresses were also removed. The final list of potential respondents numbered 2046, approximately half of which were randomly selected for inclusion in an earlier study (Vincent et al., 1991).

The current sample base consisted of 1556 veterans from the revised register. Of these, 556 had participated in the previous study (Long et al., 1992). In total

151 questionnaires were returned with untraceable addresses and 7 were returned because the veterans were deceased. A further 33 respondents were eliminated as ineligible because they had served with the Airforce, Navy, or the Australian forces, or because they had served in unconventional roles (such as dentists) or for exceptionally short periods of time (such as 2 weeks). Of the remaining 1365 veterans, 18 declined to participate, and 756 (55.4%) returned valid questionnaires.

Overall the response rate was lower than that reported for an earlier study involving New Zealand Vietnam veterans (62%: Long et al., 1992). As expected, the response rate was higher for the group who had participated in the previous study (313, 61.1%), than it was for the remaining veterans (443, 51.9%). Addresses for the former group were more current and these veterans had already displayed a willingness to participate in similar research.

3.3 Procedure

Data collection occurred over a three month period by mailed questionnaire. The initial posting included a self-report questionnaire, information sheet, consent form, freepost return envelope, and covering letter. Measures used in the questionnaire are discussed below and are given in appendices A to K. Examples of information sheets, consent forms, and letters are given in appendices L to P. Two months after the initial posting, a follow-up letter was sent to 707 veterans who had not responded to the initial posting. The survey was approved by the Massey University Human Ethics Committee and was conducted within the guidelines of the New Zealand Psychological Society.

3.4 Questionnaire

The questionnaire consisted of a number of measures chosen primarily from previous research concerned with the mental health and social functioning of Vietnam veterans. A number of these measures were used in previous research involving New Zealand veterans (Vincent et al., 1991).

Socio-demographic information: Using questions revised from previous research (Vincent et al., 1991) and taken from the 1986 New Zealand Census (New Zealand Department of Statistics), information was sought on respondents' age, living arrangements, marital status, ethnicity, income, educational qualifications, and employment (Appendix A).

Military service: Respondents were asked about their total length of military service and a range of specific questions about their service in Vietnam. These included their rank, unit, and major military activity during their time in Vietnam (Appendix B).

Combat exposure: Respondents' perceptions of the frequency of combat engagement were measured with the Boulanger and Kadushin (1986) combat exposure index (Appendix C). The index measures a single combat exposure factor and was prepared specifically for use with Vietnam veterans. It is based on a series of questions about individual acts that respondents may have engaged in themselves or been engaged in by the enemy. Respondents were asked to respond to 12 items on a scale ranging from "rarely" to "very often". The scale is scored to provide a continuous measure of combat exposure to

which cut-off scores can be applied to differentiate between respondents with no combat (<3), low combat (3-16.99), and heavy combat (>17). Boulanger and Kadushin (1986) report the alpha reliability for the index at .95.

Post-traumatic stress disorder: Post-traumatic stress disorder symptoms were measured with the Mississippi Scale (Appendix D) which was derived from the DSM-III criteria for the disorder (Keane, Caddell & Taylor, 1986). The scale incorporates 35 self-report items and measures symptom severity and effect of symptoms on an individual's life. It has been shown to be a reliable and valid instrument for the identification of combat-related post-traumatic stress disorder symptoms in Vietnam combat veterans (Watson, 1990; Watson et al., 1994). High internal consistency measures have been reported (.94, Keane, Caddell & Taylor, 1988; & .96, McFall, Smith, MacKay & Tarver, 1990). Keane et al. (1988) report a test-retest reliability of .97 and an overall correct classification rate of .90 when the scale is used to differentiate between a PTSD group and two non-PTSD groups.

The Mississippi scale is scored to provide a continuous measure of PTSD and a cut-off score can be applied to assign respondents to PTSD and non-PTSD groups. A range of cut-off scores have been used to define PTSD caseness in different military groups, with Keane et al. (1988), McFall et al. (1990) and Schlenger and Kulka (1987) employing scores of 107, 100, and 94 respectively. Watson (1990) suggests a cutoff at 102 as most useful in a non-psychiatric setting. In the current study PTSD prevalence rates are reported using cut-off scores of 94 and 102 (see section 4.34).

Interpersonal problems: The Inventory of Interpersonal Problems (IIP; Horowitz, Rosenberg, Baer, Ureno & Villasenor, 1988; Horowitz, Rosenberg, Ureno, Kalehzan & O'Halloran, 1989) is a 127-item inventory which assesses interpersonal difficulties in a range of interpersonal domains. The inventory has been found to have high degree of internal consistency and test-retest reliability in college students (Horowitz, Weckler & Doren, 1982), people describing themselves as lonely (Horowitz & French, 1979), and psychiatric patients (Horowitz et al., 1989). The IIP has been shown to be sensitive to clinical change (Horowitz et al., 1989), and has been used to identify dysfunctional patterns in individual's interpersonal interactions (Horowitz, Rosenberg & Bartholomew, 1993).

In the current study a shorter version was used which included 87 statements reflecting common interpersonal problems (Appendix E). Respondents indicated the extent to which they believed each statement was true for them on a five point scale ranging from "not at all true for me" to "extremely true for me". The inventory includes 5 dimensions: intimacy; aggression/assertiveness; compliance; independence; and sociability (Horowitz, French, Gani & Lapid, 1980). On a sample of college students, Horowitz et al.(1980) report retest coefficients for the clusters ranging from .67 to .81 and .87 for all items. In a sample of Vietnam veterans Roberts et al. (1982) found that the 87-item IIP successfully differentiated between PTSD and non-PTSD cases in the areas of intimacy and sociability. A slightly expanded 100-item version has been used to identify patterns of interpersonal problems in people who perceive themselves as lonely (Horowitz & French, 1979).

Family functioning: The Bloom (1985) family functioning scale was used to assess levels of family functioning across a number of dimensions (Appendix G). The scale was developed from a serial examination of four well-known self-report measures of family functioning and uses 75 self-report items to assess 15 dimensions of family functioning. Bloom (1985) reported chronbach alphas ranging from .40 to .85 with a mean of .71 across the 15 factors. Average inter-item correlations ranged from .13 to .53 with a mean of .36. Scale score intercorrelations ranged from .03 to .73 with a mean of .28.

Dyadic adjustment: The degree of satisfaction in marital/dyadic relationships was measured with the Dyadic Adjustment Scale (Spanier, 1976). The Dyadic Adjustment Scale (DAS) consists of 32 self-report items which can be scored to provide a global assessment of dyadic functioning, or scores for 4 subscales: dyadic satisfaction, dyadic cohesion, dyadic consensus, affectional expression. As a global measure the scale has been shown to be both valid and reliable with reports of alpha coefficients of .96 (Spanier, 1976; Sharpley & Cross, 1982) and .91 (Spanier & Thompson, 1982) for the total scale.

Although Spanier's original analysis for the subscales produced alpha coefficients ranging from .73 to .94 these have not been replicated in later studies, and debate continues as to how robust the four factors appear to be. Although a re-evaluation of the scale by Spanier and Thompson (1982) confirmed the psychometric properties of DAS as a global measure, the findings for the subscales were replicated to a far lesser degree. The reliability of the overall scale was also confirmed by Sharpley and Cross (1982), however their analysis

did not replicate earlier factor structures, suggesting that there was only one underlying "adjustment" dimension. Results from a later factor analysis (Kazak, Jarmas & Snitzer, 1988), corroborated the findings of Sharpley and Cross (1982) while providing weak support for the presence of four subscales.

Sharpley and Cross (1982) conclude that, for the purposes of classifying individuals as high or low on a continuum of dyadic adjustment, most of the original 32 items are unnecessary. They claim that researchers can obtain almost as confident a classification by using only 6 items, and that the global self-rating item 31 would be sufficient for quick screening purposes. Kazak, Jarmas and Snitzer (1988) also urged researchers to view the DAS as an instrument for assessing one general or global dimension of marital satisfaction. The 6 items identified by Sharpley and Cross (1982) include items 8, 10, 11, 25, 27, and 28. For the purposes of the current study, the 6-item version of the scale was used (Appendix H).

Anxiety: The State-Trait Anxiety Inventory (Spielberger, 1968) was used to provide a measure of anxiety (Appendix I). The inventory can be administered individually or in groups, and has been used in research and clinical settings (Spielberger, 1968). It is a self-administered questionnaire which consists of two 20-item scales. The first, the State-anxiety scale, requires respondents to report how they feel "right now" or at a specific time. The second, Trait-anxiety scale, asks respondents to indicate how they "generally" feel. On the State-Anxiety scale respondents describe the intensity of their feelings on a four point scale ranging from "not at all" to "very much so" while they indicate the frequency of

their feelings on the Trait-anxiety scale on a four point scale ranging from "almost never" to "almost always". For samples of military recruits, working adults, and students, Spielberger (1968) reports reliability scores between .86 and .95 for the State-Anxiety scale and between .89 and .91 for the Trait-anxiety scale.

Depression: The revised version of the Beck Depression Inventory (BDI: Beck, Rush, Shaw & Emery, 1979) was included to assess the severity of depression in respondents (Appendix J). The scale presents 21 symptoms and attitudes in a multiple-choice format with the respondent selecting the alternative which best described the way they had been feeling over the past week. The Beck Depression Inventory is used widely in clinical settings and has been used as a screening instrument in normal populations (Steer, Beck, Riskind & Brown, 1986).

A number of studies have reviewed the psychometric properties the BDI and have shown it to be psychometrically sound over a range of samples of both clinical and normal populations (Beck & Steer, 1987; Steer et al., 1986). From a meta-analysis with nine psychiatric samples and 15 non-psychiatric samples, Beck, Steer and Garbin (1988) demonstrated that the revised BDI has high internal consistency. They reported mean coefficient alphas of .86 with the psychiatric samples and .81 for the non-psychiatric samples. Non-psychiatric samples displayed more stable BDI scores than did psychiatric patients. Across 19 studies, the test-retest correlations of the BDI ranged from .48 to .86 for

psychiatric patients, and from .60 to .90 for non-psychiatric patients (Beck et al., 1988).

Although the BDI was not designed to discriminate among patients with different psychiatric diagnoses, a number of studies have shown that it differentiates between psychiatric and normal patients (Steer et al., 1986), between Dysthymic and Major Depressive Disorders (Steer, Beck, Brown & Berchick, 1987), and between Generalized Anxiety Disorders and Major Depressive Disorders (Steer et al., 1986). In terms of its construct and concurrent validity, the BDI has been shown to be significantly correlated to a number of measures including the Hopelessness Scale, MMPI-D Scale, Zung Self-Rating Depression Scale, and the Hamilton Psychiatric Rating Scale for Depression (Beck & Steer, 1987)

Coping: The COPE inventory (Carver, Scheier & Weintraub, 1989) was included to assess the ways in which people respond to stress (Appendix K). COPE, a self-report inventory consisting of 15 scales (of 4 items each) asks respondents to indicate how they usually act in a stressful situation. The inventory has a 4-point response scale ranging from "I usually don't do this at all" to "I usually do this a lot". Carver, Scheier and Weintraub (1989) report alpha reliability coefficients for each scale, ranging from .45 to .92, with a mean of .62. Test-retest correlations ranged from .42 to .89, with a mean of .59 across all scales on two groups, and suggest that the self-report coping tendencies as measured by COPE are relatively stable (Carver, Scheier & Weintraub, 1989). The inventory has been used successfully with groups of undergraduate students (Carver, Scheier & Weintraub, 1989) and cancer patients (Carver et al., 1993).

Chapter contents

4.1 Chapter overview

In this chapter the relationship between PTSD and interpersonal functioning is explored and the results of the data analyses are presented. The techniques used for data analysis are outlined first, then the sample is described in terms of demographic, relationship and military experience variables. The prevalence of PTSD in the sample is also given. Two procedures were undertaken prior to testing the hypotheses presented in Section 2.5. First, the relationship between the three measures of interpersonal functioning was assessed. Second, potential confounding demographic and military experience variables were identified through correlation and regression analyses.

A series of standard multiple regression analyses were then employed to test the hypotheses that PTSD would be significantly related to severity of interpersonal problems, family functioning and marital/dyadic adjustment. The results of these analyses showed that PTSD was significantly related to interpersonal problems but not to family functioning or dyadic adjustment. A series standard multiple regression analyses were then employed to test whether the effect of PTSD on family functioning was mediated by the level of interpersonal problems or dyadic adjustment and to test whether the effect of PTSD on dyadic adjustment was mediated by the level of interpersonal problems or family functioning.

A series of principal components analyses were undertaken on the IIP, BLOOM, DAS, Mississippi and COPE scales to explore the underlying structure of the scales as reported by the veterans in this sample. While the Mississippi scale has been previously factor analysed, there have been several different factor

structures reported. Of the remaining scales, only the IIP has been used with combat veteran samples and only the DAS has been extensively factor analysed, although not the shortened version. As the component solutions generated by the analyses differed in several ways from most of the original subscales it was decided that the solutions generated by the current analyses would form the basis of subsequent analyses. To maintain consistency throughout the remaining analyses, subscale scores for each measure were computed in the same manner by summing scores across items defining the identified components from the principal component analyses. These subscale scores were used in subsequent analyses.

To examine the relationship between IIP subscales and level of PTSD, family functioning and dyadic adjustment, IIP subscale scores were correlated with each of these measures. A series of standard multiple regression analyses were then employed in which the IIP subscale scores were entered as the dependent variables. To test the hypothesis that specific classes of PTSD symptomatology would be significantly related to specific dimensions of interpersonal problems, the Mississippi subscale scores (computed following a principal components analysis) were correlated with each of the IIP subscales.

In the next set of analyses, correlation and regression analyses were employed to determine if concurrent diagnoses of anxiety and depression impact on the relationship between PTSD and interpersonal problems. Finally, the relationship between PTSD, interpersonal problems and coping strategies was examined. Principal components analyses of the COPE scale identified eight primary

components and three second-order dimensions of coping. To examine the relationship between PTSD and coping strategies, PTSD cases and non-PTSD cases were compared across the coping subscales. Correlation and regression analyses were employed to examine the relationship between coping strategies and interpersonal problem subscales.

4.2 Data analyses

The Statistical Package for the Social Sciences (SPSS/PC+ V5.0) was used for all data analysis (Norusis, 1992a; 1992b). The primary methods of data analysis employed were standard multiple regression analysis and principal components analysis. Potential multivariate outlier values were identified by utilising the RESIDUALS subcommand with the OUTLIERS specification with the initial multiple regression analysis. Using Mahalanobis distance with a conservative probability estimate of $p < .001$ (Tabachnick & Fidell, 1989), 20 cases were identified as significant multivariate outliers in the series of regressions. After checking data accuracy, these cases were excluded from subsequent analyses. All significant outlier cases were identified after two data screenings.

Principal components analyses were applied to the IIP, BLOOM, DAS, Mississippi and COPE scales. Varimax rotation was conducted in each case, with the number of rotated components determined by a combination of eigen values greater than 1.0 (Tabachnick & Fidell, 1989) and Scree criteria (Cattell, 1988). Items loading at .40 or greater were selected (Tabachnick & Fidell, 1989).

There has been considerable debate over the rules used to determine the number of components to retain in a principal components analysis. In particular, the common use of the eigen values greater than one rule (Kaiser, 1960) has been challenged (Cattell & Vogelman, 1977; Cliff, 1988; Zwick & Velicer, 1986), with the primary argument being that this rule overestimates the number of components (Zwick & Velicer, 1986). The decision of how many components to accept in an analysis is partly a subjective one. Tabachnick and Fidell (1989) assert that a good principal components analysis "makes sense" and a bad one does not. In this thesis the decision to retain components was based on a combination of eigen values greater than 1.0 (Tabachnick & Fidell, 1989) and Scree criteria (Cattell, 1988) supported by a subjective decision as to the general theoretical "interpretability" of the component solution.

Following the principal components analyses subscale scores were computed for each scale by summing scores across all items defining the identified components. This approach to estimating component scores was preferred over more sophisticated strategies. Tabachnick and Fidell (1989) note that although this is perhaps the simplest techniques for estimating factor scores, for many research purposes it is entirely adequate. These subscale scores were utilised in subsequent analyses.

4.3 Sample description

4.3.1 Demographic information

The overall sample size was 756. Socio-demographic information on respondents is detailed in Appendix Q. The age of respondents ranged from 41 to 70 years

and the mean age was 50 years (*SD* = 6.3 years). Over half of the respondents (60%) were aged between 45 and 54 years. The majority (75%) of respondents were of European descent and almost one-fifth (18%) were Maori. Maori veterans may have been under-represented in this sample but this can not be confirmed as the ethnic composition of New Zealand Vietnam forces is unknown.

The mean annual income of the respondents was $39,354 (*SD* = 31,429) and most (57%) earned between $20,000 and $49,999 per annum. A few (3%) respondents reported incomes of over $100,000 per annum. The majority (70%) of respondents were fully employed, with 8% employed part-time and the remaining 22% not in paid employment. The occupational data was analysed in accordance with the New Zealand Standard Classification of Occupations (New Zealand Department of Statistics, 1992). Respondents were engaged in occupations across the spectrum of the census classifications. The most frequently reported occupations were those in the legislators, administrators or other professionals category, followed by the category of plant and machinery operators and assemblers.

Almost half (44%) of the respondents had not attained a formal school qualification such as School Certificate. One quarter (24%) had attained a secondary school qualification and slightly fewer (23%) had attained a trade or professional qualification.

4.3.2 Relationship information

Relationship information on respondents is detailed in appendix R. Most respondents (83%) were legally married or living in a defacto relationship and lived with their partner and/or children (86%). A small proportion (8%) lived alone. Most respondents were married or living in a defacto relationship (70%) and the length of their current relationships ranged from less one month to 45 years (M = 20.4 years, SD = 9.16 years) with almost half (45%) having been in their current relationship 20 to 29 years.

4.3.3 Military service information

Information on respondents' military service is detailed in appendix S. The length of time respondents had spent in military service ranged from 1 to 40 years, with the average length of military service being 15 years (SD = 10 years). At the time of the survey, very few respondents (3%) were still serving in the armed forces.

The majority of respondents (89%) completed a single tour of duty in Vietnam and most respondents (80%) spent 12 months or less in Vietnam (M = 11.1, SD = 5.2 months). Almost half (48%) held ranks below that of corporal while in Vietnam and very few were officers (14%). Most were engaged in combat duties (63%) and combat support duties (17%) during their tour of duty. Half served in the infantry (51%) and almost one-third served in the artillery (31%).

4.3.4 Prevalence of PTSD

To assess the current prevalence rate of combat-related PTSD in the sample, respondents were classified as PTSD cases or non-PTSD cases on the basis of their scores on the Mississippi Scale. The point at which the cut-off should be set to define PTSD caseness is a matter of debate, with previous researchers utilizing scores of 107, 102, 100 and 94 (McFall, Smith, MacKay, & Tarver, 1990; Watson, 1990; Keane, Caddell, & Taylor, 1988; Schlenger & Kulka, 1987). For the present sample, a cut-off point of 94 on the Mississippi Scale identified 18% of the sample as PTSD cases. Using a cut-off of 102, suggested by Watson (1990) as appropriate for a community sample, 9% were identified as PTSD cases.

4.4 Interpersonal measures

Three aspects of interpersonal functioning were assessed: severity of interpersonal problems; perceptions of family functioning; and marital/dyadic relationship adjustment. Although these measures were intended to assess different aspects of interpersonal functioning they were significantly associated with each other and with PTSD. Table 2 presents the correlations between the measures, together with means, standard deviations and alpha reliabilities.

Increased PTSD was associated with increased interpersonal problem severity and reduced family functioning and dyadic adjustment. Higher levels of interpersonal problems were also associated with lower levels of family functioning and dyadic adjustment and higher levels of family functioning were associated with higher levels of dyadic adjustment.

Table 2: Inter-correlations, means, standard deviations and alpha reliabilities of PTSD and interpersonal functioning measures (N = 495).

	PTSD	Interpersonal Problems	Family Functioning	Dyadic Adjustment
Interpersonal Problems	.686***			
Family Functioning	-.238***	-.404***		
Dyadic Adjustment	-.348***	-.451***	.466***	
Mean	73.29	122.99	112.70	19.25
Standard Deviation	19.59	59.40	13.97	4.61
alpha reliability	.94	.97	.83	.85

*** $p < .001$

4.5 Background variables

To determine which demographic and military experience variables might act as confounding variables in subsequent analyses, these variables were correlated with each of the interpersonal functioning measures. The results of these correlations are presented in Table 3.

Table 3: Correlations of interpersonal functioning measures with demographic and military experience variables (N = 308).

Variable	Interpersonal Functioning Measures		
	Interpersonal Problems	Family Functioning	Dyadic Adjustment
Description of duties	.062	-.096	.051
Military specialisation	-.001	-.090	.066
Highest rank in Vietnam	-.163**	.005	.056
Length of service in Vietnam	-.010	-.039	-.041
Combat Exposure	.005	.169**	.002
Total years of military service	-.142**	-.110	-.047
Ethnicity	.024	-.188***	.048
Age (years)	-.075	-.079	-.034
Income ($NZ)	-.213***	.176***	.137**
Educational qualifications	.017	.108	.032
Weekly hours paid employment	-.036	.028	.072
Occupation	-.015	.035	-.065
Marital status	-.023	-.044	-.088
Number of relationships	.093	-.112	.097
Years in current relationship	-.071	-.050	-.115

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

High interpersonal problem severity was significantly associated with; lower rank in Vietnam, decreased years of military service and lower annual income. Higher family functioning was significantly associated with; increased combat exposure, ethnicity and higher income. Higher dyadic adjustment was associated with higher income. These five variables; rank, combat exposure, length of military service, ethnicity and income, were included in subsequent analyses.

4.6 The relationship of PTSD and interpersonal functioning

The primary aim of this thesis was to investigate the relationship between PTSD and interpersonal functioning. The initial analyses consisted of a series of standard multiple regression analyses employed to determine if level of PTSD significantly predicted the level of each of the interpersonal functioning measures. Due to the high inter-correlation between the interpersonal functioning measures (Table 2), as well as the potential confounding effect of some demographic and military experience variables (Table 3, section 4.5), these variables were also entered in the analyses. The following sections present the results of three standard multiple regression analyses which determine if level of PTSD significantly predicted the level of interpersonal problems, family functioning and dyadic adjustment respectively.

4.6.1 PTSD and interpersonal problems

In the first regression, level of interpersonal problems was entered as the dependent variable, while PTSD, income, rank in Vietnam, length of military service, family functioning and dyadic adjustment were entered together as independent variables. Table 4 presents the regression coefficients and the adj

R^2 value for this analysis. Level of interpersonal problems was significantly predicted by PTSD, family functioning and dyadic adjustment, with PTSD explaining a relatively large amount of the variance. Higher interpersonal problems were predicted by higher PTSD, lower family functioning and lower dyadic adjustment.

Table 4: Regression coefficients (and adj R^2 value) for PTSD and potential confound variables with interpersonal problems.

Variables	β
PTSD	.601***
Income	-.012
Rank	.033
Length of military service	-.004
Family Functioning	-.172***
Dyadic Adjustment	-.163***
adj R^2	(.546***)
F (6, 428) = 87.91***	

*** p < .001

.6.2 PTSD and family functioning

second regression was employed to determine if level of PTSD significantly redicted the level of family functioning when entered together with combat xposure, ethnicity, income, interpersonal problems and dyadic adjustment. The egression coefficients and the adj R^2 value for this analysis are presented in able 5.

evel of family functioning was not predicted by PTSD but was significantly lated to all the remaining variables in the equation. Maori veterans were more ely to report high levels of family functioning (M = 120.24, SD = 15.11) than ere non-Maori (M = 110.52, SD = 13.35) veterans [t (632) = 7.40, p < 01]. Higher family functioning scores were also predicted by higher combat

exposure, albeit marginally, higher income level, higher dyadic adjustment scores and lower interpersonal problem scores.

Table 5: Regression coefficients (and adj R^2 value) for PTSD and potential confound variables with Family Functioning.

Variables	β
PTSD	.009
Combat Exposure	.097*
Ethnicity[a]	-.200***
Income	.103*
Interpersonal Problems	-.215***
Dyadic Adjustment	.362***
adj R^2	(.319***)
F (6, 388) = 31.76***	

* $p < .05$ ** $p < .001$
[a] this variable was coded 1 = Maori, 2 = non-Maori

4.6.3 PTSD and dyadic adjustment

Finally, in the third regression, PTSD, income, interpersonal problems and family functioning were entered together predicting to level of dyadic adjustment. The regression coefficients and the adj R^2 value for this analysis are presented in Table 6. PTSD failed to predict level of dyadic adjustment. Higher level of dyadic adjustment was predicted by low interpersonal problem severity and high levels of family functioning.

Table 6: Regression coefficients (and adj R^2 value) for PTSD and potential confound variables with Dyadic Adjustment.

Variables	β
PTSD	-.059
Income	-.013
Interpersonal Problems	-.270***
Family Functioning	.337***
adj R^2	(.285***)
F (4, 453) = 44.66***	

*** $p < .001$

The results of these regressions show that the only dimension of interpersonal functioning significantly predicted by PTSD was interpersonal problems (Table 4). PTSD was not significantly related to either family functioning or dyadic adjustment. Levels of each of the three measures of interpersonal functioning were, on the other hand, significantly predicted by each other. Interpersonal problems predicted family functioning and dyadic adjustment, family functioning predicted interpersonal problems and dyadic adjustment and dyadic adjustment predicted interpersonal problems and family functioning.

4.6.4 The mediating effect of interpersonal problems with PTSD

The results from sections 4.6.1 to 4.6.3 support the first hypothesis that level of PTSD symptomatology is related to severity of interpersonal problems. The results did not support the hypotheses that level of PTSD was related to level of family functioning or dyadic adjustment. Further analyses were required to test whether the effect of PTSD on family functioning and dyadic adjustment was mediated by these variables.

In general, a given variable may function as a mediator to the extent that it accounts for the relation between the predictor and the criterion (Baron & Kenny, 1986). This mediational model is depicted in Figure 1.

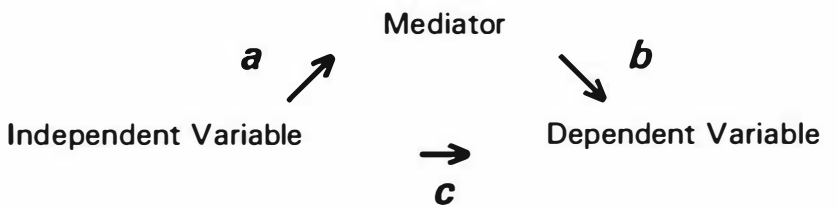


Figure 1: Mediational model (Baron & Kenny, 1986).

Baron and Kenny (1986) outline three conditions which must be met for a variable to be considered as a mediator. First, variations in levels of the independent variable significantly account for variations in the presumed mediator (Path ***a***). Second, variations in the mediator significantly account for variations in the dependent variable (Path ***b***). Finally, when Paths ***a*** and ***b*** are controlled, the previously significant relation between the independent and dependent variables is reduced, with the strongest demonstration of mediation occurring when Path ***c*** is no longer significant (Baron & Kenny, 1986).

A series of multiple regression analyses were employed to test whether;

a) interpersonal problems mediate between PTSD and family functioning

b) dyadic adjustment mediates between PTSD and family functioning

c) interpersonal problems mediate between PTSD and dyadic adjustment

d) family functioning mediates between PTSD and dyadic adjustment.

The results of these regressions are presented in Tables 6 to 9. Each table presents the standardised beta coefficients, total amount of variance (R^2) explained by all variables at each step, as well as change in R^2 ($\Delta R^{2)}$ which represents the contribution of the variable(s) added on a given step, exclusive of the variables in the previous steps.

A regression analysis was employed to test whether interpersonal problems mediate between PTSD and family functioning. PTSD and potential confound variables (see section 4.5) were entered on step 1 and interpersonal problems on

step 2, with family functioning as the dependent variable. The model tested by the equation is depicted in Figure 2.

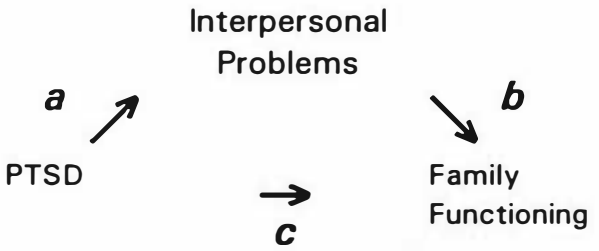


Figure 2: Mediational model for PTSD, Interpersonal Problems and Family Functioning

A significant association has already been shown to exist between PTSD and interpersonal problems (Path ***b***) (see section 4.6.1, Table 4). The R^2 data in Table 7 shows that both steps in the regression analysis explain a significant amount of variance in family functioning and the full model explains 23% of the variance. The ΔR^2 indicates that the addition of interpersonal problems makes a significant contribution to explained variance over and above PTSD and the potential confound variables in step one.

Table 7: Regression coefficients, R^2 and ΔR^2 values for PTSD, potential confound variables and interpersonal problems predicting to family functioning.

Predictor Variable	*β*	
	Step 1	Step 2
PTSD	-.269***	-.019
Combat Exposure	.146**	.110*
Ethnicity	-.258***	-.223***
Income	.115*	.107*
Interpersonal Problems		-.345***
R^2	.169***	.228***
ΔR^2		.059***

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

An examination of the beta coefficients helps clarify the effects of individual variables and the extent to which interpersonal problems mediate between PTSD and family functioning (Path ***c***). The decline in PTSD coefficients across the steps indicates that the initial significant effects of PTSD are mediated by interpersonal problems.

A similar regression analysis was employed to test whether dyadic adjustment also mediated between PTSD and family functioning. PTSD and potential confound variables (see section 4.5) were entered on step 1 with dyadic adjustment on step 2 of the equation predicting family functioning.

Table 8: Regression coefficients, R^2 and ΔR^2 values for PTSD, potential confound variables and Dyadic Adjustment predicting to Family Functioning.

Predictor Variable	*β*	
	Step 1	Step 2
PTSD	-.291***	-.133**
Combat Exposure	.137**	.104*
Ethnicity	-.251***	-.244***
Income	.096*	.088*
Dyadic Adjustment		.432***
R^2	.166***	.330***
ΔR^2		.163***

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

The data in Table 8 shows that both steps of the regression analysis explain a significant amount of variance in family functioning and the full model explains 33% of variance. Dyadic adjustment explains a significant amount of variance over and above PTSD and potential confound variables. The change in the PTSD beta coefficients over step 1 and 2 show that the initial strong effect of PTSD

is reduced with the addition of dyadic adjustment, indicating that the effect of PTSD is partially mediated through dyadic adjustment.

A comparison of data from Tables 6 and 7 shows that dyadic adjustment is the strongest predictor of family functioning and that while the effect of PTSD on family functioning is mediated by both dyadic adjustment and interpersonal problems, the strongest mediating effect clearly occurs through interpersonal problems.

To test the mediating hypotheses relating to the level of dyadic adjustment, two further regression analyses were undertaken. A regression analysis was employed to test whether interpersonal problems mediate between PTSD and dyadic adjustment. PTSD and potential confound variables (see section 4.5) were entered on step 1 and interpersonal problems on step 2, with dyadic adjustment as the dependent variable.

Table 9: Regression coefficients, R^2 and ΔR^2 values for PTSD, potential confound variables and interpersonal problems predicting to dyadic adjustment.

Predictor Variable	β	
	Step 1	Step 2
PTSD	-.321***	-.032
Income	.020	.008
Interpersonal Problems		-.425***
R^2	.107***	.203***
ΔR^2		.096***

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

A regression analysis was employed to test whether family functioning mediates between PTSD and dyadic adjustment. PTSD and potential confound variables

(see section 4.5) were entered on step 1 and family functioning on step 2, with dyadic adjustment as the dependent variable. The R^2 data in Table 10 indicate both steps in the regression analysis explain a significant amount of variance in dyadic adjustment, with the full model explaining 28% of the variance. The ΔR^2 indicates that family functioning explains a significantly increased amount of variance over and above PTSD and the potential confound variables. The initial strong effect of PTSD is reduced by the addition of family functioning, indicating that family functioning partially mediates the effect of PTSD on dyadic adjustment.

Table 10: Regression coefficients, R^2 and ΔR^2 values for PTSD, potential confound variables and Family Functioning predicting to Dyadic Adjustment.

Predictor Variable	β	
	Step 1	Step 2
PTSD	-.326***	-.231***
Income	.026	.005
Family Functioning		.427***
R^2	.111***	.283***
ΔR^2		.171***

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

Data from Tables 8 and 9 show that PTSD predicted level of dyadic adjustment in the presence of family functioning but failed to do so in the presence of interpersonal problems. These results support the hypothesis that interpersonal problems functions as a mediating variable in the relationship between PTSD and dyadic adjustment.

4.7 The relationship among interpersonal problems, family functioning and dyadic adjustment

Previous analyses reported in this chapter have utilised total scores for each measure of interpersonal functioning. The IIP and the BLOOM consist of a number of subscales and the short version of the DAS provides a single global score. These scales have rarely been used with non-clinical samples or combat veteran samples (Roberts et al., 1982), apart from the DAS, the scales have not been extensively factor analysed. A series of principal components analyses were undertaken to explore the underlying structure of the scales as reported by the veterans in this sample and to examine the degree to which the original scale structures were replicated in the current sample. The results of these analyses are presented in sections 4.7.1 to 4.7.3.

4.7.1 Principal components analysis of the Inventory of Interpersonal Problems

The 87 items of the IIP were subjected to a principal components analysis using varimax rotation. The number of components were determined by a combination of eigen values greater than 1.0 (Tabachnick & Fidell, 1989) and Scree criteria (Cattell, 1988). Items loading at .40 or greater were selected (Tabachnick & Fidell, 1989). Using these criteria a five-component solution was identified and extracted. Table 11 presents IIP items with rotated loadings greater than .40. Individual item-correlations and subscale summary information are presented in Appendix U.

The first component, sociability/global intimacy, consists of 29 items relating primarily to difficulties with initiating and maintaining social interaction and

intimacy on a global level. This component is the largest and accounts for the largest proportion of the overall variance (33.3%).

The second 19-item component comprises items reflecting difficulties maintaining a sense of independence from others and the need to comply with the wishes of others in the pursuit of social acceptance. The third component, dyadic intimacy, consists of 14 items which reflecting difficulties relating to the maintenance of a close intimate relationship.

The fourth component, assertiveness, comprises 7 items relating to difficulties expressing feelings or behaving in ways which are contrary to the wishes or feelings of others. The fifth and final component consists of 9 items relating to the desire to control, manipulate or criticise others.

Fifteen items were complex variables, in that they had loadings greater than .40 for two components. While complex variables usually make the interpretation of components more difficult (Tabachnick & Fidell, 1989), they were retained in this analysis for two reasons. Firstly, almost all secondary loadings were less than .45 for the second component. Second, most duplicate loadings occurred between component 1 (sociability and global intimacy) and component 3 (dyadic intimacy). Two items from the second component (independence/compliance) also loaded on component 4 (assertiveness). Given the global similarity of these components, some duplicate loadings should not be surprising.

Table 11
Principal component analysis of the Inventory of Interpersonal Problems
(Five component solution)

Item	Content[a]: difficulties with...	Rotated Loadings
Component 1: Sociability and global intimacy		
87	feeling comfortable around others	.76
24	being friendly and sociable	.74
13	relating to others	.73
84	making friends naturally	.71
30	accepting friendship	.70
79	introducing oneself at parties	.70
4	opening up and talking freely	.68
37	becoming "good mates"	.66
76	participating in groups	.66
62	getting close to others	.65
80	entertaining at home	.64
9	getting others to respond and relate to me	.63
25	initiating social contact by phone	.62
3	getting pleasure out of parties	.61
39	expressing the light, humorous side of one's personality	.59
2	confronting others with problems as they arise	.57
74	relaxing and enjoying a date	.57
5	"reading" another's point of view	.55
1	being competitive with others	.54
28	getting along in a relationship	.54
85	selecting and motivating employees	.53
33	participating in playing games	.52
8	getting too easily annoyed	.51
10	being assertive	.51
38	expressing a different viewpoint from others	.48
6	giving another person approval	.48
61	trusting others	.46
54	saying good things to others	.45
78	disclosing personal things	.42
	Percentage of overall variance	33.30

[a] Item wording has been condensed for clarity of presentation

Table 11: continued ...

Item	Content[a]: difficulties with...	Rotated Loadings
Component 2: Independence/compliance		
60	risking another person not liking me	.73
70	feeling obliged to please others	.68
42	being too sensitive to possible signs of rejection	.66
59	saying no to others	.62
72	needing too much praise, admiration and approval	.59
12	being too easily persuaded by others	.56
57	feeling free of responsibility and guilt towards others	.55
53	monitoring others' reactions too much	.55
55	telling someone I am leaving because of changed plans	.53
41	doing as I please without guilt	.52
16	telling others I don't like what they are saying	.49
34	feeling obliged to remain in relationships longer than I desire	.48
31	telling others to back off	.47
27	being strong against others	.47
86	adhering to my own wishes in opposition to others	.46
29	letting others see me as mean and hard-hearted	.44
36	taking control of my relationships with friends/lovers	.42
22	clowning around to avoid threatening others	.41
81	rebelling against other people's control	.40
	Percentage of overall variance	6.60
Component 3: Dyadic Intimacy		
52	being open and loving with another	.75
58	initiating love with another	.68
48	committing myself to another	.66
51	being sexually open	.66
56	sharing a feeling of being "one" with another	.65
83	loving another	.65
64	expressing feelings of affection	.63
43	accepting love when it is given	.62
21	giving myself to another	.60
23	showing affection in public	.51
44	being genuine in a one-to-one relationship	.50
17	performing sexually with another	.49
63	getting along with the person I care about	.48
71	being seductive and flirtatious in front of people	.42
	Percentage of overall variance	4.60

[a] Item wording has been altered for clarity of presentation

Table 11: continued ...

Item	Content*: difficulties with...	Rotated Loadings
Component 4: **Assertiveness**		
82	showing my anger to others	.68
35	being aggressive towards others	.66
75	criticising others	.65
49	expressing anger when it comes up	.63
11	feeling angry at others	.59
68	fighting with other people	.58
26	seeing weaknesses in others	.46
	Percentage of overall variance	2.70
Component 5: Control/manipulation		
45	talking back to others too much	.64
19	complying with other people's wishes	.61
46	being too critical of other people	.56
65	exerting too much pressure on others	.54
14	being too ready to put others down	.52
47	accepting what others feel and think	.51
7	manipulating others too much in order to get praise	.46
66	leaving another to go to work	.42
18	being honest with others	.41
	Percentage of overall variance	2.10

* Item wording has been altered for clarity of presentation

An examination of the items loading on each component reveals a clearly interpretable solution. The component solution which emerged from the IIP items in this sample differs from the five subscales of the 87-item inventory; aggression/assertiveness, compliance, intimacy, independence and sociability (Horowitz, French, Gani & Lapid, 1980).

4.7.2 Principal components analysis of the Bloom Family Functioning Scale

The 75 items of the Bloom Family Functioning Scale were subjected to a principal components analysis with varimax rotation. The number of components were determined by a combination of eigen values greater than 1.0 (Tabachnick &

Fidell, 1989) and Scree criteria (Cattell, 1988). Items loading at .40 or greater were selected (Tabachnick & Fidell, 1989). Using these criteria a nine-component solution was identified and extracted. Table 12 presents BLOOM items with rotated loadings greater than .40. Individual item-correlations and subscale summary information are presented in Appendix V.

Table 12
Principal components analysis of the Bloom Family Functioning Scale
(Nine component solution)

Item content	Rotated Loadings
Component 1: Unity (cohesion/expressiveness/idealisation)	
There is a feeling of togetherness in our family	.76
I don't think anyone could possibly be happier than my family and I, when we are together	.70
I don't think any family could live together with greater harmony than my family	.70
We really get along well with each other	.67
Our family is as well adjusted as any family in this world can be	.66
Our family does not discuss its problems	-.65
Family members discuss problems and usually feel good about the solutions	.65
Family members make the rules together	.64
In our family it is important for everyone to express their opinion	.63
My family has all the qualities I've always wanted in a family	.63
We are full of life and good spirits	.62
Family members feel they have no say in solving problems	-.59
We don't tell each other about our personal problems	-.59
Family members really help and support one another	.58
Family members feel free to say what is on their minds	.58
We encourage each other to develop in his or her own way	.58
Each family member has at least some say in major family decisions	.56
We are satisfied with the way in which we live	.56
My family could be happier than it is	-.55
Our family does not do things together [R]	-.52
In our family we know where all family members are at all times	.50
Family members seem to avoid contact with each other when at home [R]	-.50
We rarely have intellectual discussions	-.46
Family members do not check with each other when making decisions	-.40
Percentage of overall variance	21.30

[R] These items were reversed in the original scoring procedure

Table 12 continued...

Item content	Rotated Loadings
Component 2: Enmeshment	
It is difficult for family members to take time away from the family	.66
Family members feel pressured to spend most free time together	.64
Family members feel guilty if they want to spend some time alone	.63
Family members find it hard to get away from each other	.63
It seems like there is never any place to be alone in our house	.51
Family members are expected to have the approval of before making decisions [R]	.44
Our decisions are not our own, but are forced upon us by things beyond our control	.41
Percentage of overall variance	5.80
Component 3: Family Activities	
Family members sometimes attend courses or take lessons for some hobby or interest	.66
Family members really like music, art and literature	.54
We are very interested in cultural activities	.50
Everyone in our family has a hobby or two	.49
Family members are not very involved in recreational activities outside work or school [R]	-.47
Watching TV is more important than reading in our family [R]	-.43
Percentage of overall variance	4.00
Component 4: Organisation	
We are generally pretty sloppy around the house [R]	.70
Family members make sure their rooms are neat	-.64
Dishes are usually done immediately after eating	-.64
It is often hard to find things when you need them in our household [R]	.56
Being on time is very important in our family	-.42
Percentage of overall variance	3.20

[R] These items were reversed in the original scoring procedure

Table 12 continued...

Item content	Factor Loadings
Component 5: Discipline Style	
There is strict punishment for breaking rules in our family	.72
Family members are severely punished for anything they do wrong	.65
Family members are not punished or reprimanded when they do something wrong	-.62
There are very few rules in our family [R]	-.52
It is unclear what will happen when rules are broken in our family	-.45
The method of punishment is discussed in our family	.43
Percentage of overall variance	3.00
Component 6: Family Sociability	
Our family likes having parties	.68
Our family enjoys being around other people	.62
As a family we have a large number of friends	.62
Socialising with other people often makes my family uncomfortable [R]	-.58
Friends rarely come over for dinner or to visit [R]	-.55
Percentage of overall variance	2.50
Component 7: Religion	
The Bible is a very important book in our home	.79
Family members attend church or Sunday School fairly often	.70
We often talk about the religious meaning of Christmas, Easter or other holidays	.69
We don't say prayers in our family [R]	-.63
We don't believe in heaven or hell [R]	-.63
Percentage of overall variance	2.20

[R] These items were reversed in the original scoring procedure

Table 12 continued...

Item content	Rotated Loadings
Component 8: Conflict	
Family members hardly ever lose their tempers [R]	.69
Family members rarely criticise each other [R]	.58
We fight a lot in our family	-.53
Family members sometimes get so angry they throw things	-.42
Percentage of overall variance	2.10
Component 9: Independence	
Family members are extremely independent	.61
It is difficult to keep track of what other family members are doing	.47
It is hard to know what the rules are in our family because they always change	.40
Percentage of overall variance	2.00

[R] These items were reversed in the original scoring procedure

The first component, family unity, accounts for the largest proportion of variance (21.30%) and consists of 24 items. This component is associated with how family members relate to each other and the extent to which members feel that they are an important part of the family. Seven of these items relate to the sense of cohesiveness, including a sense of togetherness and mutual support. Nine items relate to the degree which there is open expression in the family and the extent to which family members have a say in decision-making. Seven of the component items relate to the family's sense of idealisation, or the extent to which the members feel that they feel valued within the family and their satisfaction with the family as it is. An additional item refers to the degree to which the family have intellectual discussions.

With the exception of components 3, 5 and 9, the remaining components are similar if not identical to the dimensions outlined by Bloom (1985). The second component, enmeshment, comprises seven items associated primarily with the extent of insistence on interdependence between family members to the exclusion of individual action.

The six items which comprise the third component, family activity, are associated with the degree to which the family members are engaged intellectual, cultural or recreational activities. The fourth component consists of five items relating to the general degree of organisation within the family household. The fifth component, discipline style, is a composite of six items from Bloom's (1985) dimensions relating to the style of family interaction. These items relate to the characteristic style which governs the making and enforcement of rules and punishment in the event of failure to adhere to those rules.

The five items of the sixth component, sociability, refer to the degree to which family members engage in and derive satisfaction from, shared social activity. Religion, the seventh component, consists of five items which refer to the degree that religious values and practices form an integral part of family life. Four items relating to the degree to which conflict is characteristic of family interactions make up the eighth component. The final component consists of three items, two of which relate to the degree of independence in the activities of family members and the third relates to the consequent flexibility of family rules.

4.7.3 Principal components analysis of the Dyadic Adjustment Scale

The 6 items of the short version of the Dyadic Adjustment Scale (DAS) were subjected to a principal components analysis using varimax rotation. The number of components were determined by a combination of eigen values greater than 1.0 (Tabachnick & Fidell, 1989) and Scree criteria (Cattell, 1988). Items loading at .40 or greater were selected (Tabachnick & Fidell, 1989). Using these criteria a two-component solution was identified and extracted. Table 13 presents DAS items with rotated loadings greater than .40. Individual item-correlations and subscale summary information are presented in Appendix W. This solution failed to confirm the single global dyadic adjustment factor reported by Sharpley and Cross (1982).

Component one comprises three items relating to the degree of cohesion in the relationship while component two, also consisting of three items, relates to the degree of consensus in the relationship.

The main reason for undertaking the principal components analyses presented above was to explore the underlying structure of the scales as reported by the veterans in this sample. The component solutions generated by the analyses differed from most of the original subscales. In subsequent analyses subscale scores are not required for the BLOOM or DAS scales, but are required for the IIP. For the purposes of the following analyses the items identified by the principal components analysis formed the basis of computed IIP subscales.

Table 13: Principal components analysis loadings of DAS items.
(Two component solution)

	Rotated Loadings	
Item	Cohesion	Consensus
Component 1: Cohesion		
How often do you and your partner ...		
have a stimulating exchange of ideas	.86	
calmly discuss something	.81	
work together on a project	.81	
Component 1: Consensus		
How much do you and your partner agree over ...		
aims, goals and things believed important		.84
philosophy of life		.83
amount of time spent together		.76
Percentage of overall variance	56.50	16.90

4.8 Predicting specific dimensions of interpersonal problems

Results of sections 4.6.1 to 4.6.3 show that interpersonal problems was the only dimension of interpersonal functioning significantly predicted by PTSD. Interpersonal problems were also significantly related to family functioning and dyadic adjustment and were shown to strongly mediate the effect of PTSD on both family functioning and dyadic adjustment (section 4.6.4). Given the importance of interpersonal problems in the results thus far, it was proposed that similar relationships would exist between these variables and identifiable IIP components. The subscale scores employed in the following analyses were computed by summing scores over all items defined by the components in the previous principal components analysis (section 4.7.1). Table 14 presents the correlations between the measures, together with means and standard deviations for the subscales.

Table 14: IIP subscale inter-correlations, means, standard deviations and correlations with PTSD, family functioning and dyadic adjustment measures (N = 505).

	Sociability	Independence /Compliance	Dyadic Intimacy	Assertiveness	Control/ Manipulation
Independence	.653***				
Intimacy	.807***	.558***			
Assertiveness	.223***	.498***	.243***		
Control	.632***	.544***	.507***	.019	
PTSD	.725***	.478***	.615***	.041	.537***
Family Functioning	-.426***	-.285***	-.442***	-.072	-.210***
Dyadic Adjustment	-.413***	-.354***	-.499***	-.130**	-.266***
Mean	41.53	27.09	21.65	10.84	9.92
Standard Deviation	25.61	14.81	13.65	5.54	6.17

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

The subscales had moderate to high inter-correlations, moderately-high correlations with PTSD and moderate to low correlations with the measures for family functioning and dyadic adjustment. The IIP assertiveness subscale was not significantly associated with the IIP control subscale, PTSD, or family functioning. All other correlations were significant to the $p < .01$ level or higher.

To determine if level of PTSD, family functioning and dyadic adjustment significantly predicted the level of each of the five IIP subscales, a series of standard multiple regression analyses were undertaken. Table 15 presents the regression coefficients and adj R^2 values for each of the five multiple regression analyses.

Table 15: Regression coefficients (and adj R^2 values) for PTSD, Family Functioning and Dyadic Adjustment regressed on Interpersonal Problem subscales.

	PTSD	Family Functioning	Dyadic Adjustment
Interpersonal Problem Subscales	β	β	β
Sociability (adj R^2 = .583, F(3,548) = 257.54***)	.636***	-.249***	-.055
Independence/Compliance (adj R^2 = .282, F(3,558) = 74.42***)	.390***	-.131**	-.163***
Dyadic Intimacy (adj R^2 = .498, F(3,568) = 189.65***)	.491***	-.206***	-.216***
Assertiveness (adj R^2 = .008, F(3,592) = 2.69*)	-.006	-.032	-.099*
Control/Manipulation (adj R^2 = .276, F(3,589) = 76.29***)	.474***	-.063	-.078

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

PTSD, family functioning and dyadic adjustment all significantly predicted the sociability, independence/compliance and intimacy subscales. In each case PTSD was the strongest predictor accounting for proportionally more variance in each subscale. Dyadic adjustment predicted a significant but relatively small amount of variance in the assertiveness score while PTSD accounted for a significant proportion of the variance in the control/manipulation subscale. High PTSD was associated with higher severity in problems related to sociability, independence/compliance, intimacy and control/manipulation. Higher family functioning, on the other hand, was associated with lower sociability, independence/compliance, intimacy and control/manipulation problems. Higher dyadic adjustment score was associated with lower independence/compliance and assertiveness problem scores.

4.9 Dimensions of PTSD and interpersonal problems

Initial hypotheses stated that specific dimensions of PTSD symptomatology would be differentially related to the various dimensions (subscales) of interpersonal problems and family functioning. Given PTSD was not significantly related to family functioning (section 4.7.2) or dyadic adjustment (section 4.7.3) when entered in controlled regression analyses, investigation of the relationship between dimensions of PTSD symptomatology and family functioning or dyadic adjustment subscales was not warranted.

Further analysis was required, however, to investigate the relationship between the different dimensions of PTSD symptomatology and dimensions of interpersonal problems. First, a principal components analysis was performed on the Mississippi Scale items to identify specific dimensions (components) of PTSD symptomatology. This analysis was undertaken to maintain consistency in the analyses and because although factor structures have previously been reported for the scale there is considerable variation between them (Keane et al., 1988; King & King, 1994; McFall et al., 1990). Mississippi subscale scores were computed by summing scores over all items defined by the components in the principal components analysis. These scores were then correlated with the total interpersonal problems (IIP) score and the five interpersonal problem subscales.

4.9.1 Principal components analysis of the Mississippi Scale

The 35 items of the Mississippi Scale were subjected to a principal components analysis with varimax rotation. The number of components were determined by a combination of eigen values greater than 1.0 (Tabachnick & Fidell, 1989) and

Scree criteria (Cattell, 1988). Items loading at .40 or greater were selected (Tabachnick & Fidell, 1989). Using these criteria a six-component solution was identified and extracted. Table 16 presents Mississippi Scale items with rotated loadings greater than .40. Individual item-correlations and subscale summary information are presented in Appendix X.

The first component accounted for the largest percentage of the overall variance (33%) and was composed of items pertaining to reexperiencing of the trauma. The second component was composed of items measuring symptoms of emotional numbing and avoidance while the third and fourth components included hostility and suicide/depression items respectively. A fifth component consisted of two items pertaining to cognitive functions and an item referring to crying.

The final component was composed of two sleep disturbance items and a guilt item. Item 23 from component 1 also loaded on component three. This item, "I am frightened by my urges" appears to be measuring aspects of both reexperiencing and hostility. Similarly item 08 from component 4 also loaded on component 1. The item, "When I think of some of the things I did in the military, I wish I were dead", is clearly composed of both a reexperiencing and a suicidal dimension. The last three components which consist of only three items each, are less stable the first three components. They were retained in the component solution however, as each of these components correspond to distinct dimensions of PTSD symptomatology. Two items were identified as complex variables, in that they had loadings greater than .40 for two components.

Table 16: Principal components analysis loadings of Mississippi Scale items (Six component solution)

Item	Content[a]	Rotated Loadings 1[b]	2[c]	3[d]	4[e]	5[f]	6[g]
07	Nightmares	.77					
14	Dreams so real, I stay awake	.71					
18	Daydreams frightening	.65					
04	Distressed by reminders	.65					
29	Substance abuse to forget	.60					
28	Things can never tell	.58					
32	Afraid to sleep	.56					
13	Military flashbacks	.55					
12	Wonder why survived	.53					
33	Avoid military reminders	.48					
23	Frightened by urges	.44		.42			
25	Jump at noises	.42					
22	Enjoy company of others [R]		.72				
06	Emotionally close to others [R]		.70				
16	Laugh or cry inappropriately		.61				
09	Have no feelings		.61				
35	Can't express feelings		.59				
30	Comfortable in a crowd [R]		.56				
26	No one understands		.54				
01	Few close friends		.48				
17	Enjoy things that used to [R]		.43				
03	Become violent easily			.71			
31	Lose cool and explode			.69			
27	I am easy going and even-tempered [R]			.59			
05	I make others afraid			.57			
10	Felt like killing myself				.77		
15	Feel can't go on				.71		
08	Wish I were dead	.46			.55		
34	Memory is as good as ever [R]					.76	
20	Trouble concentrating					.56	
21	Cried for no good reason					.40	
11	Sleep well [R]						.74
24	Fall asleep easily [R]						.67
02	Do not feel guilt over things did [R]						.46
Percentage of overall variance		33.9	6.0	4.2	3.8	3.4	3.0

Note. Item 19 is not shown because it did not load on any component above .40.
[a] Item wording has been altered for clarity of presentation
[b] Reexperiencing [c] Numbing [d] Hostility [e] Depression/Suicide [f] Cognitive functioning [g] Sleep
[R] These items were reversed in the original scoring procedure

The Mississippi Scale was derived from DSM-III criteria for PTSD (Keane et al., 1988), however, the component solution which emerged from this analysis corresponds reasonably well to the diagnostic criteria as outlined by DSM-III-R (see table 1). Component 1 relates to symptoms of reexperiencing, component 2 relates to symptoms of avoidance and emotional numbing, while components 3, 5 and 6 were composed of items pertaining primarily to symptoms of increased arousal. Component 4 reflected suicide items which, although not specific PTSD diagnostic criteria, were included in the scale because they have frequently been associated with the disorder in combat veterans (Keane et al., 1988).

4.9.2 PTSD symptomatology and interpersonal problem dimensions

To test the hypothesis that specific dimensions of PTSD symptomatology would have different relationships with different dimensions of interpersonal problems, the six Mississippi subscales were correlated with the total IIP score and each of the five IIP subscales identified in section 4.7. The results of these correlations are presented in Table 17.

Table 17: Correlations of Mississippi subscales with Interpersonal problem (IIP) subscales (N = 573).

	IIP subscales					
Mississippi subscales	**Sociability**	**Independence /Compliance**	**Dyadic Intimacy**	**Assertiveness**	**Control/ Manipulation**	**Total IIP Score**
Reexperiencing	.227***	.240***	.156***	.109**	.233***	.254***
Numbing/ Avoidance	.652***	.246***	.611***	.074	.309***	.549***
Hostility	.193***	.128**	.136***	-.272***	.333***	.169***
Depression/ Suicide	.185***	.201***	.166***	.040	.142***	.202***
Cognitive Functioning	.277***	.312***	.262***	.197***	.205***	.325***
Sleep	.170***	.105**	.124**	.015	.039	.141***

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

All but four of the correlations between the Mississippi subscales and the IIP subscales were significant. Assertiveness problems were not significantly associated with the avoidance/numbing, depression/suicide, or sleep subscales of the Mississippi Scale. Control problems were not significantly associated with the Mississippi Scale sleep subscale. The only negative correlation was between the assertiveness and hostility subscales, with higher scores on the PTSD hostility subscale relating to lower assertiveness problem scores. With the remaining subscales, higher scores on the PTSD subscales were related to higher scores on the interpersonal problem subscales.

4.10 PTSD and concurrent diagnoses

Recent studies have shown that Vietnam War veterans rarely have PTSD as their only diagnosis (Behar, 1987; Green et al., 1990c; Roszell et al., 1991) and that two of the most common co-occurring diagnoses are depression and anxiety (Breslau & Davis, 1987; Green et al., 1989; Helzer et al., 1987). A large proportion of the veterans in the current sample who were identified as PTSD cases, also had moderate to high levels of anxiety (86%) or depression (70%). Depressed and anxious individuals have also been shown to be at risk for poorer interpersonal functioning (Alden & Philips, 1990; Horowitz et al., 1990).

While PTSD was found to significantly predict level of interpersonal problems, this relationship may be affected by the complex nature of PTSD and its high association with concurrent psychiatric diagnoses, in particular, the presence of high levels of anxiety and depression. In the current sample, anxiety and depression were found to be strongly correlated with PTSD, interpersonal

problems and each other. Table 18 presents the correlations between the measures, together with means and standard deviations.

Table 18: Inter-correlations, means and standard deviations of PTSD, Interpersonal Problem, Anxiety and Depression measures (N = 569).

	PTSD	Interpersonal Problems	Anxiety	Depression
Interpersonal Problems	.682***			
Anxiety	.711***	.622***		
Depression	.787***	.683***	.746***	
Mean	73.96	125.98	38.71	8.40
Standard Deviation	19.79	60.94	13.45	7.36

*** $p < .001$

A standard multiple regression analysis was employed to determine if the level of PTSD significantly predicted the level of interpersonal problems when controlling for levels of anxiety and depression. The regression coefficients and adj R^2 values for this equation are given in Table 19. PTSD significantly predicted severity of interpersonal problems in the presence of both anxiety and depression.

Table 19: Regression coefficients (and adj R^2 values) for PTSD, Anxiety and Depression with Interpersonal problems.

Variables	β
PTSD	.326***
Anxiety	.163***
Depression	.304***
adj R^2	(.529***)
F (3, 565) = 214.02 ***	

*** $p < .001$

4.11 PTSD and coping

In order to identify underlying dimensions of coping, the strategies which respondents reported to use when under stress were subjected to a principal components analysis using varimax rotation. The number of components were

determined by a combination of eigen values greater than 1.0 (Tabachnick & Fidell, 1989) and Scree criteria (Cattell, 1988). Items loading at .40 or greater were selected (Tabachnick & Fidell, 1989). Using these criteria an eight-component solution was identified and extracted. Table 20 presents COPE items with rotated loadings greater than .40. Individual item-correlations and subscale summary information are presented in Appendix Y.

Table 20: Principal components analysis of the COPE Scale (Eight component solution)

Item content	Rotated Loadings
Component 1: Active	
I think about how I might best handle the problem	.77
I try to come up with a strategy about what to do	.76
I take additional action to try to get rid of the problem	.74
I think hard about what steps to take	.73
I try to prevent things from interfering with my efforts at dealing with this	.70
I do what has to be done, one step at a time	.70
I make a plan of action	.69
I take direct action to get around the problem	.68
I learn something from the experience	.66
I concentrate my efforts on doing something about it	.66
I try to see it in a different light, to make it seem more positive	.61
I force myself to wait for the right time to do something	.56
I put aside other activities in order to concentrate on this	.55
I look for something good in what is happening	.55
I focus on dealing with this problem and if necessary let other things slide	.54
I keep myself from getting distracted by other thoughts or activities	.53
I accept the reality of the fact that it happened	.50
I make sure not to make matters worse by acting too soon	.48
I try to grow as a person as a result of the experience	.46
Percentage of overall variance	19.90

Table 20 continued...

Item content	Rotated Loadings
Component 2: Support-Seeking	
I talk to someone about how I feel	.78
I discuss my feelings with someone	.76
I try to get emotional support from friends or relatives	.66
I try to get advice from someone about what to do	.65
I get sympathy and understanding from someone	.63
I ask people who have had similar experiences what they did	.62
I talk to someone who could do something concrete about the problem	.62
I talk to someone to find out more about the situation	.59
Percentage of overall variance	11.00
Component 3: Denial	
I pretend that it hasn't really happened	.69
I act as though it hasn't even happened	.69
I refuse to believe that it has happened	.59
I admit to myself that I can't deal with it and quit trying	.59
I just give up trying to reach my goal	.56
I give up the attempt to get what I want	.56
I reduce the amount of effort I'm putting into solving the problem	.51
I say to myself "this isn't real"	.46
I sleep more than usual	.40
Percentage of overall variance	5.70
Component 4: Alcohol/Drug Use	
I try to lose myself for a while by drinking alcohol or taking drugs	.91
I use alcohol or drugs to help me get through it	.89
I drink alcohol or take drugs, in order to think about it less	.89
I use alcohol or drugs to make myself feel better	.88
Percentage of overall variance	5.20
Component 5: Religion	
I seek God's help	.93
I pray more than usual	.90
I put my trust in God	.88
I try to find comfort in my religion	.87
Percentage of overall variance	4.30

Table 20 continued...

Item content	Rotated Loadings
Component 6: Humour	
I make fun of the situation	.82
I make jokes about it	.80
I kid around about it	.75
I laugh about the situation	.65
Percentage of overall variance	3.60
Component 7: Acceptance	
I accept that this has happened and that it can't be changed	.62
I learn to live with it	.61
I get used to the idea that it happened	.61
I hold off doing anything about it until the situation permits	.44
Percentage of overall variance	2.60
Component 8: Venting emotions	
I get upset and let my emotions out	.75
I feel a lot of distress and I find myself expressing those feelings a lot	.68
I get upset and am really aware of it	.66
I let my feelings out	.60
Percentage of overall variance	2.40

The first component is a composite of nineteen items from five of the original COPE subscales (Carver, Scheier & Weintraub, 1989). It includes all items from the planning, active, positive and suppression subscales as well as two restraint items. Generally these items relate to active cognitive or behavioral coping strategies. The second component consists of eight items from the COPE subscales seeking emotional support and seeking instrumental support. Both types of support seeking strategies loaded together on the same component in this solution. The third component consists of nine items which relate to denial and disengagement coping. These include four items from the original COPE denial subscales, four items from the original behavioral disengagement subscales and a single cognitive disengagement item (Carver, Scheier & Weintraub, 1989).

The remaining components; alcohol/drug use, religion, humour, acceptance and venting emotions mirror the original COPE subscales (Carver, Scheier & Weintraub, 1989) although the acceptance component includes three of the original acceptance items and a single restraint item. The restraint item, "I hold off from doing anything about it .." is clearly related to the other items. Only one of the four original mental disengagement items loaded on any component. Three item were identified as complex variables, in that they had loadings greater than .40 for two components. These dual loadings were between factors one and seven (one item) and between factors one and two (two items).

COPE subscale scores were computed by summing scores over items defined by the components in the principal components analysis. These eight subscales were in turn subjected to a principal components analysis with varimax rotation, to identify second-order coping dimensions. The number of components were determined by a combination of eigen values greater than 1.0 (Tabachnick & Fidell, 1989) and Scree criteria (Cattell, 1988). Items loading at .40 or greater were selected (Tabachnick & Fidell, 1989). Using these criteria a three-component solution was identified and extracted. Table 21 presents items with rotated loadings greater than .40.

The data in Table 21 indicate that the eight coping strategies fall into three broad categories. The first includes strategies in which the individual attempts to take direct action (cognitive or behavioural) to deal with the stressor and strategies in which the individual attempts to accept or lessen the impact of the stressor

(for example, through humour). The second category includes strategies in which the individual either denies the existence of the stressor or disengages from attempts to deal with it. The third category comprises strategies relating to seeking support and attempts to meet the individual's emotional needs.

Table 21: Principal component analysis component loadings of COPE subscale items (Three component solution).

	Rotated Loadings		
Subscale items	**Active**	**Denial/ Disengagement**	**Support/ Emotional**
Humour	.77		
Cognitive/Behavioural	.72		.42
Acceptance	.70		
Denial		.82	
Alcohol/Drug use		.78	
Venting Emotions		.44	.70
Support-Seeking	.44		.64
Religion			.62
Percentage of overall variance	29.50	20.60	12.90

To test the hypothesis that PTSD cases will report greater use of emotion-focused coping strategies and less use of problem-focused coping strategies than non-PTSD cases, scores for each of the coping strategies were compared across each group. The mean scores for PTSD cases and non-cases for each coping strategy are presented in Table 22.

PTSD cases used a number of coping strategies at a significantly higher level than did non-cases, including strategies related to denial/disengagement but also included acceptance and venting emotions. These strategies are primarily emotion-focused strategies. PTSD cases and non-cases did not differ on the reported use of problem-focused coping strategies (active and support-seeking).

Table 22: Mean scores on coping strategies fro PTSD cases and non-cases.

COPE variable	PTSD Case	Non-Case	F
Active			
Humour	7.01	7.47	1.76
Cognitive/Behavioral	47.58	48.09	.10
Acceptance	11.06	9.63	15.30***
Denial/Disengagement			
Denial	15.50	11.66	63.94***
Alcohol/Drug Use	8.94	5.23	119.95***
Support/Emotions			
Venting Emotions	9.35	7.34	37.72***
Support-seeking	14.44	15.22	1.27
Religion	6.25	5.76	1.45
Total COPE Score	131.26	120.02	16.21***

*** $p < .001$
Ns vary: PTSD case, 65-69; non-case, 626-652

These results suggest that coping strategies may influence the relationship between PTSD and interpersonal problems. A standard regression analysis was employed to investigate whether level of PTSD significantly predicted severity of interpersonal problems when controlling for coping. For the purposes of this analysis, second-order subscale scores were computed by summing the scores for contributing first-order subscale items identified by the previous principal components analysis (Table 21). The regression coefficients and adj R^2 value for this analysis are presented in Table 23.

PTSD accounted for a relatively high proportion of the variance in level of interpersonal problems. Increased interpersonal problem severity was predicted by increased PTSD, increased denial/disengagement coping scores and lower support-seeking/emotional coping scores.

Table 23: Regression coefficients (and adj R^2 value) for PTSD and second-order COPE subscales, with interpersonal problems.

Variables	β
PTSD	.615***
Active coping	.042
Denial/Disengagement coping	.126***
Support/Emotional coping	-.130***
adj R^2	(.471***)
F(4, 538) = 121.42 ***	

*** $p < .001$

To investigate the relationship between coping and interpersonal problems further, the eight COPE subscales (Table 20) were correlated with the total interpersonal problems score and each of the five interpersonal problem subscales identified in section 4.7. The results of these correlations are presented in Table 24. The coping subscales are grouped according to the second-order categories.

There were a number of significant relationships between IIP subscales and COPE subscales. The clearest associations were related to the denial/disengagement coping subscales. Two coping subscales, denial and acceptance, were correlated significantly with the IIP total score and all IIP subscales. Two additional subscales, alcohol/drug use and venting emotions, were significantly related to the IIP total score and all IIP subscales with the exception of assertiveness.

Two of the IIP subscales, sociability and dyadic intimacy, were related to all COPE subscales with the exception of religion. The total IIP score was associated with most COPE subscales except humour and religion, with higher

interpersonal problem severity being related to higher scores on acceptance, denial, drug/alcohol use and venting emotions and lower scores on cognitive/behavioral and support-seeking subscales. The total COPE score, however, was associated with only 2 IIP subscales; independence/compliance and control/manipulation.

Table 24: Correlations of COPE subscales with Interpersonal problem (IIP) subscales (N = 549).

	IIP Subscales					
COPE subscales	**Sociability**	**Independence/ Compliance**	**Dyadic Intimacy**	**Assertiveness**	**Control/ Manipulation**	**Total IIP Score**
Active						
Humour	-.122**	.053	-.139***	.085	.064	-.047
Cognitive/ behavioral	-.166***	-.023	-.120**	-.011	-.085	-.117**
Acceptance	.233***	.254***	.207***	.166***	.162***	.268***
Denial/ Disengagement						
Denial	.458***	.392***	.373***	.150***	.423***	.475***
Alcohol/drug use	.258***	.228***	.199***	.045	.245***	.268***
Support/ Emotional						
Venting emotions	.204***	.280***	.109**	-.004	.302***	.227***
Support-seeking	-.230***	-.036	-.316***	-.066	-.014	-.196***
Religion	.029	.141***	-.014	.151***	-.028	.061
Total COPE score	.053	.218***	.006	.087	.153***	.119**

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

4.12 Chapter summary

These results reveal that PTSD is significantly associated with severity of interpersonal problems. When entered in a series of controlled multiple regression analyses, PTSD was not significantly related to either family functioning or dyadic adjustment. Subsequent analyses revealed that the

relationship between PTSD and family functioning was partially mediated by dyadic adjustment and fully mediated by interpersonal problems. Similarly, it was found that the effect of PTSD on dyadic adjustment was partially mediated by family functioning and fully mediated by interpersonal problems.

A series of principal components analyses were then undertaken to explore the underlying dimensions of the interpersonal functioning measures as reported by these veterans and to examine the degree to which the original scale structures were replicated in the sample. The component solutions generated by the analyses differed in significant ways from most of the original subscales. To maintain consistency throughout the remaining analyses, subscale scores for each measure were computed in the same manner by summing scores across items defining the identified components from the principal components analyses. A principal components analysis of the IIP generated a five-component solution. Nine components were generated from a principal components analysis of the BLOOM items and a two-component solution was generated from a principal components analysis of the DAS.

When interpersonal problems were considered as five dimensions it was found that, with the exception of assertiveness, the IIP subscales were significantly associated with each other as well as with PTSD, family functioning and dyadic adjustment. Through a series of standard multiple regression analyses it was found that PTSD, family functioning and dyadic adjustment significantly predicted scores on the subscales of sociability, independence/compliance and dyadic intimacy. PTSD was the strongest predictor in each case. PTSD was also a

significant predictor of the control/manipulation subscale, while assertiveness problems were predicted by dyadic adjustment.

In order to test the hypothesis that interpersonal subscales would be related to specific dimensions of PTSD, a principal components analysis was conducted on the Mississippi Scale items. This analysis produced six components which corresponded to the diagnostic criteria of PTSD as outlined by DSM-III-R (APA, 1987). All but four of the correlations between the IIP subscales and Mississippi subscales were significant.

In a test of the relationship between PTSD and interpersonal problems, when controlling for the effect of anxiety and depression, PTSD was found to be significantly associated with severity of interpersonal problems in the presence of both the these concurrent diagnoses. When entered in a standard multiple regression analyses, in the presence of anxiety and depression, PTSD was the strongest predictor of interpersonal problem severity.

Finally the influence of coping strategy on the relationship between PTSD and interpersonal functioning was considered. A principal components analysis of the COPE scale produced a eight-component solution. A principal components analysis of the resulting subscale scores produced three second-order dimensions of coping. A number of the COPE subscales were found to be significantly associated with interpersonal problem severity and/or the interpersonal problem subscale scores. PTSD cases and non-cases were also compared across each of the coping subscales and it was found that PTSD cases used a number of

coping strategies at a higher level than non-cases. These strategies related primarily to denial/disengagement coping. In the final analysis, it was revealed that PTSD and denial/disengagement coping and support/emotional coping predicted interpersonal problem severity. PTSD, however, accounted for the greatest proportion of variance in level of interpersonal problems. The implications of these findings are addressed in the following chapter.

Chapter contents

5.1 Chapter overview

Despite debate over the relative importance of premilitary, combat and postmilitary factors in the development of PTSD in veterans, there is a general consensus that PTSD is a significant long-term outcome of combat exposure for a substantial number of Vietnam veterans (Boulanger & Kadushin, 1986; Buydens-Branchey et al., 1990; Cordray et al., 1992; Foy & Card, 1987; Frye & Stockton 1982; Green et al., 1990; Penk et al., 1981). It is also apparent that these veterans are at risk of developing other mental health disorders, physical health problems, or social adjustment difficulties (Breslau & Davis, 1987b; Green et al., 1990c; Jordon et al., 1991; Kulka et al., 1990).

Previous research has tended to focus on the relationship between PTSD and concurrent psychiatric and physical health symptoms. Few studies have closely examined the impact of PTSD on the interpersonal functioning of combat veterans. It is apparent, however, that veterans with PTSD do experience a range of interpersonal difficulties. These difficulties include poor relationship adjustment, including difficulties with emotional expressiveness, aggression and intimacy (Carroll et al., 1985; Roberts et al., 1982; Streimer, Cosstick & Tennant, 1985) as well as poor marital and family adjustment (Jordon et al., 1992; Solomon et al., 1987).

These findings appear to be consistent with several of the DSM-III-R diagnostic criteria for PTSD which suggest that the disorder is likely to impact on interpersonal functioning. These criteria include, diminished interest in significant activities, feelings of estrangement or detachment, a restricted range of affect

and irritability or outbursts of anger (section 1.3). The manual also states that interference with interpersonal relationships, such as marriage or family life, are a possible complication arising from the phobic avoidance of situations that resemble or symbolize the original trauma (American Psychiatric Association, 1987). The significance of these wider social and interpersonal effects of PTSD are acknowledged in the recently published DSM-IV which includes a new criterion (F) stating that "the disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning" (American Psychiatric Association, 1994).

Veterans with PTSD also appear to differ from those without the disorder in terms of general coping styles. Research has shown that combat veterans with PTSD are more likely to utilise emotion-focused coping strategies and less likely to use problem-focused coping strategies than those without PTSD (Nezu & Carnevale, 1987; Solomon, Mikulincer & Avitzur, 1988; Solomon, Mikulincer, & Flum, 1988; Solomon, Mikulincer & Waysman, 1991).

Combat veterans must function in a social world which includes their immediate family environment, their work environment and the wider community to which they belong. Effective social functioning requires a number of social and interpersonal abilities which are frequently taken for granted. For veterans with PTSD however, the ability to interact successfully with others may be severely impaired. The wide range of concurrent mental health and social adjustment problems reported by these veterans also supports this view. It is the aim of the current research to further investigate the association between PTSD and

interpersonal difficulties as reported by Vietnam War veterans because of the importance of effective interpersonal functioning in the psychological adjustment of veterans. This study also examines the relationship between PTSD, coping and interpersonal functioning in the veterans.

In the following section the prevalence of PTSD reported in this sample is discussed before the results of the study are considered in relation to the degree to which they support the hypotheses stated in chapter two. The chapter then proceeds to a discussion of a number of methodological issues raised by the study, the theoretical implications of the current findings and recommendations for future research.

5.2 PTSD prevalence

The reported PTSD prevalence rates for combat veterans vary considerably with much of the variation being attributable to the nature of samples, methodologies and assessment instruments used. The current study used the Mississippi Scale for combat-related PTSD to assess the level of the disorder in a community sample of Vietnam War veterans. Although it is acknowledged that the optimal approach to the assessment of PTSD is to use a multiaxial approach (Keane et al., 1988; McFall et al., 1990), the Mississippi Scale has been shown to be a reliable and valid instrument for the identification of combat-related post-traumatic stress disorder symptoms in Vietnam combat veterans (Watson, 1990; Watson et al., 1994).

There has been some debate as to where the cut-off score should be set in order to define PTSD caseness with this scale, with Keane et al. (1988), McFall et al. (1990) and Schlenger and Kulka, (1987) employing scores of 107, 100 and 94 respectively in combat veteran samples. Using the cutoff of 102 suggested by Watson (1990) as the most useful in a non-psychiatric setting, 9% of the sample were identified as PTSD cases. A lower cut-off of 94 identified 18% of the sample as PTSD cases.

Most analyses undertaken in the current study utilised the Mississippi Scale scores as a continuous measure of PTSD symptomatology, rather than using the score to define PTSD caseness. However the prevalence rates reported here do show that the prevalence of current PTSD in this sample is comparable to previously reported current prevalence rates for community samples of Vietnam veterans which range from 12% to 19% (Card, 1987; Centers for Disease Control, 1988a; Goldberg, True, Eisen et al., 1990; Green, Grace, Lindy et al., 1990a; Kulka, Schlenger, Fairbank et al., 1990; Long, Chamberlain & Vincent, 1992). The rates obtained in the current sample are lower than those reported for veterans with high combat exposure and for clinical samples of veterans. Rates for these groups range from 25% to 70% (Blake, Keane, Wine et al., 1989; Breslau & Davis, 1987; Foy et al., 1987; Green et al., 1990a; Keane et al., 1988; Kulka et al., 1990). As expected from a community sample, the rates reported in this study are also lower than that reported by Keane et al. (1988) who used the Mississippi Scale with a cutoff score of 107 and identified 33% of a clinical sample of veterans as PTSD cases. The current study supports the

use of the Mississippi Scale as a valid measure for the identification of PTSD in Vietnam combat veterans.

5.3 Degree of support for hypotheses and comparison of results with previous research findings

5.3.1 PTSD and interpersonal functioning

The first three hypotheses evaluated the degree to which level of PTSD is associated with three facets of interpersonal functioning; interpersonal problems, family functioning and dyadic adjustment. Throughout this chapter the term *level* is used to refer to the degree or magnitude of a given variable, not to the prevalence or incidence of the variable. The analyses relating to these hypotheses utilised continuous scores of PTSD and each of the interpersonal functioning variables. Further hypotheses relating to subscales of these measures are discussed in subsequent sections of this chapter. In this section the hypotheses pertaining to the relationship between PTSD and interpersonal problems, family functioning and dyadic adjustment are considered separately. This is followed by a discussion of a set of hypotheses which were generated as a consequence of the first set of results and which seek to clarify to the relationship between the three key variables included in hypotheses 1 to 3 (Section 5.3.1.1).

Hypothesis 1: That increased level of PTSD will be significantly related to increased severity of interpersonal problems in Vietnam War veterans.

The results presented in Section 4.6.1 support this hypothesis and indicate that increased level of PTSD is significantly related to increased severity of interpersonal problems. In the analysis PTSD was a joint predictor of interpersonal problem severity, together with level of family functioning and dyadic adjustment.

This result is consistent with previous research showing that some Vietnam veterans, especially those with PTSD, report a range of interpersonal adjustment problems. In an Australian sample of Vietnam veteran inpatients, almost one-third reported having severe problems in interpersonal relationships (Streimer, Cosstick & Tennant, 1985). In a sample of Israeli combat veterans, Solomon and Mikulincer (1987b) found that combat veterans with PTSD, compared to non-PTSD veterans, reported more problems related to their social, sexual, family and work functioning. Sociability problems, such as social isolation or conflict and difficulties with emotional expressiveness, have also been reported by Vietnam combat veterans (Egendorf et al., 1981; Penk et al., 1981; Wilson, 1978).

Interpersonal problems have not been the primary focus of these studies and Roberts et al. (1982) is the only study which has been concerned specifically with interpersonal problems of veterans. Roberts et al. examined the veterans' responses on the basis of PTSD caseness and found that PTSD veterans scored significantly higher on clusters of problems dealing with intimacy and sociability. The current study extends this previous research by utilising the measures of PTSD and interpersonal problems as continuous scores and by examining the degree to which level of PTSD predicts level of interpersonal problems. In

addition to establishing that level of PTSD significantly predicted severity of interpersonal problems, the current study also examined the types of interpersonal problems reported by the veterans and the results of those analyses are discussed in Section 5.3.2.

Hypothesis 2: That increased level of PTSD will be significantly related to decreased level of family functioning in Vietnam War veterans.

The results presented in Section 4.6.2 show that although PTSD was significantly correlated with family functioning, it failed to predict the level of this measure when entered in a controlled multiple regression analysis. Level of family functioning was significantly predicted by interpersonal problems, dyadic adjustment, ethnicity and to a lesser degree, by combat exposure and income. In the presence of these variables level of PTSD was not significantly related to level of family functioning. This result suggests that level of PTSD and level of family functioning have a indirect rather than direct relationship. This proposition is explored more fully in Section 5.3.1.1.

These results do not support hypothesis 2 and are inconsistent with previous studies which have reported a significant association between PTSD and family functioning in veterans (Jordon et al., 1992; Solomon et al., 1987). In a community study of Vietnam veteran families Jordon et al. (1992) reported that families of veterans with PTSD had severe adjustment problems, including family violence, behavioral problems in children and high levels of nonspecific distress. Among Israeli families of PTSD veterans, Solomon et al. (1987) reported high levels of problems associated with expressiveness, cohesiveness and conflict.

Neither the Jordon et al. (1992) or Solomon et al. (1987) studies attempted to control for the effects of potential confounding variables. The current study extends the previous work by utilising controlled regression analyses to examine the relationship between PTSD and family functioning more closely and by showing that the relationship between PTSD and family functioning may be more complex than previously suggested.

Hypothesis 3: That increased level of PTSD will be significantly related to decreased level of marital/dyadic adjustment in Vietnam War veterans.

A number of studies have shown that veterans with PTSD are likely to report elevated levels of marital adjustment problems (Jordon et al., 1992; Solomon et al., 1991; Verbosky & Ryan, 1988). Results from a community study of Vietnam veteran families (Jordon et al., 1992) indicate that PTSD was associated with elevated levels of family violence and decreased levels of marital adjustment. In a sample of treatment-seeking veterans, Carroll et al. (1985) found that veterans with PTSD reported more problems in the dyadic relationship relating to self-disclosure, expressiveness and physical aggression. Solomon et al. (1987) found that among Israeli combat veterans, married soldiers had higher rates of PTSD than unmarried soldiers and higher rates of PTSD were associated with low expressiveness, low cohesiveness and high conflict in the PTSD veterans' families.

Apart from the Verbosky and Ryan (1988) study which presented retrospective, descriptive data from a small group (23) of women, the focus of these previous studies was a comparison of PTSD and non-PTSD groups across a range of

marital adjustment measures. The studies did not attempt to control for the effects of potential confounding variables.

The current study attempted to remedy this weakness by again utilising a controlled regression analysis in a similar manner to that adopted for hypothesis 2. The results from the current study (Section 4.6.3) show that although level of PTSD was significantly correlated with level of dyadic adjustment (Section 4.4), PTSD did not predict level of dyadic adjustment when entered in a controlled regression analysis. Level of dyadic adjustment was predicted by level of interpersonal problems and level of family functioning.

This finding is consistent with findings from Australian studies of Vietnam veterans which failed to demonstrate a significant relationship between PTSD and marital disruption or marital stability (Boman, 1985; 1986). The finding also suggests that level of PTSD has an indirect rather than direct effect on dyadic adjustment. Subsequent analyses which tested this proposition are discussed in Section 5.3.1.1.

5.3.1.1 Mediating relationships

The first three hypotheses in this study were concerned with the relationship between PTSD and interpersonal functioning as represented by scores on three separate measures. The only dimension of interpersonal functioning significantly predicted by level of PTSD was interpersonal problems, with increased interpersonal problem severity being related to increased PTSD. Although PTSD was significantly correlated with both family functioning and dyadic adjustment,

PTSD failed to predict the level of either measure when entered in controlled regression analyses.

These findings are inconsistent with findings from previous research which investigated how PTSD relates to family functioning and dyadic adjustment by comparing the types of family and dyadic problems reported by PTSD veterans with reports from other control groups. Further analyses were required to account for why PTSD failed to predict family functioning and dyadic adjustment in the current sample. In response to the findings from the initial analyses, further hypotheses were generated to investigate whether PTSD was related to family functioning and dyadic adjustment through one or more mediating variables. It was hypothesised that:

a) interpersonal problems mediate between PTSD and family functioning

b) dyadic adjustment mediates between PTSD and family functioning

and that:

c) interpersonal problems mediate between PTSD and dyadic adjustment

d) family functioning mediates between PTSD and dyadic adjustment.

Tests of these hypotheses (Section 4.6.4) show that the effect of PTSD on family functioning was partially mediated by dyadic adjustment and entirely mediated by interpersonal problems. Similarly, it was found that the effect of PTSD on dyadic adjustment was partially mediated by family functioning and entirely mediated by interpersonal problems. These results extend previous research findings which demonstrate significant relationships between PTSD and levels of both family functioning and dyadic adjustment (Carroll et al., 1985; Jordon et al., 1992; Solomon et al., 1987; 1991) by suggesting that these

relationships are more complex than has been previously indicated and that correlational approaches are not sensitive to mediating effects of variables.

The results of the mediating analyses (Section 4.6.4) suggest that increased PTSD gives rise to increased interpersonal problem severity which is manifested in decreased family functioning and decreased dyadic adjustment and the latter are themselves interrelated. This model is presented diagrammatically in Figure 3.

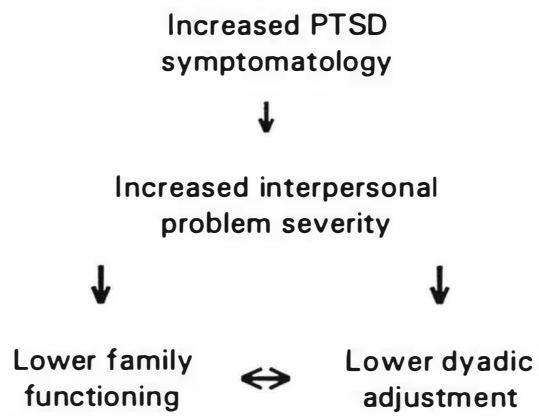


Figure 3: Relationship between PTSD, interpersonal problems, family functioning and dyadic adjustment

It may be useful to consider the three interpersonal functioning measures utilised here as two tiers of interpersonal functioning. Interpersonal problems refer to the difficulties individuals encounter in establishing and maintaining interpersonal relationships at a global or general level. These difficulties refer to all interpersonal interactions where as the measures of family functioning and dyadic adjustment may be seen as a second-tier of interpersonal functioning referring to interpersonal functioning in specific domains. Findings reported by Solomon and Mikulincer (1987b) showing an association between PTSD and a decline in

postwar employment functioning would suggest that employment-related interpersonal relationships might be another specific domain which would be encompassed by this second tier of interpersonal functioning.

In the current study the measures of interpersonal problems, family functioning and dyadic adjustment were significantly inter-correlated. It is possible, therefore, that there is a degree of overlap in measurement which accounts for some of the mediation effect. This may be particularly so for family functioning and dyadic adjustment. These measures assess aspects of interpersonal relationships which relate specifically to the family/marital situation of the respondent. The interpersonal problem measure, on the other hand, deals with broader, more general problems in establishing and maintaining interpersonal relationships. The potential overlap between this measure and those of family functioning and dyadic adjustment should be limited.

It is clear from the results of the first set of analyses (Sections 4.6) that in terms of the relationship between interpersonal functioning and PTSD, interpersonal problems play a significant role. Given most of the global measures utilised in these analyses consist of a number of components or subscales, an examination of how these subscales relate to one another is necessary for a clearer understanding of the relationships identified. The degree to which level of PTSD predicts subscales of interpersonal problems is examined in the following section (5.3.2). The relationship between PTSD subscales and interpersonal problem subscales is considered in section 5.3.3.

The measures used in the current study to assess interpersonal problems, family functioning, dyadic adjustment and coping, have not been widely used in this field of research. Before further analyses could be undertaken, it was necessary to investigate the underlying dimensions of the scales as reported by the veterans in this sample and to examine the degree to which the original scale structures were replicated. Each scale was therefore subjected to a principal components analysis. Given the importance of the assessment of PTSD in this study and because there have been a number of differing factor solutions reported for the Mississippi Scale, this scale was also subjected to a principal components analysis. The component solutions generated by these analyses differed in significant ways from most of the original subscales. These differences are discussed in Section 5.3.1.2.

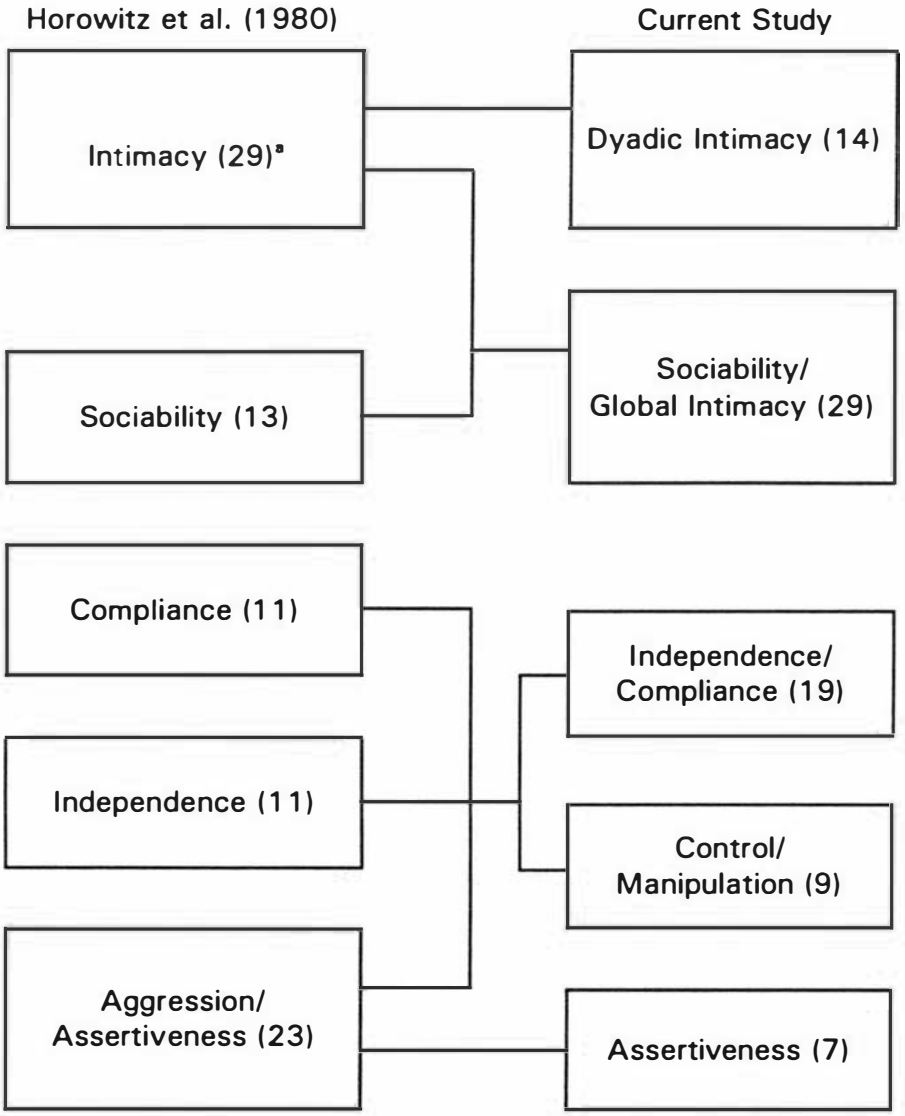
5.3.1.2 Principal components analyses

Interpersonal problems: The 87-item version of the IIP includes five subscales; aggression/assertiveness, compliance, intimacy, independence and sociability (Horowitz, French, Gani & Lapid, 1980). This structure differs in a number of respects from the component solution which emerged in the current analysis. The original intimacy items loaded as two distinct components. Items relating to difficulties maintaining a close intimate relationship loaded together to form a dyadic intimacy component. Most of the remaining intimacy items loaded with an almost equal number of sociability items to form the basis of a component reflecting difficulties with initiating and maintaining social interaction and intimacy on a global rather than a dyadic level.

Only one-third of the original aggression/assertiveness items loaded together as a distinct component. These items reflect difficulties expressing feelings or behaving in ways which are contrary to the wishes or feelings of others, particularly when feelings of anger or conflict are involved. The remaining assertiveness items loaded with original compliance and independence items together into two distinct components. The common theme in the first of these reflects difficulties maintaining a sense of independence from others and the need to comply with the wishes of others in the pursuit of social acceptance. The remaining component consists of items relating to the desire to control, manipulate, or criticise others.

A summary of the comparison between the current component solution and the subscales proposed by Horowitz et al. (1980) is depicted in Figure 4. Although the component solution identified in this study differs from the original subscales proposed by Horowitz et al. (1980), the solution is meaningful. Subscale summary information, presented in Appendix U, shows that the subscales meet satisfactory internal consistency requirements (Nunnally, 1978).

The manner in which the items have clustered together in the current components does have a degree of correspondence with the Horowitz et al. (1980) subscales in that each broad category of interpersonal difficulty represented by those subscales are reflected by the current components. Although these broad categories of interpersonal difficulties are represented by a different combination of items in the current study, the original sense and intention of the inventory is not lost.



* Number of items in subscale

Figure 4: Summary of comparison between IIP (Horowitz et al., 1980) subscales and components from the current study

Partial explanation of the differences between the current component solution and original inventory structure may lie in the current sample. The IIP was developed to assist patients and therapists to identify interpersonal sources of stress (Horowitz et al., 1988) and has generally been used in psychotherapy settings (Horowitz et al., 1989; 1993) and tested on American university samples (Horowitz et al., 1980). Although Roberts et al. (1982) used the IIP

with Vietnam veterans, the sample consisted of veterans in treatment for substance abuse. The veterans in the current sample represent an at-risk group of middle-aged males from the community. The response from this group may well differ in significant ways from samples of younger American university students (Horowitz et al., 1980), treatment-seeking veterans (Roberts et al., 1982) and psychotherapy outpatients (Horowitz et al., 1988).

Family Functioning: The current study identified a nine-component solution for the family functioning scale as opposed to the original 15 subscale structure presented by Bloom (1985). Four of the components consist of a composite of items from one or more of the original subscales, while the remaining five components are similar if not identical to Bloom's (1985) subscales.

The largest and most complex component is a composite of all the items from the original cohesion, expressiveness and family idealisation subscales and miscellaneous items from other subscales. Together these items reflect the degree to which family members relate to each other and the extent to which members feel that they are an important part of the family.

The family activities component also consists of items from two of the original subscales, intellectual-cultural orientation and active-recreational orientation. This component reflects the degree to which the family and it's members engage in recreational or intellectual-cultural pursuits. In this sample there appears to be a distinction between the degree of involvement in activities, but not the type of activity.

In the original scale structure Bloom (1985) also differentiated between three styles of family interaction; democratic, laissez-faire and authoritarian. This distinction was not replicated in the current study. The discipline style component identified in this sample consisted of items from each of the original style subscales and reflected the characteristic style governing the making and enforcement of rules and punishment in the event of failure to adhere to those rules.

A number of components; enmeshment, organisation, sociability, religion and conflict, mirror those in Bloom's (1985) original structure, with the addition or omission of one of two items in some cases. The final component consists of three items. Two of the items relate to the degree of independence in the activities of family members and the third relates to a consequent lack of consistency, or flexibility in family rules.

A summary of the comparison between the original subscales established by Bloom (1985) and the current component solution is depicted in Figure 5. The figure shows that half of the components identified in the current study replicate Bloom's (1985) original subscales. The remaining components are composites of the Bloom subscales. At first glance it may appear that these remaining components differ dramatically from the original subscales. The component solution does, however, correspond to broader dimensions of family functioning which have been proposed by Moos (1974) and elaborated by Bloom (1985). Moos (1974) suggested that family functioning can be considered in terms of

three major dimensions; the relationship dimension, the personal growth dimension and the system maintenance dimension.

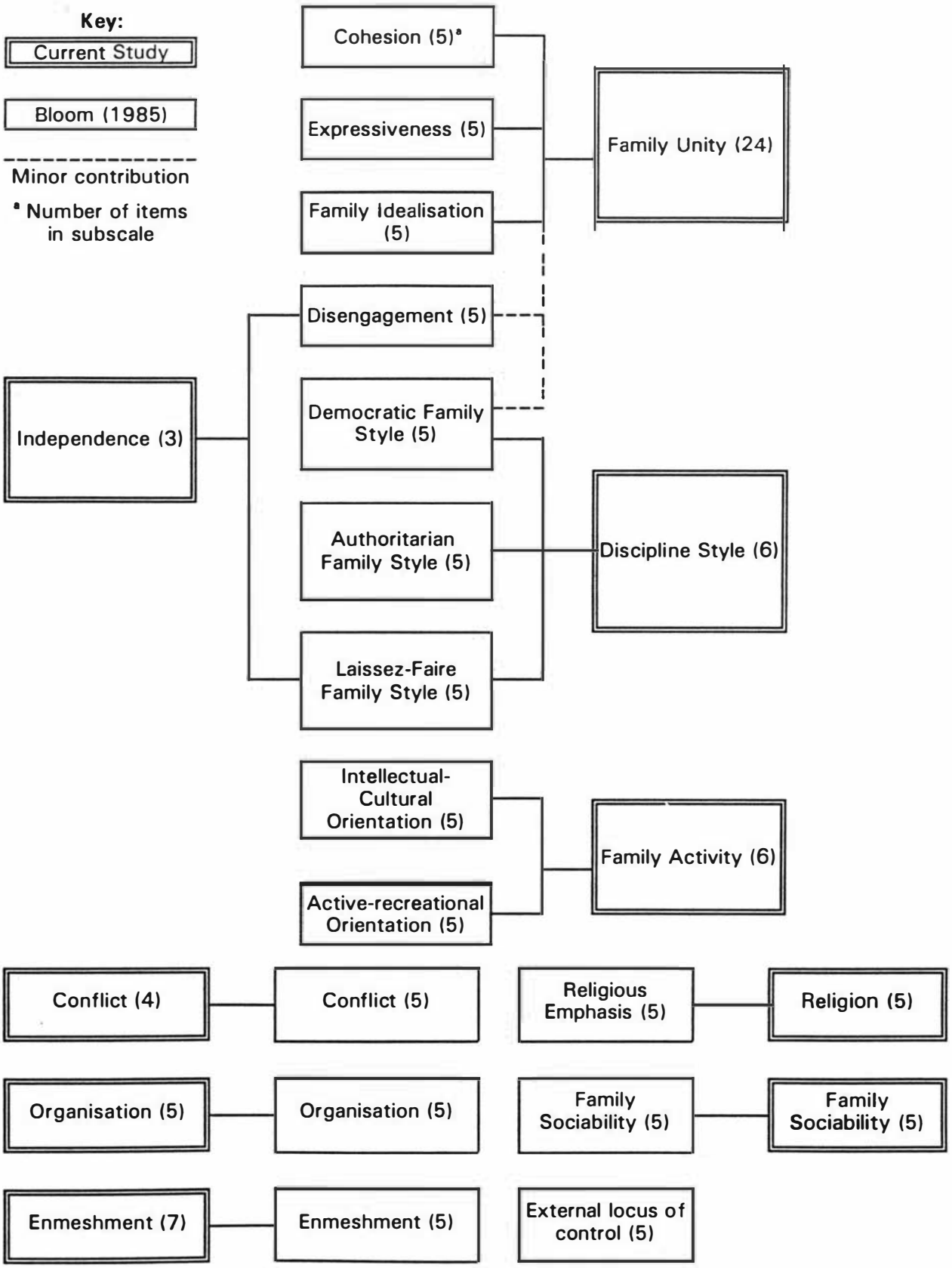


Figure 5: Summary of comparison between Bloom (1985) Family Functioning subscales and components from the current study

The relationship dimension in the Bloom (1985) study was comprised of six components cohesion, expressiveness, idealisation, disengagement, conflict and sociability. The family unity component in the current study is comprised of items from four of these components, with the conflict and sociability components remaining independent. In Bloom's (1985) results the personal growth dimension appeared to comprise a set of value orientations and consisted of three components, intellectual-cultural orientation, active-recreational orientation and religious emphasis. While religious emphasis items loaded as a distinct component in the current study, items pertaining to intellectual-cultural orientation and active-recreational orientation formed a single family activity style. In the Bloom study the system maintenance dimension was comprised of six components; organisation, enmeshment, external locus of control and the three family style components. In the current study items from the three family style components loaded together as a single discipline style component, with organisation and enmeshment items loading independently. In the current study external locus of control items did not load together.

Overall, while there are significant differences between the Bloom (1985) and the current study in the way in which individual items loaded on components, there is a degree of replication in terms of broad dimensions of family functioning. Comparisons between these studies must be regarded as tentative, however, as there are fundamental differences between the studies. The purpose of Bloom's (1985) study was to develop and validate a scale for the assessment of family functioning. The subjects in that study comprised North American male and female college undergraduates and they only received family functioning scales.

In the current study the Bloom Family Functioning Scale was included in a large questionnaire which assessed a range of mental health and coping outcomes. The sample in the current study consisted of male Vietnam War veterans and while not a clinical sample, can be considered as an "at risk" sample. It is plausible that these male, middle-aged veterans of combat, most with families of their own (Section 4.3.1), will respond to questions about perceptions of family functioning in different ways than would a sample comprised of both male and female college undergraduates who would tend to be relatively young and single.

Although in the current study subscales for the Bloom Family Functioning Scale were computed on the basis of the principal components analysis, these subscales were not utilised in subsequent analyses. Analyses involving family functioning utilised continuous scores of the measure and reliability analyses (Table 1) show that the scale meets satisfactory internal consistency requirements (Nunnally, 1978). While the differences between the current component solution and the original subscale structure may warrant closer investigation in the future, they should not have major ramifications for the results presented here.

Dyadic Adjustment The psychometric properties of the Dyadic Adjustment Scale (Spanier, 1976), in particular the degree of support for a four-factor structure, has been the matter of consistent debate (Kazak, Jarmas, & Snitzer, 1988; Spanier, 1976; Spanier & Thompson, 1982; Sharpley & Cross, 1982). Sharpley and Cross (1982) factor analysed the full scale and revealed a single underlying

adjustment dimension. These results were corroborated by Kazak et al. (1988) who reported only weak support for four subscales and strong support for a single factor. The six DAS items used in this study were identified by Sharpley and Cross (1982) as giving a confident classification of level of dyadic adjustment. A principal components analyses of the six items in the current study failed to confirm the single global factor. In this sample the consensus items and the cohesion items loaded on two distinct components. While the Sharpley and Cross (1982) and Kazak et al. (1988) studies support the existence of a single global factor of dyadic adjustment, as opposed to a number of subscales, neither of the studies reported factor analysis results of the subsequent six-item version. As these six items were drawn equally from two of the original subscales, it is perhaps not surprising that they have loaded as distinct components in the current analysis. This result does not pose problems for analyses involving the measure in the current sample, as all analyses including this measure utilised continuous scores and not subscale scores and reliability analyses (Table 1) show that the scale meets satisfactory internal consistency requirements (Nunnally, 1978).

Coping: Previous factor analyses of the COPE inventory (Carver, Scheier & Weintraub, 1989) are not available for comparison. There are notable differences, however, between the original subscale structure proposed by Carver et al. (1989) and the component solution identified in this study.

The largest component is a composite of items from five of the original COPE subscales, including all items from the planning, active, positive and suppression

subscales as well as two restraint items. The uniting theme of these items is that they relate to active cognitive or behavioral coping. In the original structure a distinction was drawn between strategies aimed at seeking instrumental support and those seeking emotional support. The distinction was not supported by the current component solution which saw both types of support-seeking strategies loading together on a single component. In the current analysis items from the original denial and behavioral disengagement subscales also loaded together in a denial/disengagement component. Given denial/disengagement behaviours are included amongst the cardinal diagnostic criteria for PTSD, it is perhaps not surprising that they have loaded together in a sample of combat veterans, 18% of whom report severe PTSD symptomatology. Each of the remaining components; alcohol/drug use, religion, humour, acceptance and venting emotions mirror the original COPE subscales (Carver, Scheier & Weintraub, 1989). Subscale summary information, presented in Appendix X, show that the subscales meet satisfactory internal consistency requirements (Nunnally, 1978).

Post-traumatic Stress Disorder: The components derived from the current analysis differ from those described by King and King (1993), Keane et al. (1988) and McFall et al. (1990), although some similarities emerged. The dimensionality of PTSD was evaluated in a recent study by King and King (1993) who concluded that as measured by the Mississippi Scale, PTSD is a unidimensional construct. As the methodology utilised in that study differs from those reported in the present and earlier studies (Keane et al., 1988; McFall et al., 1990), the results are not directly comparable.

Keane et al. (1988) generated a six-factor solution, the first factor of which included both reexperiencing and depressive symptoms. These symptoms emerged in separate components in the current analysis. Keane identified an interpersonal adjustment problem factor which included five of the 9 items in the numbing/avoidance component from the current solution. Keane's sleep factor is similar to the current component six which includes a guilt item in addition to two sleep items.

McFall (1990) presented a three-factor model, the first factor of which appears to be a composite of intrusive reexperiencing and numbing-avoidance items. The remaining two smaller factors relate to anger and lability items and symptoms of social alienation. In the current solution the reexperiencing items and numbing-avoidance items emerged in separate components, as did the hostility items which were embedded in McFall's second anger/lability factor. The analyses by McFall (1990) and Keane (1988) did not produce clear suicidal or cognitive functioning component which emerged in the current analysis.

The component solution identified in this study has reasonable correspondence with the diagnostic criteria as outlined by DSM-III-R (see Table 1), despite the fact that the scale was developed using the criteria defined in DSM-III (Keane et al., 1988). Components one and two reflect symptoms of reexperiencing and symptoms of avoidance and emotional numbing respectively. The items in components three, five, and six are related primarily to symptoms of increased arousal. The suicide items in component four were included in the scale because, although not a DSM-III-R criteria, they were believed to reflect a

condition frequently reported with combat veterans (Keane et al., 1988). The subscales also meet satisfactory internal consistency requirements (Nunnally, 1978). Subscale summary information is presented in Appendix Y.

5.3.2 Predicting specific types of interpersonal problems

The focus of much of the previous work on interpersonal functioning in combat veterans has been the identification of specific types of interpersonal problems (Carroll et al., 1985; Roberts et al., 1982; Solomon et al., 1987). The aim of the second set of hypotheses in this study was to investigate the degree to which PTSD is related to types of interpersonal problems (hypothesis 4) and types of family functioning problems (hypothesis 5).

Hypothesis 4: That increased level of PTSD will be significantly associated with interpersonal problems relating to intimacy difficulties and sociability difficulties.

The IIP has been used as a measure of interpersonal problems in previous research with Vietnam veterans in which PTSD veterans, compared to those without the disorder, reported more interpersonal problems related to intimacy difficulties and sociability difficulties (Roberts et al., 1982). In contrast, results from the current sample (Section 4.8) show that PTSD was associated with four of the five IIP subscales. In this sample increased PTSD significantly predicted increased interpersonal problems relating to sociability difficulties, independence/compliance difficulties, dyadic intimacy difficulties and control/manipulation difficulties. PTSD was not significantly associated with the assertiveness problems subscale. In these veterans PTSD appears to be

associated with a wide range of interpersonal problems rather than a narrow set of interpersonal problems as suggested by the Roberts et al. (1982) study.

Caution must be exercised when comparing the results of these two studies as the subscales reported by Roberts et al. (1982) refer to the original dimensions outlined by Horowitz et al. (1980) and not the subscales as used in the present study. In the current study a principal components analysis of the IIP items was undertaken to explore the underlying structure of the scales as reported by the veterans in this sample and the results of this analysis were used to generate the IIP subscales which were used in subsequent analyses. It is also important to note that the current sample is a large community sample of veterans as opposed to the smaller sample of veterans seeking treatment for substance abuse in the Roberts et al. study. It is conceivable that such a sample may report different types of interpersonal problems at different rates than non-treatment-seeking veterans.

In the first set of analyses (Section 4.6) severity of interpersonal problems was found to be significantly related to level of family functioning and dyadic adjustment as well as to PTSD. Given the apparent importance of interpersonal problems in the results thus far, the relationship between IIP subscale scores and both family functioning and dyadic adjustment was also investigated (Section 4.8). These analyses were undertaken to test if the significant relationship of interpersonal problem severity with family functioning and dyadic adjustment were also true for each of the IIP subscales.

The results (Section 4.8) show that higher family functioning and dyadic adjustment were associated with decreased sociability, intimacy, independence/compliance and control/manipulation problems. Higher dyadic adjustment scores were also associated with decreased assertiveness problem scores. As with the relationship between interpersonal problems and PTSD, the relationship between interpersonal problems and family functioning and dyadic adjustment appears to hold for most types of interpersonal problems rather than for a limited range of problems as the Roberts et al. (1982) study suggests.

Hypothesis 5: That increased level of PTSD will be significantly associated with family functioning problems relating to expressiveness, cohesiveness and conflict.

Results presented in Section 4.6 show that PTSD failed to predict the overall level of family functioning and that this relationship was mediated by interpersonal problems and to a lesser degree, dyadic adjustment. As the direct relationship between PTSD and family functioning was not significant, hypothesis 5, which related level of PTSD to family functioning subscale scores, was not tested.

This hypothesis had been generated in response to previous research findings indicating that PTSD was associated with certain types of family dysfunction, specifically, expressiveness difficulties, low cohesiveness and high conflict (Solomon et al., 1987). In the study of Israeli combat veterans, Solomon et al. (1987) assessed levels of family functioning by comparing PTSD cases with non-PTSD cases, they did not attempt to control for potential confounding effects of

other variables. In an earlier study of Vietnam veterans, Roberts et al. (1982) used the same family functioning measure as Solomon et al. but failed to find any significant differences between PTSD and non-PTSD Vietnam veterans in terms of dimensions of family functioning. Results from the current study (Section 5.3.1) suggest that the relationship between PTSD and family functioning is more complex than has been indicated by previous research findings.

5.3.3 PTSD subscales and types of interpersonal problems

In terms of the DSM-III-R definition of PTSD there are a number of diagnostic criteria which suggest that the disorder is likely to impact on interpersonal functioning. These criteria include, diminished interest in significant activities, feelings of estrangement or detachment, a restricted range of affect and irritability or outbursts of anger (section 1.3). In the current study a principal components analysis of the items from the Mississippi Scale for combat-related PTSD was undertaken to explore the underlying structure of the scale as reported by the veterans in this sample and the results of this analysis were used to generate the PTSD subscales which were used in subsequent analyses.

In an attempt to clarify the relationship between PTSD and interpersonal functioning, it was proposed to investigate how these PTSD subscales related to the interpersonal problem subscales and second, how they related to the family functioning subscales. These hypotheses are discussed in turn below. A comparable hypotheses relating PTSD and Dyadic Adjustment scale was not

included as this scale was designed to assess a single global measure of dyadic adjustment and therefore does not have subscales.

Hypothesis 6: That PTSD subscale scores will be significantly related to interpersonal problem subscale scores.

When the 6 Mississippi subscales were correlated with the 5 IIP subscales (Section 4.9.2) all except four of the resulting correlations were significant. Three of the PTSD subscales (reexperiencing, hostility and cognitive functioning) were significantly associated with all IIP subscales (sociability, independence/compliance and dyadic intimacy, assertiveness, control/manipulation). The numbing/avoidance and depression/suicide PTSD subscales were associated with each IIP subscale except assertiveness. The final PTSD subscale, sleep, was associated with the sociability, independence/compliance and dyadic intimacy subscales of interpersonal problems.

Previous researchers have not attempted to investigate how PTSD subscales relate to types of interpersonal problems, but given the diagnostic criteria for PTSD, it would be reasonable to assume that a clearer pattern of interaction between the variables would have emerged in this analysis. It was likely, for example, that the emotional numbing/avoidance subscale, consisting of items pertaining primarily to the emotional numbing criteria of PTSD, would be most clearly associated with interpersonal problems. The pattern which emerged indicates that, regardless of the PTSD subscale considered, higher levels of PTSD

associated with high interpersonal problems of all types. An exception to the pattern emerged with the assertiveness and hostility correlation. Increased assertiveness problems were related to decreased hostility and increased scores on all other interpersonal problem subscales were related to increased PTSD subscale scores. In terms of social interaction there can sometimes be a fine line between assertiveness and aggressiveness and it should not be surprising to find that veterans who report higher levels of PTSD hostility symptomatology, or difficulties controlling aggression and hostility, do not report having assertiveness difficulties, such as expressing feelings or behaving in ways which are contrary to the wishes or feelings of others.

Hypothesis 7: That PTSD subscale scores will be significantly related to family functioning subscale scores.

Results presented in Section 4.6, show that PTSD failed to predict the overall level of family functioning when entered in a controlled regression analysis and that the relationship between PTSD and family functioning was mediated by interpersonal problems and dyadic adjustment. As the direct relationship between PTSD and family functioning was not significant, the hypothesis relating PTSD subscales to family functioning subscale scores was not tested.

5.3.4 Concurrent diagnoses

It was initially hypothesised that concurrent diagnoses of anxiety and depression would impact on the relationship between PTSD and interpersonal functioning. As a consequence of results which showed that the only dimension of

interpersonal functioning significantly predicted by PTSD in this study was interpersonal problems (Section 4.6), hypothesis 8 was altered to focus on the relationship between PTSD and interpersonal problems with anxiety and depression.

Results from the current study (Section 4.10) show that anxiety and depression were strongly correlated with PTSD, interpersonal problems and with each other. These findings confirm previous research which has demonstrated a significant link between depression, anxiety and poor interpersonal functioning (Alden & Philips, 1990; Horowitz et al., 1990). In the current sample 95% of the PTSD veterans also reported moderate to high levels of anxiety and/or depression. These results confirm findings from previous research showing that as many as 96% (Green et al., 1990c) of a general sample and 94% (Roszell et al., 1991) of a clinical sample of combat veterans with PTSD had other mental health disorders.

The high interrelationship between PTSD, interpersonal problems, anxiety and depression in the current sample suggest that the significant relationship between level of PTSD and interpersonal problems might be due, at least in part, to the high levels of anxiety and depression in this sample. It was therefore hypothesised that PTSD would continue to predict level of interpersonal problem severity in an analysis controlling for the effects of anxiety and depression.

Hypothesis 8: That level of PTSD will continue to predict level of interpersonal problem severity in an analysis which controls for the effects of anxiety and depression.

Results presented in Section 4.10 support the hypothesis. In a controlled regression analysis, severity of interpersonal problems was significantly predicted by PTSD, anxiety and depression, with PTSD accounting for the greatest proportion of variance. This result suggests that the relationship between PTSD and interpersonal problems is not due primarily to the impact of anxiety and/or depression and that the relationship is strong and endures in the presence of these concurrent diagnoses.

5.3.5 Coping

Previous research has shown that combat veterans with PTSD differ from veterans without PTSD in terms of the strategies they use to deal with stress. PTSD veterans, compared to non-PTSD veterans, are more likely to utilise emotion-focused coping strategies which aim to reduce or manage the internal tension associated with stress and are less likely to use problem-focused coping strategies which aim to modify or eliminate the source of stress (Nezu & Carnevale, 1987; Solomon, Mikulincer & Avitzur, 1988; Solomon, Mikulincer, & Flum, 1988; Solomon, Mikulincer & Waysman, 1991).

Most research on coping in combat veterans has considered the role of coping style in the development of PTSD, few studies have examined the impact of these differences on subsequent mental health outcomes. This study examines differences in coping styles between Vietnam veterans with PTSD and extends

previous research by examining the relationship between PTSD, coping and interpersonal functioning in the veterans.

Hypothesis 9: That PTSD cases will report greater of emotion-focused coping strategies and less use of problem-focused coping strategies than non-PTSD cases.

Results presented in Section 4.11 show that veterans with PTSD used a number of coping strategies at a significantly higher level than veterans without the disorder. PTSD cases made greater use of both of the denial/disengagement strategies (denial and alcohol/drug use) as well as the strategies of acceptance and venting emotions. These four strategies can be classified as emotion-focused strategies in so far as they represent attempts to reduce or manage stress (Carver, Scheier & Weintraub, 1989; Folkman & Lazarus, 1980). The results provide partial support for the hypothesis and are consistent with previous research findings in which PTSD in combat veterans is related to greater use of emotion-focused and distancing coping (Nezu & Carnevale, 1987; Solomon, Mikulincer & Avitzur, 1988; Solomon, Mikulincer, & Flum, 1988; Solomon, Mikulincer & Waysman, 1991).

Greater use of acceptance and denial coping strategies by PTSD veterans in the current sample supports findings by Blake et al. (1992) who reported that combat veterans with PTSD predominately used the strategies of accepting responsibility and escape-avoidance. While the greater acceptance of responsibility by PTSD veterans may seem incongruous, Blake et al. (1992) point

out that in their study acceptance included the notion of self-blame, which is consistent with associated features of PTSD, especially guilt (see section 1.3). In the current study, the acceptance dimension reflects the veteran's belief that little, if anything, can be done to change the stressful situation (I accept that this has happened and that it can't be changed"). In this sense acceptance strategies may be regarded as emotion-focused strategies which avoid active attempts to deal with the stressful situation.

Green et al. (1988) also reported that denial and sublimation coping strategies were amongst those strategies used more frequently by treatment-seeking veterans with PTSD. The frequent use of emotional expression by the veterans in the Green et al. study is also confirmed by the greater use of venting emotions by PTSD veterans in the current study.

The coping strategies in the current study include two strategies which can be regarded as problem-focused strategies, in so far as they represent attempts to modify or manipulate the source of the stress (Carver, Scheier & Weintraub, 1989; Folkman & Lazarus, 1980). These include active coping and to a lesser degree, support-seeking coping. The reported use of these strategies among the veterans did not differ significantly between the PTSD and non-PTSD groups. This result is in contrast to the findings of Solomon, Mikulincer and Flum (1988) who reported that increased use of problem-focused coping was related to less severe PTSD in Israeli combat veterans. This discrepancy maybe due in part to differences between the studies in terms of samples and the assessment of coping. The current study recruited a community sample of Vietnam veterans

whereas the Solomon et al. (1988) sample consisted of Israeli soldiers who had suffered combat stress reactions during combat. The current study assessed dispositional coping (how respondents *usually* cope) rather than situational coping (situation specific) which was assessed by Solomon et al. (1988).

The current finding that PTSD veterans made greater use of emotion-focused strategies lends support to the argument that emotion-focused coping tends to dominate when people feel that they have limited control over stressful events (Billings & Moos, 1985; Folkman & Lazarus, 1980). The veterans' appraisal of their coping options as limited may stem from the fact that the original event(s) precipitating PTSD occurred in the past and therefore are not amenable to modification. It may also be due to the intrusive way in which aspects of the original event are reexperienced (APA - criterion C, see section 1.3.3) and thus kept alive in the active memory of the veteran. These stressful reminders, in turn, become a source of stress requiring ongoing coping effort (Fairbank et al., 1991; Green et al., 1988).

While the current study supports previous research findings by confirming that there is a significant relationship between PTSD and coping strategies in combat veterans, it also attempts to extend previous research by examining the relationship between PTSD, coping and interpersonal problems. To this end two additional hypotheses were generated. The first concerns the relationship between PTSD, interpersonal problem severity and coping strategies. The second hypothesis concerns the relationship between coping strategies and types of interpersonal problems reported by the veterans.

The finding that coping strategies were significantly associated with PTSD caseness (Section 4.11) suggests the possibility that coping strategies may influence the relationship between PTSD and interpersonal problems. It was therefore hypothesised that increasing PTSD would significantly predict level of interpersonal problem severity when controlling for the effects of coping strategies.

Hypothesis 9a: Increasing PTSD would significantly predict level of interpersonal problem severity when controlling for the effects of coping strategies

When entered in a regression analysis along with three second-order coping strategies (Section 4.11) PTSD remained a significant predictor of interpersonal problem severity and accounted for the greatest amount of variance in the outcome variable. Increased interpersonal problem severity was predicted by increased level of PTSD, increased denial/disengagement coping scores and lower support-seeking/emotional coping scores. Interpersonal problem severity was not predicted by active coping.

There is little research which has considered the impact of coping style in the relationship between PTSD and subsequent health or mental health outcomes. Although they did not assess PTSD symptomatology, Solomon, Avitzur and Mikulincer (1989), reported that decreased use of problem-focused coping and increased emotion-focused coping were correlates of social dysfunction. These findings are consistent with the results of the current study in which increased

interpersonal problem severity is related to increased use of denial/disengagement coping and decreased use of support/emotional coping.

Hypothesis 9b: That coping strategies will be significantly related to interpersonal problem subscales.

The results presented in Section 4.11 show that increased use of denial/disengagement coping strategies and decreased use of support-seeking coping, predicted increased interpersonal problem severity. These coping strategies are second-order dimensions of coping strategies (Section 4.11). To investigate the relationship between coping and interpersonal problems further, the subscales of the COPE Scale (coping strategies) were correlated with the IIP subscales.

Overall the pattern of relationships between these subscales is consistent with the findings relating PTSD caseness to coping strategies. The clearest associations between IIP subscales and COPE subscales related to the acceptance, denial, alcohol/drug use and venting emotions subscales, with most of these correlations reaching statistical significance. The IIP assertiveness subscale was significantly related to only three of the eight COPE subscales. This is consistent with the findings relating PTSD subscales to IIP subscales in which the IIP assertiveness was the only subscale which had non-significant correlations with the PTSD subscales (Section 4.9.2).

These results suggest that in this sample of veterans, particular coping strategies are related to increased interpersonal problem severity across most types of interpersonal problems. The coping subscales most clearly related to interpersonal problems are the same as those which are related to PTSD symptomatology and which are primarily representative of emotion-focused coping strategies. Taken together the results from the analyses concerned with coping in these veterans extend previous research by suggesting that coping strategies are not only significantly associated with PTSD, but that they may also have an important role in the relationship between PTSD and subsequent interpersonal functioning outcomes.

As with previous research investigating the interpersonal aspects of PTSD, the current study was exploratory in nature and caution must be exercised in interpretation of the results. In the following section methodological issues raised by the study are discussed.

5.4 Methodological issues

It should be noted that the generalisability of the present results is limited by the reliance on a self-report, retrospective, cross-sectional design. These limitations are discussed in detail in the following sections which deal with methodological issues relating to the sample, research design and assessment instruments respectively.

5.4.1 Sample

The relatively low response rate in this study raises questions about the generalisability of the results. The overall 55% response rate was lower than the 62% reported in an earlier study involving New Zealand Vietnam veterans (Long et al., 1992). There is no national register of the 2,500 to 3,000 New Zealand service personnel who served in Vietnam and a number of difficulties were encountered in attempts to ascertain current contact addresses for these veterans. The lack of information on non-respondents means that it is not possible to ascertain whether "healthy" or "unhealthy" veterans were less likely to respond. It is possible that some subjects did not respond because they felt that the subject matter was too stressful to deal with. If so, this would suggest that reported morbidity rates may not be representative of the entire New Zealand Vietnam War veteran population and may in fact be higher. However, it is also possible due to the difficulties obtaining current addresses for veterans, that a proportion of the non-responses were due to non-delivery.

As the sample was not randomly selected, the ability to generalise to the population from these results is limited. Findings may only be applicable to combat veterans, perhaps Vietnam War veterans who are non-treatment-seeking. Unfortunately, there is no suitable data base for comparison with the present findings and it is difficult to assess the extent to which the mental health and adjustment of these veterans is comparable to their age-sex peers who have not served in the armed forces or in Vietnam.

The use of a community sample of veterans is a strength of the current. Studies using population-based research designs commonly use either a random population sample or a pre-defined at-risk sample from the community. Community samples of Vietnam combat veterans constitute a group at-risk for the development of PTSD and other psychiatric disorders (Centers for Disease Control, 1988a; Green et al., 1990c; Jordon et al., 1991). Community based studies are important for determining estimates of PTSD prevalence because treatment-seeking samples exclude from study an important proportion of the community who have the disorder but who do not seek treatment (Davidson & Fairbank, 1993). While the knowledge gained from studies of treatment-seeking veterans is essential for an increased understanding of PTSD, the degree to which that knowledge can be generalised to non-clinical samples is limited.

5.4.2 Research design

The reliance on mailed questionnaires is a further limitation of the current research design. Mail surveys are generally designed on the basis of simplicity of response and primarily obtain quantitative rather than qualitative data. As a consequence the complexity of some issues may be underestimated.

This study is also limited by its reliance on self-report data which is vulnerable to bias and distortion. Attempts were not made to support veterans' responses with reports from secondary sources, such as military or medical records. Although self-report surveys can provide valid reflections of psychopathology, systematic interviews were not conducted and in the absence of clinical validation, subsequent conclusions must be regarded as tentative.

It should also be noted that some of the items pertaining to past military experience, in particular combat activity in Vietnam, required respondents to recall events which may have occurred up to twenty years earlier. Due to the dependence on data obtained from retrospective recall, caution must be exercised in drawing conclusions involving the military experience of these veterans.

5.4.3 Assessment instruments

Few studies have attempted to identify specific interpersonal problems of veterans with PTSD and these have tended to include measures which are more suited to the identification of personal rather than interpersonal adjustment. The selection of instruments in this study attempted to remedy this problem.

The selection of assessment instruments for a given questionnaire is determined by previous research in the field, previous experience of the researcher and by practical considerations such as instrument availability, space allocation within a questionnaire and the priority of research questions. The selection of assessment instruments will consequently be a potential source of limitations in any study.

Many of the assessment instruments included in the questionnaire had been used in previous research involving New Zealand Vietnam veterans (Vincent et al., 1991). Knowledge gained from this previous research and the pilot study undertaken as part of that research, informed the development of the questionnaire for the current study. The questionnaire did include, however, a

number of instruments which have not been used often with combat veteran samples or in association with PTSD research. The most important of these, with regard to the overall aim of the study, were the Inventory of Interpersonal Problems (Horowitz et al., 1988; Horowitz et al, 1989), the Bloom (1985) family functioning scale, the short version of Dyadic Adjustment Scale (Sharpley & Cross, 1982) and the COPE inventory (Carver, Scheier & Weintraub, 1989). These measures, along with the Mississippi Scale, were subjected to a principal components analysis to examine the degree to which the original scale structures were replicated and to investigate the underlying dimensions of the scales as reported by the veterans in this sample. The component solutions generated by these analyses are discussed in Section 5.3.1.2. Reliability data is given in Table 1 for full scales and Appendices U to Y for subscales.

5.5 Theoretical implications of results

5.5.1 PTSD and interpersonal functioning

The present study supports findings in the literature which show that war has long-term adverse effects on the psychological adjustment of combatants and in particular, that increased levels of PTSD is associated with poorer interpersonal functioning among Vietnam War veterans.

In the present study, the relationship between increased PTSD and poorer interpersonal functioning of veterans was revealed primarily in increased interpersonal problem severity, rather than in poorer family functioning or lower dyadic adjustment. Previous research has shown a significant association between PTSD and family functioning (Jordon et al., 1992; Solomon et al.,

1987) and marital adjustment (Carroll et al., 1985; Jordon et al., 1992; Solomon et al., 1991; Verbosky & Ryan, 1988) in Vietnam War veterans.

While simple correlational data from the current study support these findings, more complex analyses support a mediating model. This model suggests that increased PTSD gives rise to increased interpersonal problem severity which is, in turn, manifested in decreased family functioning and decreased dyadic adjustment and the latter are themselves interrelated. This model was illustrated in figure 3 (Section 5.3.1.1). The results also show that this pivotal relationship between PTSD and interpersonal relationships is strong and resistant to potential effects of others variables such as the initial combat experience, other dimensions of interpersonal functioning (family functioning and dyadic adjustment), concurrent mental health diagnoses and the characteristic coping styles of the veterans. These results confirm findings from Carroll et al. (1985) which suggest that the presence of PTSD in veterans is more strongly related to problematic social functioning than combat experience per se.

In the current sample, level of PTSD is significantly associated with a range of interpersonal problems. This contrasts with the findings of Roberts et al. (1982), who reported that treatment-seeking veterans with PTSD, compared to non-PTSD veterans, scored significantly higher on clusters of intimacy and sociability problems only. In the current sample PTSD was significantly associated with interpersonal problems relating to sociability and global intimacy; independence and compliance; dyadic intimacy; and control or manipulation.

These findings support the inclusion of symptoms of numbing of general responsiveness, specifically, diminished interest in significant activities, detachment or estrangement from others and constricted affect, in the DSM-III-R and DSM-IV definitions of PTSD (American Psychiatric Association, 1987; 1994). They also support the inclusion in DSM-IV of distress or impairment in social, occupational, or other important areas of functioning as a primary feature of a PTSD diagnosis.

An investigation of how PTSD subscales relate to types of interpersonal problems did not provide conclusive results. Each of the PTSD subscales (reexperiencing, numbing/avoidance, hostility, depression/suicide, cognitive functioning and sleep) were significantly associated with total interpersonal problem severity and most of the interpersonal problem subscales. This is perhaps surprising as it would have been reasonable to expect, given the nature of PTSD symptoms and the nature of the interpersonal problems assessed, that the pattern of relationships between them would have been more distinctive. It was expected, for example, that interpersonal problems would be more clearly associated with the PTSD subscale of emotional numbing/avoidance (consisting of items pertaining primarily to the emotional numbing criteria of PTSD) compared to other PTSD subscales.

In any event, it is evident that PTSD is related to a range of difficulties which these veterans encounter when initiating and maintaining interpersonal relationships. It is also clear that these difficulties are manifested in lower levels of family functioning and poorer dyadic adjustment. This research confirms that multiple, complex interpersonal functioning problems continue to persist for some

veterans twenty years after the initial combat experiences. It is also clear that the problems of individual veterans also impact on those immediately around them. As Brende and Goldsmith (1991) note, when one or more members of a family are traumatised, the entire family can be affected.

Previous research showing a significant association between levels of PTSD, family and marital dysfunction lend support to the argument that inclusion of family members as an integral part of therapy is beneficial for the veteran and for the family members themselves (Brende & Goldsmith, 1991; Carroll et al., 1985; Jordan et al., 1992; Silver & Iacono, 1986). Silver and Iacono (1986) suggest that the marital subsystem appears to be the primary focus of the interrelationships of family functioning and PTSD. The current research suggests that the link may not be that clearly defined. If the mediating model suggested here has some validity, then the individual interpersonal functioning difficulties and abilities of the veteran must become a major treatment focus. While the interactional effects of family and dyadic relationships can not be ignored, if the interpersonal problems of veterans are indeed manifested in family and dyadic dysfunction, only limited improvement can be expected in these relationships if the difficulties veterans encounter in interpersonal interactions are not addressed.

The interpersonal problems reported by veterans with PTSD and the subsequent link to poorer family functioning and dyadic adjustment suggests that it is important to develop a comprehensive treatment plan that includes attempts to improve individual interpersonal skills as well as attempts to reduce the interactional problems in the family and dyadic relationships.

5.5.2 Concurrent diagnoses

The complexity of PTSD is perhaps most clearly illustrated by the range of mental health problems and social adjustment problems which co-occur with the disorder. The temporally distant nature of the traumatic stressor may also complicate attempts to unravel the diagnostic picture of the disorder and it is possible that multiple diagnosis may be a characteristic feature the syndrome described by chronic PTSD (Roszell et al., 1991). It is likely, as Keane and Wolfe (1990) suggest, that traumatised individuals develop a broad range of symptoms including depression and substance abuse. It is still unclear, however, what the relationship between the comorbid diagnoses are, which are primary and which are secondary and how they impact upon one another. Comorbidity studies have raised the question of whether the comorbidity reported is due primarily to overlapping diagnostic criteria (Breslau & Davis, 1987b; Green et al., 1990c), as a number of symptoms central to a PTSD diagnosis are also symptoms of other DSM-III-R Axis I disorders. For example, as well as being symptoms of PTSD, hyperalertness and physiological reactivity are symptoms of anxiety disorders and diminished interest in significant activities, sleep disturbance and impaired concentration are also symptoms of depression. It should be noted that levels of PTSD, anxiety and depression were assessed in the current study with standardised tests and were not verified by other methods. There is also a possibility that the Mississippi Scale may assess symptoms of anxiety and depression as well as symptoms of PTSD. However, the unidimensionality and high internal reliability of the scale suggests that this potential overlap of symptom assessment may not be a major problem (Aldwin, 1994).

Despite the difficulties and differences in comorbidity studies, it is clear that PTSD is commonly associated with the presence of other psychiatric, physical and social disorders. Although PTSD investigators are likely to continue in their attempts to unravel the complex nature of PTSD and its associated symptoms, Roszell et al. (1991) suggest that attempts to separate the symptoms of PTSD from those of other disorders becomes moot and they argue that it becomes more important to focus on the complex symptom picture of PTSD and associated symptoms as an entity in and of itself.

The results from this study confirm the findings from previous research showing that PTSD veterans are also likely to report moderate to high levels of depression and anxiety (Green et al., 1989; Helzer et al., 1987). The results also confirm the pivotal role of interpersonal problems in this sample. While anxiety and depression were significantly associated with levels of both PTSD and interpersonal problem severity and both significantly predicted the level of interpersonal problem severity, PTSD continued to account for the largest proportion of variance in interpersonal problem severity when controlling for these co-occurring disorders.

Because of the complex nature of PTSD, mental health practitioners working with PTSD veterans and their families should be aware of the possible contribution of PTSD to the presenting problems. There is a real danger that one or more of the co-occurring mental health, physical health, or social adjustment problems with which the veteran may present will become the focus of diagnosis and

treatment, with a consequent failure to recognise the underlying symptoms of PTSD.

5.5.3 PTSD and coping

In the current sample, veterans with PTSD report higher levels of emotion-focused coping, confirming previous research with veteran samples (Nezu & Carnevale, 1987; Solomon, Mikulincer & Avitzur, 1988; Solomon, Mikulincer, & Flum, 1988; Solomon, Mikulincer & Waysman, 1991). In contrast to the findings reported by Solomon, Mikulincer and Flum (1988), use of problem-focused strategies did not differ significantly between veterans with PTSD and those without the disorder. In particular the results confirmed previous research showing that PTSD veterans report higher levels of coping relating to denial and disengagement (Blake et al., 1992; Green et al., 1988; Nezu & Carnevale, 1987).

The strategies reported at higher levels by PTSD cases in this sample are often considered dysfunctional (Mitchell et al., 1983), however, this may be inappropriate. As Green et al. (1988) notes, most models of stress-adaptation characterise coping as a mediating variable that either buffers the impact of stress or contributes directly to outcome. Greens findings, however, suggest that chronic coping styles may, at least in part, be determined by type or extent of stressor, rather than just being reactive to them (Green et al., 1988).

PTSD sufferers may be overwhelmed by intrusive emotions and are excessively engaged in reflections and thoughts related to the trauma (Horowitz, 1982). To the extent that this is the case, it is logical that PTSD casualties would be more

engaged in coping with their internal state than with the external world (Solomon et al., 1988).

Although coping is frequently viewed as a fluid dynamic process, this may not be so for traumatised individuals who may have developed a characteristic or preferred coping response to stressors (Fairbank et al., 1991). The present findings support this view in that they identify dispositional coping strategies used by Vietnam War veterans and these suggest habitual use. If veterans' appraisal lead them to believe that there is nothing that they can do to alleviate the stress (Solomon et al., 1988), the problem becomes one of breaking the circle of stress. Interventions to assist PTSD sufferers may need to find ways to modify these characteristic coping strategies. The nature of the disorder, however, may limit the potential utility of teaching problem-focused strategies to the veterans (Solomon et al., 1988).

If coping acts as a mediating variable, buffering the impact of stress or contributing directly to the outcome (Green et al., 1988) then it is likely that coping style will influence the relationship between PTSD and interpersonal functioning. The results show that PTSD and the strategies relating to denial/disengagement and support-seeking/emotional coping scores were joint predictors of the level of interpersonal problem severity. PTSD again accounted for the largest proportion of variance in interpersonal problems. While further analyses would be required to investigate how these variables interacted and impacted upon each other, but these results gave testimony to the strength of the relationship between PTSD and interpersonal problems.

5.6 Research directions

The findings from this study highlight the complexity of interpersonal functioning in Vietnam veterans with PTSD and support a mediational model of interpersonal functioning in which the level of PTSD is related directly to the severity of interpersonal problems and indirectly through these problems, to the level of family functioning and dyadic adjustment.

An important direction for future research with Vietnam veterans is clearly to investigate the appropriateness of the mediational model. This would require further study of the level and types of interpersonal problems reported by individuals with PTSD as compared to those without the disorder. Future research would benefit by utilising control groups of, for example, non-combat Vietnam-era veterans and by examining the issue in non-veterans samples, such as disaster survivor populations.

Further research is also required which attempts to explain the interactional effects between interpersonal problems, family functioning and dyadic adjustment. This might include an assessment of the relative contribution of each to overall interpersonal functioning. Further investigation of how types of interpersonal problems relate to subsequent family and marital dysfunction is also advisable. Future research might also make greater use of substantiating reports from other family members. The responses presented here reflect the perceptions of the veterans only and those perceptions may well be affected by level of PTSD symptomatology.

Further examination of interpersonal functioning in clinical samples of PTSD individuals would also be useful, especially if researchers employed diagnostically homogenous groups in order to ascertain if the interpersonal functioning of individuals with concurrent diagnoses, such as depression and anxiety, differ in specific ways from individuals without those diagnoses.

The results from this study also suggest that research is required which examines the dynamics and impact of family/group therapeutic processes which are currently being recommended for treatment of PTSD veterans. In supporting the mediational model, the results indicate that there is a need to enhance the understanding of the interactional effects of family/dyadic relationships and the role of individual interactional problems in those relationships.

Future research might also explore the degree to which the characteristic maladaptive patterns of coping in these PTSD veterans are typical of PTSD individuals and the degree to which they are amenable to modification.

The defining criteria for PTSD included in DSM-IV (American Psychiatric Association, 1994) have implications for research in this area. The importance of the disorder in terms of its impact on social, occupational, or other important areas of functioning is clearly recognised by the addition of a criterion defining this aspect of the disorder. These associated symptoms are stated in broad, general terms however and future work will be required to define this "functioning" in more objective, operational terms. The objective assessment of aspects of interpersonal, social and occupational functioning will be central to

this task. As the investigation of interpersonal functioning in PTSD individuals is a relatively new area of research, much could be gained from investigating the utility of a range of interpersonal functioning measures in these samples.

The validity, utility and acceptability of the new stressor criteria is also likely to be the source of continued research and debate. The change in the stressor definition is likely to foreshadow an expansion of PTSD-related research to include events which hitherto have been excluded as being insufficiently unusual or traumatic to be regarded as likely to precipitate the disorder. The distinction between a subjective and an objective component to the stressor definition is also likely to encourage the growing interest in individual perceptions of traumatic events.

5.7 Conclusion

The focus of this thesis is the relationship between combat-related PTSD and interpersonal functioning in a community sample of Vietnam veterans. The results of this study confirm findings from previous research showing that a proportion of Vietnam War veterans can be classified as PTSD cases.

The results also support previous research findings which show that PTSD adversely impacts on veterans' interpersonal relationships, family functioning and marital/dyadic adjustment. Whereas previous research has suggested a direct relationship between higher levels of PTSD and poorer family functioning and lower dyadic adjustment, the current study indicates that these relationships are more complex. The results show for the first time, that the effects of PTSD on

family functioning and dyadic adjustment are mediated by severity of interpersonal problems. This mediating model proposes that higher levels of PTSD affect the ability of veterans to initiate and maintain interpersonal relationships and that these interpersonal problems are evident in lower levels of family functioning and poorer dyadic adjustment.

Previous research also suggests that PTSD is associated with specific types of interpersonal problems, such as hostility and intimacy difficulties. In the current sample, PTSD is associated with a wide range of interpersonal difficulties which involve most aspects of interpersonal functioning. These problems include, difficulties with initiating and maintaining social interaction, difficulties maintaining a sense of independence from others, difficulties maintaining a close intimate relationship and difficulties resisting the desire to control and manipulate others.

The role of coping strategies and concurrent diagnoses of anxiety and depression in the relationship between PTSD and interpersonal functioning was also considered. Results confirmed that in combat veterans, PTSD is associated with moderate to high levels of anxiety and depression and that veterans with PTSD are more likely than non-PTSD veterans, to utilise emotion-focused coping strategies to deal with stress.

Results showed that the strength of the relationship between PTSD and interpersonal problems is not strongly affected by concurrent diagnoses of anxiety and/or depression, or by the characteristic coping styles of the veterans.

These results confirm the central role of interpersonal problems in the relationship between PTSD and interpersonal functioning. They are also consistent with the inclusion of symptoms of diminished interest in significant activities, detachment or estrangement from others and constricted affect, in DSM-III-R and DSM-IV diagnostic criteria for PTSD

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First we would like some general background information.
Remember that the information which you give us is confidential.

What is your date of Birth _____

What ethnic group do you belong to?

New Zealander of Maori descent 1
New Zealander of European descent 2
New Zealander of Pacific Island descent . . . 3
Other, specify _____ 4

What is your highest educational qualification?

No school qualification 1
School certificate passes 2
School qualifications, University Entrance and above 3
Trade certificate or Professional certificate or diploma 4
University degree, diploma, or certificate 5

What is your present personal gross annual income (excluding your partner's salary &/or benefits)

$_____

What is your current employment status?

Employed full-time 1
Employed part-time 2
} Please continue with the questions on the following page.

Not in paid employment 3
(Unemployed / Retired / On a benefit)
} Please go to page 4

Now we want you to think back to the time you spent in Vietnam. In the first set of questions we are interested in how long you were in Vietnam and what you did during your tour of duty there.

When did you enlist in the New Zealand Army?

_____ / _____ / 19_____

When were you discharged from the New Zealand Army?

_____ / _____ / 19_____

Still serving ☐ (tick)

How many tours of duty did you serve in Vietnam?

_____ tours

In total, how many months did you spend on active service in Vietnam?

_____ months

The next three questions refer to your main service role during your last (or only) tour of duty in Vietnam.

What was your highest rank in Vietnam? _____

Which unit did you serve with in Vietnam?

Unit _____

Company / Battery / Squadron _____

Platoon / Troop _____

What was your - Corps _____

Trade _____

What was the main role of your job in Vietnam?

Combat (operational unit) 1

Combat Support 2
(direct support of an operational unit)

Administration / Technical Support 3
(non combat unit but in a combat zone)

Other, please state _____ 4

The following questions relate to any combat experience you may have had in Vietnam. Circle the number which best describes your experience.

Were you part of an artillery unit that fired on the enemy?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Did you fly in aircraft (helicopters) over South or North Vietnam?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Were you stationed at a forward observation post?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Did you receive incoming fire from enemy artillery, rockets, or mortars?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Were you on unit patrols that encountered mines and booby traps?1

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Were you on a unit patrol that received sniper or sapper fire?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Were you on a unit patrol that was ambushed?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Were you in a unit patrol that engaged the Vietcong (or guerilla troops) in a firefight?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Were you in a unit patrol that engaged the NVA (organised military forces) in a firefight?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Did you see New Zealanders or allies killed or injured?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Did you see Vietnamese killed or injured?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Did you kill anyone or thought you killed someone?

1 ---------- 2 ---------- 3 ---------- 4
rarely sometimes often very often

Now we are interested in how you have been thinking and feeling about things over the last month or so. Circle the number which best describes your experiences at present.

Before I entered the military I had more close friends than I have now.

1	2	3	4	5
not at all true	slightly true	somewhat true	very true	extremely true

I do not feel guilt over things that I did in the military.

1	2	3	4	5
never true	rarely true	sometimes true	usually true	always true

If someone pushes me too far, I am likely to become violent.

1	2	3	4	5
very unlikely	unlikely	somewhat likely	very likely	extremely likely

If something happens that reminds me of the military, I become very distressed and upset.

1	2	3	4	5
never	rarely	sometimes	frequently	very frequently

The people who know me best are afraid of me.

1	2	3	4	5
never true	rarely true	sometimes true	frequently true	very frequently true

I am able to get emotionally close to others.

1	2	3	4	5
never	rarely	sometimes	frequently	very frequently

I have nightmares of experiences in the military that really happened.

1	2	3	4	5
never	rarely	sometimes	frequently	very frequently

When I think of some of the things that I did in the military, I wish I were dead.

1	2	3	4	5
never true	rarely true	sometimes true	frequently true	very frequently true

It seems as if I have no feelings.

1	2	3	4	5
not at all true	rarely true	sometimes true	frequently true	very frequently true

Lately, I have felt like killing myself.

1	2	3	4	5
not at all true	slightly true	somewhat true	very true	extremely true

I fall asleep, stay asleep and awaken only when the alarm goes off.

1	2	3	4	5
never	rarely	sometimes	frequently	very frequently

I wonder why I am still alive when others died in the military.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
never rarely sometimes frequently very frequently

Being in certain situations makes me feel as though I am back in the military.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
never rarely sometimes frequently very frequently

My dreams at night are so real that I waken in a cold sweat and force myself to stay awake.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
never rarely sometimes frequently very frequently

I feel like I cannot go on.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
not at all true rarely true sometimes true very true almost always true

I do not laugh or cry at the same things other people do.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
not at all true rarely true somewhat true very true extremely true

I still enjoy doing many things that I used to enjoy.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
never true rarely true sometimes true very true always true

My day dreams are very real and frightening.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
never true rarely true sometimes true frequently true very frequently true

I have found it easy to keep a job since my separation from the military.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
not at all true slightly true somewhat true very true extremely true

I have trouble concentrating on tasks.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
never true rarely true sometimes true frequently true very frequently true

I have cried for no good reason.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
never rarely sometimes frequently very frequently

I enjoy the company of others

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
never rarely sometimes frequently very frequently

I am frightened by my urges.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5
never rarely sometimes frequently very frequently

I fall asleep easily at night

1	2	3	4	5
never	rarely	sometimes	frequently	very frequently

Unexpected noises make me jump.

1	2	3	4	5
never	rarely	sometimes	frequently	very frequently

No one understands how I feel, not even my family.

1	2	3	4	5
not at all true	rarely true	somewhat true	very true	extremely true

I am an easy-going, even-tempered person.

1	2	3	4	5
never	rarely	sometimes	frequently	very frequently

I feel there are certain things that I did in the military that I can never tell anyone, because no one would ever understand.

1	2	3	4	5
not at all true	slightly true	somewhat true	true	very true

There have been times when I used alcohol (or other drugs) to help me sleep or to make me forget about the things that happened while I was in the service.

1	2	3	4	5
never	infrequently	sometimes	frequently	very frequently

I feel comfortable when I am in a crowd.

1	2	3	4	5
never	rarely	sometimes	frequently	very frequently

I lose my cool and explode over minor everyday things.

1	2	3	4	5
never	rarely	sometimes	frequently	very frequently

I am afraid to go to sleep at night.

1	2	3	4	5
never	rarely	sometimes	frequently	almost always

I try to stay away from anything that will remind me of the things that happened while I was in the military

1	2	3	4	5
never	rarely	sometimes	frequently	almost always

My memory is as good as it ever was.

1	2	3	4	5
not at all true	rarely true	somewhat true	usually true	almost always true

I have a hard time expressing my feelings, even to the people I care about.

1	2	3	4	5
not at all true	rarely true	sometimes true	frequently true	almost always true

Below are a number of statements which describe common personal problems. Indicate how true each statement is for you by circling the appropriate number.

0 ---------- 1 ---------- 2 ---------- 3 ---------- 4
not at all true for me — extremely true for me

I find it hard to be competitive with other people. 0 1 2 3 4

I find it hard to confront other people with problems as they come up. . . . 0 1 2 3 4

I find it hard to get pleasure out of a party 0 1 2 3 4

I find it hard to open up to other people and talk freely. 0 1 2 3 4

I find it hard to "read" another person's point of view. 0 1 2 3 4

I find it hard to give another person the approval he or she implicitly wants. 0 1 2 3 4

I manipulate other people too much in order to get praise. 0 1 2 3 4

I get too easily annoyed by other people. 0 1 2 3 4

I find it hard to get other people to respond and relate to me. 0 1 2 3 4

I find it hard to be assertive with other people. 0 1 2 3 4

I find it hard to feel angry at other people. 0 1 2 3 4

I am too easily persuaded by other people. 0 1 2 3 4

I find it hard to relate to other people. 0 1 2 3 4

I am too ready to put other people down. 0 1 2 3 4

I find it hard to end a relationship with another person. 0 1 2 3 4

I find it hard to tell another person when I don't like what he or she is saying. 0 1 2 3 4

I find it hard to perform sexually with another person. 0 1 2 3 4

I find it hard to be honest with other people. 0 1 2 3 4

I find it hard to comply with other people's wishes. 0 1 2 3 4

I find it hard to accept praise from other people. 0 1 2 3 4

I find it hard to give myself to another person. 0 1 2 3 4

I find myself clowning around too much as a way of being non-threatening to other people. 0 1 2 3 4

I find it hard to show affection to another person in public. 0 1 2 3 4

I find it hard to be friendly and sociable with other people. 0 1 2 3 4

I find it hard to make phone calls to other people to initiate social activity. . 0 1 2 3 4

I find it hard to see weaknesses in other people. 0 1 2 3 4

I find it hard to be strong against other people. 0 1 2 3 4

I find it hard to get along in a relationship with another person. 0 1 2 3 4

I find it hard to let another person see me as mean and hard-hearted. 0 1 2 3 4

I find it hard to extend myself to accept other people's friendship. 0 1 2 3 4

I find it hard to tell other people to back off. 0 1 2 3 4

I find it hard to choose between two people as best friends. 0 1 2 3 4

I find it hard to participate in playing games with other people. 0 1 2 3 4

I feel obliged to remain in a relationship with friends or lovers longer than I want. 0 1 2 3 4

I find it hard to be aggressive toward other people 0 1 2 3 4

I find it hard to take control of my relationship with a friend or lover 0 1 2 3 4

I find it hard to become good mates with other people. 0 1 2 3 4

I find it hard to express a different viewpoint to another person. 0 1 2 3 4

I find it hard to express the light, humorous side of my personality to other people. 0 1 2 3 4

I find it hard to "make it" without other people. 0 1 2 3 4

I find it hard to do as I please without feeling guilty toward other people. 0 1 2 3 4

I am too sensitive to possible signs of rejection from other people. 0 1 2 3 4

I find it hard to accept love when it is given. 0 1 2 3 4

I find it hard to be genuine in a one-to-one relationship with another person. 0 1 2 3 4

I talk back to other people too much. 0 1 2 3 4

I am too critical of other people. 0 1 2 3 4

I find it hard to accept what another person feels and thinks. 0 1 2 3 4

I find it hard to commit myself to another person. 0 1 2 3 4

I find it hard to express anger to other people when it comes up. 0 1 2 3 4

I feel too obliged to keep promises to another person 0 1 2 3 4

I find it hard to be sexually open with another person 0 1 2 3 4

I find it hard to be open and loving with another person. 0 1 2 3 4

I monitor other people's reactions too much. 0 1 2 3 4

I find it hard to say good things to other people 0 1 2 3 4

I find it hard to tell someone that I am leaving because of a change in plans 0 1 2 3 4

I find it hard to share a feeling of being one with another person 0 1 2 3 4

I find it hard to feel free of responsibility and guilt toward other people. 0 1 2 3 4

I find it hard to initiate love with another person. 0 1 2 3 4

I find it hard to say no to other people 0 1 2 3 4

I find it hard to risk another person not liking me. 0 1 2 3 4

I find it hard to trust other people. 0 1 2 3 4

I find it hard to get close to other people. 0 1 2 3 4

I find it hard to get along with the person I care about. 0 1 2 3 4

I find it hard to express feelings of affection to other people. 0 1 2 3 4

I exert too much pressure on other people. 0 1 2 3 4

I find it hard to leave another person to go out to work. 0 1 2 3 4

I find it hard to make demands of other people. 0 1 2 3 4

I find it hard to fight with other people. 0 1 2 3 4

I feel obliged to join in on other people's drinking. 0 1 2 3 4

I feel obliged to please other people. 0 1 2 3 4

I find it hard to be seductive and flirtatious in front of other people. 0 1 2 3 4

I have too much of a need to get praise, admiration, and approval from other people. 0 1 2 3 4

I am too inclined to present myself to other people as an inept, little child. 0 1 2 3 4

I find it hard to relax on a date and enjoy myself 0 1 2 3 4

I find it hard to criticise other people. 0 1 2 3 4

I find it hard to participate in groups. 0 1 2 3 4

I find it hard to do work <u>without</u> it being for someone's approval. 0 1 2 3 4

I find it hard to disclose personal things to other people 0 1 2 3 4

I find it hard to introduce myself to new people at parties 0 1 2 3 4

I find it hard to entertain people at my home. 0 1 2 3 4

I find it hard to rebel against other people's control. 0 1 2 3 4

I find it hard to show my anger to other people. 0 1 2 3 4

I find it hard to love another person. 0 1 2 3 4

I find it hard to make friends in a simple, natural way. 0 1 2 3 4

I find it hard to select and motivate another person as my employee. 0 1 2 3 4

I find it hard to stubbornly adhere to my own wishes in opposition to other people. 0 1 2 3 4

I find it hard to feel comfortable around other people. 0 1 2 3 4

Now we would like some general background information about your family situation. Remember that the information which you give us is confidential.

What is your **present** marital status?

Never married 1

Married/ Remarried (including defacto) 2

Separated / divorced 3

Widowed 4

How many times have you been married or lived in a defacto relationship? (Even if you are not currently married) ☐ times

Do you currently live alone?

No, I live with others . . 1 } Please continue with the questions below.

Yes, I live alone . . . . . 2 } That is all the questions that we have for you. Thank you for your time and effort in completing the questionnaire.

We are interested in who you share your accommodation with. Complete the table giving initials of **all** those who **usually** live in the same place as you.

Initials	Relationship to you (eg. son, mother, etc)	Age	Sex M or F

The next set of questions are about you and your family. By your family we mean you, and the relatives you usually live with. Typically that would mean you, your partner and/or any children currently living with you. It may also include other relatives but only if they usually live with you.

Families have different ways of interacting with one another. Listed below are a number of statements about how families interact. Please circle the one number which corresponds to the statement that best describes how much you think each statement has been true for your family over the past month.

0	1	2	3
very untrue for my family	fairly untrue for my family	fairly true for my family	very true for my family

Family members really help and support one another	0 1 2 3
Family members feel free to say what is on their minds	0 1 2 3
We fight a lot in our family	0 1 2 3
We rarely go to lectures, plays, or concerts	0 1 2 3
We often go to movies, sports events, camping, etc	0 1 2 3
Family members attend church or Sunday School fairly often	0 1 2 3
It is often hard to find things when you need them in our household	0 1 2 3
We are full of life and good spirits	0 1 2 3
We encourage each other to develop in his or her own individual way	0 1 2 3
I don't think any family could live together with greater harmony than my family	0 1 2 3
It is difficult to keep track of what other family members are doing	0 1 2 3
Family members make the rules together	0 1 2 3
Members of our family can get away with almost anything	0 1 2 3
The same people make all of the important decisions in our family	0 1 2 3
Family members find it hard to get away from each other	0 1 2 3
There is a feeling of togetherness in our family	0 1 2 3
Our family does not discuss its problems	0 1 2 3
Family members sometimes get so angry they throw things	0 1 2 3
We rarely have intellectual discussions	0 1 2 3
Everyone in our family has a hobby or two	0 1 2 3
We don't say prayers in our family	0 1 2 3
Being on time is very important in our family	0 1 2 3

Our family enjoys being around other people 0 1 2 3

We are satisfied with the way in which we live 0 1 2 3

I don't think anyone could possibly be happier than my family and I, when we are together 0 1 2 3

In our family we know where all family members are at all times 0 1 2 3

Family members feel they have no say in solving problems 0 1 2 3

Family members are not punished or reprimanded when they do something wrong 0 1 2 3

There is strict punishment for breaking rules in our family 0 1 2 3

It is difficult for family members to take time away from the family 0 1 2 3

Our family does not do things together 0 1 2 3

Family members discuss problems and usually feel good about the solutions 0 1 2 3

Family members hardly ever lose their tempers 0 1 2 3

Watching TV is more important than reading in our family 0 1 2 3

Family members are not very involved in recreational activities outside work or school 0 1 2 3

We often talk about the religious meaning of Christmas, Easter or other holidays 0 1 2 3

Family members make sure their rooms are neat 0 1 2 3

Socialising with other people often makes my family uncomfortable 0 1 2 3

Our decisions are not our own, but are forced upon us by things beyond our control 0 1 2 3

My family has all the qualities I've always wanted in a family 0 1 2 3

Family members do not check with each other when making decisions 0 1 2 3

Each family member has at least some say in major family decisions 0 1 2 3

It is unclear what will happen when rules are broken in our family 0 1 2 3

Family members are severely punished for anything they do wrong 0 1 2 3

Family members feel pressured to spend most free time together 0 1 2 3

We really get along well with each other 0 1 2 3

In our family it is important for everyone to express their opinion 0 1 2 3

Family members sometimes hit each other 0 1 2 3

Family members really like music, art, and literature 0 1 2 3

Family members sometimes attend courses or take lessons for some hobby or interest 0 1 2 3

We don't believe in heaven or hell 0 1 2 3

Dishes are usually done immediately after eating 0 1 2 3

As a family we have a large number of friends 0 1 2 3

Our family has more than its share of bad luck 0 1 2 3

Our family is as well adjusted as any family in this world can be 0 1 2 3

Family members are extremely independent 0 1 2 3

The method of punishment is discussed in our family 0 1 2 3

It is hard to know what the rules are in our family because they always change 0 1 2 3

There are very few rules in our family 0 1 2 3

Family members feel guilty if they want to spend some time alone 0 1 2 3

Family members seem to avoid contact with each other when at home 0 1 2 3

We don't tell each other about our personal problems 0 1 2 3

Family members rarely criticise each other 0 1 2 3

We are very interested in cultural activities 0 1 2 3

Friends rarely come over for dinner or to visit 0 1 2 3

The Bible is a very important book in our home 0 1 2 3

We are generally pretty sloppy around the house 0 1 2 3

Our family likes having parties 0 1 2 3

My family feels that we have very little influence over the things that happen to us 0 1 2 3

My family could be happier than it is 0 1 2 3

Family members are expected to have the approval of others before making decisions 0 1 2 3

There is strong leadership in our family 0 1 2 3

Nobody orders anyone around in our family 0 1 2 3

It seems like there is never any place to be alone in our house 0 1 2 3

In our family, parents do not check with the children before making important decisions . . . . . N/A ☐ 0 1 2 3

Are you currently married or living in a defacto relationship?

Yes . . . . . 1 } Please continue with the few remaining questions below.

No . . . . . 2 } That is all the questions that we have for you. Thank you for your time and effort in completing the questionnaire.

How long have you been in your **current** relationship or marriage?

_____

Most people have disagreements in their relationships. Please indicate the approximate extent of agreement or disagreement between you and your partner for each item on the following list.

How much do you and your partner agree over the following?

0	1	2	3	4	5
always disagree	almost always disagree	frequently disagree	occasionally disagree	almost always agree	always agree

Philosophy of life 0 1 2 3 4 5

Aims, goals, and things believed important . . . 0 1 2 3 4 5

Amount of time spent together 0 1 2 3 4 5

How often would you say the following events occur between you and your partner?

0	1	2	3	4	5
never	less than once a month	once / twice a month	once / twice a week	once a day	more often

Have a stimulating exchange of ideas 0 1 2 3 4 5

Calmly discuss something 0 1 2 3 4 5

Work together on a project 0 1 2 3 4 5

A number of statements which people use to describe themselves are given below. Read each statement and then circle the one number which best indicates how you have felt in the last few days.

	0 not at all	1 somewhat	2 moderately so	3 very much so
I have been feeling calm	0	1	2	3
I have been feeling secure	0	1	2	3
I have been tense	0	1	2	3
I have been feeling strained	0	1	2	3
I have been feeling at ease	0	1	2	3
I have been feeling upset	0	1	2	3
I have been worried over possible misfortunes	0	1	2	3
I have been feeling satisfied	0	1	2	3
I have been feeling frightened	0	1	2	3
I have been feeling comfortable	0	1	2	3
I have been feeling self-confident	0	1	2	3
I have been feeling nervous	0	1	2	3
I have been jittery	0	1	2	3
I have been feeling indecisive	0	1	2	3
I have been relaxed	0	1	2	3
I have been feeling content	0	1	2	3
I have been worried	0	1	2	3
I have been feeling confused	0	1	2	3
I have been feeling steady	0	1	2	3
I have been feeling pleasant	0	1	2	3

Read each statement and then circle the one number which best indicates how you generally feel.

0 ---------- 1 ---------- 2 ---------- 3

almost never sometimes often almost always

I feel pleasant 0 1 2 3

I feel nervous and restless 0 1 2 3

I feel satisfied with myself 0 1 2 3

I wish I could be as happy as others seem to be 0 1 2 3

I feel like a failure 0 1 2 3

I feel rested 0 1 2 3

I am "cool, calm, and collected" 0 1 2 3

I feel that difficulties are piling up so that I cannot overcome them 0 1 2 3

I worry too much over something that really doesn't matter 0 1 2 3

I am happy 0 1 2 3

I have disturbing thoughts 0 1 2 3

I lack self-confidence 0 1 2 3

I feel secure 0 1 2 3

I make decisions easily 0 1 2 3

I feel inadequate 0 1 2 3

I am content 0 1 2 3

Some unimportant thought runs through my mind and bothers me 0 1 2 3

I take disappointments so badly that I can't put them out of my mind 0 1 2 3

I am a steady person 0 1 2 3

I get in a state of tension or turmoil as I think over my recent concerns and interests 0 1 2 3

Below are a set of multiple choice statements. Circle the letter next to the one statement in each group which best describes the way you have been feeling over the past week, including today. If several statements within a group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

A I do not feel sad.
B I feel sad.
C I am sad all the time and I can't snap out of it.
D I am so sad or unhappy that I can't stand it.

A I am not particularly discouraged about the future.
B I feel discouraged about the future.
C I feel I have nothing to look forward to.
D I feel that the future is hopeless and that things cannot improve.

A I do not feel like a failure.
B I feel I have failed more than the average person.
C As I look back on my life, all I can see is a lot of failures.
D I feel I am a complete failure as a person.

A I get as much satisfaction out of things as I used to.
B I don't enjoy things the way I used to.
C I don't get real satisfaction out of anything anymore.
D I am dissatisfied or bored with everything.

A I don't feel particularly guilty.
B I feel guilty a good part of the time.
C I feel quite guilty most of the time.
D I feel guilty all of the time.

A I don't feel I am being punished.
B I feel I may be punished.
C I expect to be punished.
D I feel I am being punished.

A I don't feel disappointed in myself.
B I am disappointed in myself.
C I am disgusted with myself.
D I hate myself.

A I don't feel I am any worse than anybody else.
B I am critical of myself for my weaknesses or mistakes.
C I blame myself all the time for my faults.
D I blame myself for everything bad that happens.

A I don't have any thoughts of killing myself.
B I have thoughts of killing myself, but I would not carry them out.
C I would like to kill myself.
D I would kill myself if I had the chance.

A I don't cry any more than usual.
B I cry more now than I used to.
C I cry all the time now.
D I used to be able to cry, but now I can't cry even though I want to.

A I am no more irritated now than I ever am.
B I get annoyed or irritated more easily than I used to.
C I feel irritated all the time now.
D I don't get irritated at all by the things that used to irritate me.

A I have not lost interest in other people.
B I am less interested in other people than I used to be.
C I have lost most of my interest in other people.
D I have lost all of my interest in other people.

A I make decisions about as well as I ever could.
B I put off making decisions more than I used to.
C I have greater difficulty in making decisions than before.
D I can't make decisions at all anymore.

A I don't feel I look any worse than I used to.
B I am worried that I am looking old or unattractive.
C I feel that there are permanent changes in my appearance that make me look unattractive.
D I believe that I look ugly.

A I can work about as well as before.
B It takes an extra effort to get started at doing something.
C I have to push myself very hard to do anything.
D I can't do any work at all.

A I can sleep as well as usual.
B I don't sleep as well as I used to.
C I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
D I wake up several hours earlier than I used to and cannot get back to sleep.

A I don't get more tired than usual.
B I get tired more easily than I used to.
C I get tired from doing almost anything.
D I am too tired to do anything.

A My appetite is no worse than usual.
B My appetite is not as good as it used to be.
C My appetite is much worse now.
D I have no appetite at all anymore.

A I haven't lost much weight, if any, lately.
B I have lost more than 2 kilos (5lbs).
C I have lost more than 4 kilos (10lbs).
D I have lost more than 6 kilos (15lbs).

I am purposely trying to lose weight by eating less.
Yes ☐ No ☐

A I am no more worried about my health than usual.
B I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
C I am very worried about physical problems and it is hard to think of much else.
D I am so worried about my physical problems that I cannot think about anything else.

A I have not noticed any recent change in my interest in sex.
B I am less interested in sex than I used to be.
C I am much less interested in sex now.
D I have lost interest in sex completely.

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. We want you to think about what you have done over the last month to try to deal with stress.

For each of the following items, circle the one number which best describes what you have done or felt over the last month.

There are no "right" or "wrong" answers. Choose the most accurate answer for YOU - not what you think "most people" would say or do.

Indicate what you have done over the last month to deal with stress.

1 = I haven't done this at all
2 = I have done this a little bit
3 = I have done this a medium amount
4 = I have done this a lot

I try to grow as a person as a result of the experience 1 2 3 4

I turn to work or other substitute activities to take my mind off things 1 2 3 4

I get upset and let my emotions out 1 2 3 4

I try to get advice from someone about what to do 1 2 3 4

I concentrate my efforts on doing something about it 1 2 3 4

I say to myself "this isn't real" 1 2 3 4

I put my trust in God 1 2 3 4

I laugh about the situation 1 2 3 4

I admit to myself that I can't deal with it, and quit trying 1 2 3 4

I restrain myself from doing anything too quickly 1 2 3 4

I discuss my feelings with someone 1 2 3 4

I use alcohol or drugs to make myself feel better 1 2 3 4

I get used to the idea that it happened 1 2 3 4

I talk to someone to find out more about the situation 1 2 3 4

I keep myself from getting distracted by other thoughts or activities 1 2 3 4

I daydream about things other than this 1 2 3 4

I get upset, and am really aware of it 1 2 3 4

I seek God's help 1 2 3 4

I make a plan of action 1 2 3 4

I make jokes about it 1 2 3 4

I accept that this has happened and that it can't be changed 1 2 3 4

I hold off doing anything about it until the situation permits 1 2 3 4

I try to get emotional support from friends or relatives 1 2 3 4

I just give up trying to reach my goal 1 2 3 4

I take additional action to try to get rid of the problem 1 2 3 4

I try to lose myself for a while by drinking alcohol or taking drugs . . 1 2 3 4

I refuse to believe that it has happened 1 2 3 4

I let my feelings out 1 2 3 4

I try to see it in a different light, to make it seem more positive . . . 1 2 3 4

I talk to someone who could do something concrete about the problem 1 2 3 4

I sleep more than usual 1 2 3 4

I try to come up with a strategy about what to do 1 2 3 4

I focus on dealing with this problem, and if necessary let other things slide a little 1 2 3 4

I get sympathy and understanding from someone 1 2 3 4

I drink alcohol or take drugs, in order to think about it less 1 2 3 4

I kid around about it 1 2 3 4

I give up the attempt to get what I want 1 2 3 4

I look for something good in what is happening 1 2 3 4

I think about how I might best handle the problem 1 2 3 4

I pretend that it hasn't really happened 1 2 3 4

I make sure not to make matters worse by acting too soon 1 2 3 4

I try hard to prevent other things from interfering with my efforts at dealing with this 1 2 3 4

I go to movies or watch TV, to think about it less 1 2 3 4

I accept the reality of the fact that it happened 1 2 3 4

I ask people who have had similar experiences what they did 1 2 3 4

I feel a lot of emotional distress and I find myself expressing those feelings a lot 1 2 3 4

I take direct action to get around the problem 1 2 3 4

I try to find comfort in my religion 1 2 3 4

I force myself to wait for the right time to do something 1 2 3 4

I make fun of the situation 1 2 3 4

I reduce the amount of effort I'm putting into solving the problem . . 1 2 3 4

I talk to someone about how I feel 1 2 3 4

I use alcohol or drugs to help me get through it 1 2 3 4

I learn to live with it 1 2 3 4

I put aside other activities in order to concentrate on this 1 2 3 4

I think hard about what steps to take 1 2 3 4

I act as though it hasn't even happened 1 2 3 4

I do what has to be done, one step at a time 1 2 3 4

I learn something from the experience 1 2 3 4

I pray more than usual 1 2 3 4

1 August 1992

Dear Veteran

Some time ago you participated in research on the health and well-being of New Zealand Vietnam War veterans. The same team of researchers from Massey University is now conducting research on long-term coping with combat and military stress. The research is funded by the War Pensions Medical Research Trust Board. The team includes Senior Lecturers in Psychology, Dr Nigel Long and Mr Kerry Chamberlain, and Research Officer, Ms Carol Vincent.

The earlier study was just a beginning and raised as many questions as answers. We are extending the scope of that study to investigate patterns of coping and interpersonal functioning of veterans. We are also contacting a large number of veterans who were not included in the first study. We would appreciate it if you would agree to take part in this study. Its success depends on your participation as we need to obtain information from as many veterans as possible.

Details of the research are provided in the attached information sheet. Please read through this carefully and if you are willing to participate in the study, complete the enclosed consent form and questionnaire and return them in the envelope provided.

Please do not hesitate to contact a member of the research team if you have any queries about the questionnaire or research in general. You may wish to contact us at the above address, fax us at (06)350 5611, or phone us at (06)356 9099 (Nigel Long x 5229, Kerry Chamberlain x 8300, Carol Vincent x 8202). Your assistance with this research would be greatly appreciated.

Yours sincerely

Carol Vincent
Research Officer
Department of Psychology

Vietnam War Veteran Research

Information Sheet

A team of researchers from Massey University is conducting research on long-term coping with combat and military stress. The research is funded by the War Pensions Medical Research Trust Board. The team includes Senior Lecturers in Psychology, Dr Nigel Long and Mr Kerry Chamberlain, and Research Officer, Ms Carol Vincent.

What the study is about?
The present study is an extension of the research on the health and well-being of Vietnam War veterans which you have assisted with already. This study will investigate the long-term effects of military service on the health, well-being, coping and interpersonal functioning of veterans

Eligibility
You are eligible to take part in the study if you were on active service in Vietnam with the New Zealand Army.

What you will be asked to do
You will be asked to complete a single questionnaire which should take about 45 minutes of your time. The questionnaire asks you about aspects of your military service, general demographic information, and interpersonal functioning, including family interaction. There is some duplication with the previous questionnaire which you completed, but most of the questions are different.

Your rights as a participant

All participants:

* have the right to contact the researchers at any time during the research to discuss any aspects of the study.

* have the right to refuse to answer any question, or withdraw from the study at any time.

* provide information on the understanding that it is completely in confidence to the researchers, to be used only for the purposes of the research. It will not be possible to identify individuals in any reports of the results.

* will receive information about the results of the study on its completion.

1 August 1992

Dear Veteran

Your name has been selected at random from a list of New Zealand Vietnam War veterans to receive this invitation to participate in a study investigating the long-term effects of combat on service personnel. This study is part of a research project funded by the War Pensions Medical Research Trust Board and is being undertaken by a team of independent researchers from Massey University. The research team includes Dr Nigel Long, Mr Kerry Chamberlain, and Ms Carol Vincent.

The team has already undertaken research on the health and well-being of New Zealand Vietnam War veterans. This present study extends the earlier research by investigating the long-term effects of military service on the health, well-being, coping and interpersonal functioning of veterans. We would appreciate it if you would agree to take part in this study. Its success depends on your participation as we need to obtain information from as many veterans as possible.
Details of the research are provided in the attached information sheet. Please read through this carefully and if you are willing to participate in the study, complete the enclosed consent form and questionnaires and return them in the envelope provided.

Please do not hesitate to contact a member of the research team if you have any queries about the questionnaire or research in general. You may wish to contact us at the above address, fax us at (06)350 5611, or phone us at (06)356 9099 (Nigel Long x 5229, Kerry Chamberlain x 8300, Carol Vincent x 8202). Your assistance with this research would be greatly appreciated.

Yours sincerely

Carol Vincent
Research Officer
Department of Psychology

Vietnam War Veteran Research

Information Sheet

A team of researchers from Massey University is conducting research on long-term coping with combat and military stress. The research is funded by the War Pensions Medical Research Trust Board. The team includes Senior Lecturers in Psychology, Dr Nigel Long and Mr Kerry Chamberlain, and Research Officer, Ms Carol Vincent.

What the study is about?

The present study is an extension of our previous research on the health and well-being of Vietnam veterans. This study will investigate the long-term effects of military service on the health, well-being, coping and interpersonal functioning of veterans

Eligibility

You are eligible to take part in the study if you were on active service in Vietnam with the New Zealand Army.

What you will be asked to do

You will be asked to complete a questionnaire which is in two parts. It will take about 30 minutes of your time for each part. You don't need to complete both parts at the same time, but we would like you to complete both parts within the next few days. The first part asks about aspects of your military service, general demographic information, general health and well-being. The second part includes questions on coping, daily hassles and your interpersonal functioning, including family interaction.

Your rights as a participant

All participants:

* have the right to contact the researchers at any time during the research to discuss any aspects of the study.

* have the right to refuse to answer any question, or withdraw from the study at any time.

* provide information on the understanding that it is completely in confidence to the researchers, to be used only for the purposes of the research. It will not be possible to identify individuals in any reports of the results.

* will receive information about the results of the study on its completion.

Vietnam War Veteran Research

Consent Form

If you are willing to participate in the study please complete this consent form and return it with the completed questionnaire in the envelope provided.

I have read the information sheet about this study and understand the details of the study. I understand that I may ask questions at any time and decline to answer any particular questions in the questionnaire. I also understand that I am free to withdraw from the study at any time. I agree to provide the researchers with information on the understanding that it is completely confidential, and I will not be identified in any reports from the study.

Signed: _____

Name: _____

Date: _____

Appendix Q: Summary of socio-demographic information

	Number of respondents	Percentage of respondents
Age (Years)		
40-44	105	14
45-49	291	39
50-54	157	21
55-59	90	12
60-64	80	11
65 +	20	3
Ethnicity		
Maori	139	18
European	563	75
Other	53	7
Annual income		
Below $10,000	32	5
$10,000 - $19,999	99	15
$20,000 - $29,999	146	21
$30,000 - $39,999	131	19
$40,000 - $49,999	115	17
$50,000 - $59,999	63	9
$60,000 - $69,999	35	5
$70,000 - $79,999	16	2
$80,000 - $89,999	13	2
$90,000 +	34	5
Employment status		
Employed full-time	528	70
Employed part-time & other	58	8
Unemployed	168	22
Occupation		
Legislators, Administrators, & Managers	120	20
Professionals	48	8
Technicians & associated professionals	68	12
Clerks	54	9
Service & sales workers	74	13
Agricultural & fishery workers	41	7
Trades workers	43	7
Plant & machinery operators &	89	15
assemblers	38	6
Labourers & elementary service workers	17	3
Armed Forces		
Educational qualification		
No School qualification	329	44
Secondary School	172	23
Trade or Professional	184	24
University	68	9

	Number of respondents	Percentage of respondents
Marital status		
Never Married	36	5
Married	628	83
Divorced / separated	78	10
Widowed	12	2
Living arrangements		
Living alone	61	8
Living with partner	206	28
Living with partner & children	409	55
Living only with children	25	3
Other (eg boarding, flatting)	48	6
Number of relationships		
0	36	5
1	522	70
2	131	17
3 or more	58	8
Length of relationships (years)		
less than 10	85	14
10 - 19	157	25
20 - 29	280	45
30 - 39	86	14
40 - 45	12	2

	Number of respondents	Percentage of respondents
Length of service (years)		
5 & less	223	31
6 - 10	91	13
11 - 15	60	8
16 - 20	99	14
21 - 25	129	18
26 - 30	69	10
31 & over	43	6
Number of tours in Vietnam		
1	659	89
2	74	10
3 or more	8	1
Total months in Vietnam	121	17
1 - 6	462	63
7 - 12	108	15
13 - 18	36	5
19 & over		
Highest rank in Vietnam	359	48
Private, Lance Corporal	279	38
Non-commissioned Officers	103	14
Officers		
Main activity in Vietnam		
Combat	464	63
Combat Support	129	17
Administration or Technical	89	12
Support	60	8
Other		
Military specialisation in Vietnam		
Infantry	380	51
Artillery	22	31
Headquarters	45	6
Other	90	12

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. Note: in children, it may be expressed instead by disorganised or agitated behavior

B The traumatic event is persistently reexperienced in at least one of the following ways:

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

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

(3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that can occur upon awakening or when intoxicated) Note: in young children, trauma-specific reenactment may occur

(4) intense psychological distress at exposure to internal or external cues that symbolise or resemble an aspect of the trauma

(5) physiologic reactivity upon exposure to internal or external cues that symbolise or resemble an aspect of the trauma

C Persistent avoidance of stimuli associated with 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 affect (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 outburst of anger

(3) difficulty concentrating

(4) hypervigilence

(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, occupational, or other important areas of functioning.

Specify if: **Acute:** if duration of symptoms is less than three months
Chronic: if duration of symptoms is three months or more
With delayed onset: onset of symptoms at least six months after the stressor

*Source:*American Psychiatric Association, 1994

Summary information for IIP subscales[a]

Subscale	N[b]	M[c]	SD[d]	*R*[e]	Subscale Intercorrelations 1	2	3	4
1 Sociability	29	42.72	26.34	.97				
2 Independence	17	26.09	13.94	.91	.66***			
3 Intimacy	14	22.56	14.00	.94	.82***	.57***		
4 Assertiveness	9	13.45	6.82	.82	.26***	.51***	.28***	
5 Control	9	10.12	6.25	.82	.61***	.54***	.50***	.05

[a] Subscale scores were computed by summing scores across all items defining the subscale
[b] number of items in subscale; [c] mean; [d] standard deviation; [e] reliability (N = 611)
*** $p < .001$

Individual item-total correlations for the 87 items of the IIP Scale were .60, .69, .62, .63, .62, .63, .36, .59, .70, .68, .11, .48, .72, .45, .38, .57, .53, .53, .48, .45, .58, .42, .54, .67, .66, .43, .60, .75, .36, .70, .58, .48, .53, .53, .29, .63, .68, .62, .58, .37, .50, .64, .67, .58, .33, .44, .61, .67, .37, .39, .59, .68, .47, .58, .60, .73, .62, .69, .54, .55, .59, .77, .68, .69, .30, .29, .53, .23, .36, .46, .45, .39, .34, .71, .29, .66, .49, .50, .61, .68, .43, .30, .63, .75, .56, .49, .73 consecutively.

Summary information for BLOOM subscales[a]

Subscale	N[b]	M[c]	SD[d]	r[e]	Subscale Intercorrelations							
					1	2	3	4	5	6	7	8
1 Unity	24	48.35	12.50	.94								
2 Enmeshment	7	6.02	3.77	.75	-.40***							
3 Family activity	6	10.96	3.45	.72	.56***	-.24***						
4 Organisation	5	5.35	3.02	.70	-.43**	.26***	-.21***					
5 Discipline Style	6	7.63	3.40	.70	.28***	-.02	.25***	-.10**				
6 Sociability	5	9.20	3.15	.77	.50***	-.35***	.43***	-.16***	.21***			
7 Religion	5	5.03	3.85	.76	.20***	.02	.26***	-.08	.22***	.16***		
8 Conflict	4	7.30	2.37	.68	.49***	-.33***	.20***	-.39***	-.02	.22***	.00	
9 Independence	3	3.84	1.62	.30	-.44***	.17***	-.23***	.31***	-.15***	-.19***	-.05	-.37***

[a] Subscale scores were computed by summing scores across all items defining the subscale
[b] number of items in subscale; [c] mean; [d] standard deviation; [e] reliability (N = 587)
** $p < .01$ *** $p < .001$

Individual item-total correlations for the 75 items of the BLOOM Scale were .47, .42, -.27, .26, .40, .26, .10, .59, .53, .55, -.34, .51, .27, -.04, -.06, .60, .54, -.20, .42, .36, .29, .30, .39, .46, .57, .44, .44, .32, .25, -.10, .49, .58, -.17, .31, .42, .40, .30, .37, -.29, .56, -.41, .45, .35, .11, -.05, .45, .51, -.09, .39, .41, .26, .16, .49, -.16, .57, .05, .38, -.31, .17, -.19, .38, .51, -.07, .45, .40, .30, .25, .23, -.28, .46, -.12, -.47, -.09, -.28, .11 consecutively.

Summary information for DAS subscales[a]

Subscale	N[b]	M[c]	SD[d]	r[e]	Inter-correlation
Consensus	3	10.30	2.45	.80	
Cohesion	3	8.82	3.14	.83	.54***

[a] Subscale scores were computed by summing scores across all items defining the subscale
[b] number of items in subscale; [c] mean; [d] standard deviation; [e] reliability (N = 629) *** $p < .001$

Individual item-total correlations for the 6 items of the DAS Scale were .56, .65, .57, .67, .67, .62 consecutively.

Summary information for COPE subscales[a]

Subscale	N[b]	M[c]	SD[d]	r[e]	Subscale Intercorrelations						
					1	2	3	4	5	6	7
1 Cognitive/Behavioral	16	39.93	10.49	.93							
2 Support-Seeking	8	15.17	5.33	.87	.55***						
3 Denial	8	12.03	3.98	.80	-.09	-.01					
4 Alcohol/Drug use	4	5.55	2.84	.95	-.09**	-.07	.41***				
5 Religion	4	5.85	3.24	.93	.18***	.15***	.12***	-.03			
6 Humour	4	7.43	2.71	.83	.35***	.26***	.14***	.03	.09**		
7 Acceptance	4	10.41	2.94	.72	.45***	.18***	.33***	.17***	.11**	.31***	
8 Venting Emotions	4	7.48	2.64	.74	.17***	.31***	.32***	.26***	.16***	.03	.20***

[a] Subscale scores were computed by summing scores across all items defining the subscale
[b] number of items in subscale; [c] mean; [d] standard deviation; [e] reliability (N = 665)
** $p < .01$ *** $p < .001$

Individual item-total correlations for the 60 items of the COPE Scale were .39, .29, .28, .43, .51, .34, .27, .33, .21, .39, .41, .18, .40, .49, .47, .21, .32, .28, .46, .40, .37, .41, .40, .13, .53, .13, .19, .35, .55, .51, .20, .55, .48, .34, .17, .35, .15, .50, .55, .12, .48, .56, .15, .50, .50, .34, .48, .34, .52, .33, .23, .48, .16, .42, .49, .56, .11, .51, .56, .31 consecutively.

Summary information for Mississippi subscales[a]

Subscale	N[b]	M[c]	SD[d]	r[e]	Subscale Intercorrelations				
					1	2	3	4	5
1 Reexperiencing	12	23.15	8.05	.89					
2 Numbing	9	22.12	6.77	.87	.66***				
3 Hostility	4	8.73	3.18	.79	.62***	.65***			
4 Depression/suicide	3	3.72	1.47	.74	.58***	.47***	.45***		
5 Cognitive functioning	3	6.70	2.39	.62	.55***	.58***	.51***	.45***	
6 Sleep	3	8.25	2.73	.52	.36***	.34***	.30***	.23***	.28***

[a] Subscale scores were computed by summing scores across all items defining the subscale
[b] number of items in subscale; [c] mean; [d] standard deviation; [e] reliability (N = 700)
*** $p < .001$

Individual item-total correlations for the 35 items of the Mississippi Scale were .49, .13, .59, .64, .57, .42, .59, .48, .57, .44, .30, .47, .45, .60, .54, .64, .56, .63, .45, .53, .56, .55, .63, .53, .51, .68, .55, .57, .58, .57, .60, .64, .52, .40, .63 consecutively.