

POSTTRAUMATIC STRESS SYMPTOMATOLOGY IN AGING COMBAT VETERANS:
THE DIRECT AND BUFFERING EFFECTS OF STRESS AND SOCIAL SUPPORT

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The literature has reported that some older veterans are still distressed by memories of traumatic experiences decades after wartime military service. Recent research has suggested that posttraumatic stress symptoms may appear or reappear during late life in survivors of past trauma and that stress associated with age-related changes may intensify this phenomenon. This dissertation research examined the relationship between past combat exposure and posttraumatic stress symptomatology in community-dwelling veterans of World War II and the Korean War. The risk factor of perceived stress and the protective factor of perceived social support were examined for their potential to exacerbate or mitigate this relationship. The study also investigated the effect of past combat exposure and the role of the moderating variables on health-related quality of life. A secondary aim of the research was to assess the direct effect of perceived stress and perceived social support on the outcome variables.

The results indicated that past combat exposure was positively associated with experiencing posttraumatic stress symptoms in World War II and Korean War veterans. Perceived stress was found to significantly exacerbate this relationship. Direct effect relationships were found between perceived stress and posttraumatic stress symptomatology and the mental health domain of health-related quality of life. The mean number of posttraumatic

stress symptoms experienced by participants at the symptomatic level was five. The most frequent symptom experienced was sleep disturbance; the second was becoming upset at reminders of the traumatic experience. Increased levels of posttraumatic stress symptoms were found in veterans who were not married, living in an urban area, and diagnosed with depression.

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PREFACE

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CHAPTER 1. INTRODUCTION

1.1. STATEMENT OF THE PROBLEM

Despite the substantial increase in the number of persons living into late adulthood, little is known about the extent and long-term effects of trauma in older adults. The limited research conducted to date suggests that older adults may reexperience symptoms related to past traumatic events that have been repressed for decades, or that symptoms may worsen during late-life (Port, Engdahl & Frazier, 2001). For the current cohort of older adults, trauma that occurred before their middle adult years preceded the recognition in 1980 of Posttraumatic Stress Disorder (PTSD) as a diagnostic entity. The stigma against mental illness that influenced the present generation of older Americans may have resulted in a reluctance to report posttraumatic stress symptoms or to interpret them as somatic rather than as psychological problems (Cook, 2001). Many World War II and Korean War veterans are only now coming forward and acknowledging previously ignored symptoms of PTSD (Cuervo-Rubio, 1995). The literature suggests that many of today's older veterans who are survivors of traumatic wartime experiences may have lived with undetected or misdiagnosed mental health problems for decades. One aim of the present research is to examine whether traumatic experiences while serving in the military is associated with the presence of posttraumatic stress symptoms in World War II and Korean War veterans.

Individuals who develop PTSD represent only a subset of those exposed to traumatic experiences. Investigators have studied why certain people are at risk of developing PTSD, while others appear to be more resilient to the effects of trauma. Resilience, or the ability to prevent, minimize, or overcome damaging effects of adversities (Greene & Conrad, 2000), has received increased attention during the past decade as researchers in aging shift their focus from disease and disability to successful aging. Protective factors, the internal and external resources that facilitate resilience, may act to mitigate the effects of past trauma on posttraumatic symptom severity in older adults as well as improve their overall functioning.

Research suggests that social support acts as a protective factor that helps elders evaluate and overcome traumatic events, and thus promotes coping (Hardy, Concato, & Gill, 2004; Taft, Stern, King & King, 1999). Studies of trauma survivors have shown that those who perceive that they are cared for by others and assistance will be available if needed cope better than those who perceive that they have few resources (Krause, 2004; Norris, Friedman, Watson, Byrne, Diaz, & Kaniasty, 2002). Perceived social support is examined in this study for its potential to buffer the relationship between past traumatic combat exposure and posttraumatic stress symptomatology.

Many of the age-related changes that commonly occur in late life constitute stressors (Buffum & Wolfe, 1995). Unresolved past trauma may interact negatively with these age-related stressors to affect physical, psychological, and social functioning in older adults (Schnurr, Spiro & Paris, 2000). Studies done principally with Holocaust survivors have shown that elders exposed to severe trauma may have a heightened vulnerability to late-life stressors (Solomon & Prager, 1992; Yehuda, Kahana, Schneidler, Southwick, Wilson, & Giller, 1995). This study looks at the potential of perceived stress to act as a risk factor to exacerbate the negative impact of past trauma on posttraumatic stress symptomatology and late-life health-related quality of life.

Historically, investigators have made use of military populations in order to address important questions in the field of trauma. By utilizing this population in studies of trauma, researchers have been able to assess traumatic stress reactions throughout the life course. To date, much of what is known about PTSD has been gained from studies conducted with combat veterans (Whealin, Morgan & Hazlett, 2001). In addition to its reputation as the leading contributor to the knowledge base of PTSD, the Veterans Administration is also considered a world leader in research on aging (DVA, 1998). Table 1 presents data from the Veterans Administration (DVA, 2001a) and the Administration on Aging (2006), illustrating the higher percentage of older adults in the veteran population compared to the general population as well as the predicted increase in the older population in the coming decades. In the current cohort of Americans over the age of 64, an estimated 25 percent of men have experienced combat (Port et al., 2001). The present study utilized the opportunities available within the VA system for accessing an older population with possible traumatic military experiences.

Table 1: Comparison of Veteran and U. S. Geriatric Populations

	2000	2020
Median Age		
Veteran Population:	57	63
U. S. Population:	36	38
% Over Age 64		
Veteran Population:	37%	45%
U. S. Population:	13%	20%
% Over Age 85		
Veteran Population:	3%	6%
U. S. Population:	1%	2.5%

Understanding the long-term consequences of traumatic experiences is not only important for the well-being of combat veterans, but also for the population-at-large. The PTSD Alliance

(2004) reports the following statistics on the prevalence of traumatic events and PTSD in the general population:

1. An estimated 70 percent of adults in the United States have experienced a traumatic event at least once in their lives, and up to 20 percent go on to develop Posttraumatic Stress Disorder.
2. An estimated 5 percent of Americans – more than 13 million people – have PTSD at any given time.
3. Approximately 8 percent of all adults – one of 13 people in this country – will develop PTSD during their lifetime.
4. Almost 17 percent of men and 13 percent of women have experienced more than three traumatic events during their life course.

These statistics point out the importance of research like this study that adds to the existing knowledge base on posttraumatic stress and resilience in order to ensure better health outcomes both within and outside of the VA system.

1.2. SIGNIFICANCE OF THE PRESENT STUDY TO SOCIAL WORK

Because posttraumatic stress symptoms may have gone unnoticed by health professionals for decades, it is vital that social workers understand the importance of inquiring about possible traumatic experiences and symptoms in their older clients. These survivors are now coping with age-related changes, and as a result, their symptoms may be exacerbated and more difficult to manage. The recognition of how past trauma negatively impacts people throughout the life course is a prerequisite for effective social work interventions. By addressing the issues

investigated in this study with their clients, social workers have the opportunity to contribute to the overall well-being of the older population as well as help control escalating healthcare costs. Research such as this study that identifies who may present with posttraumatic stress symptoms in late life will allow for interventions to take place before they develop. Identifying effective protective factors will enable the development of resilience-based programs, these programs can be in place and available for the large cohort of over eight million Vietnam veterans that is approaching late-life.

Traumatic experiences not only affect the victim but also his or her family members. When trauma reactions go on for some time without treatment, they can cause major problems in a family, including domestic violence, depression, substance abuse, and physical illness (Carlson, 2005). Studies have shown that children of veterans with PTSD may also develop traumatic stress reactions, referred to in the literature as the transgenerational transmission of the effects of trauma (Davidson & Mellor, 2001). Partners of veterans with undetected or untreated PTSD often experience caregiver burden and psychological distress (Calhoun & Wempler, 2002). By increasing social workers' awareness of remote trauma in the older veteran, this study not only helps the victim, but their family members and future generations as well.

Acts of terrorism and war have been found to be particularly disturbing for people who have previously experienced traumatic events (Kaiman, 2003). These stressors that may bring back memories of traumatic combat experiences for older veterans and result in the recurrence or aggravation of posttraumatic stress symptoms (PTSD Alliance, 2004). The present study is of particularly significant in the current climate of the ongoing threat of terrorism and war. The results will aid social workers in interpreting a sudden onset or exacerbation of posttraumatic stress symptoms in their older clients. Social workers will increasingly be called upon to assist a

new generation of veterans and their families from Operation Iraqi Freedom and Operation Enduring Freedom likely to be coping with PTSD.

1.3. SPECIFIC AIMS OF THE PRESENT STUDY

The aim of this research study is to examine whether prior combat exposure is associated with experiencing posttraumatic stress symptoms in community-dwelling World War II and Korean War veterans over the age of 64 who had not been previously diagnosed with or treated for PTSD. The risk factor, perceived stress, and the protective factor, perceived social support, are assessed for their potential to exacerbate or mitigate this relationship. The relationship between combat exposure during the two wars and late-life health-related quality of life is also examined. World War II and Korean War veterans are studied as separate groups, filling a current gap in the literature on war-related traumatic experiences and PTSD.

CHAPTER 2. LITERATURE REVIEW

2.1. POSTTRAUMATIC STRESS DISORDER

2.1.1 Definition

Posttraumatic stress disorder is an anxiety disorder that is the direct result of exposure to a traumatic event(s). In the fourth edition of the *Diagnostic and Statistical Manual*, evidence-based text revision (DSM-IV-TR), the diagnostic criteria for posttraumatic stress disorder (PTSD) states that an individual must have “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 self or others” (American Psychiatric Association, 2000, p. 467). In addition, the individual must experience a sense of intense fear, helplessness, or horror in response to the traumatic stressor. Characteristic symptoms of PTSD are grouped into three clusters: (a) reexperiencing the event, (b) avoidance of reminders of the traumatic event, and (c) emotional numbing/hyperarousal. In order to make a diagnosis of PTSD, symptoms must be present for at least one month and cause significant impairment in social, occupational, and other areas of functioning (American Psychiatric Association, 2000).

Several qualities of a traumatic event distinguish it from others that may be highly stressful but not likely to result in traumatic stress reactions. First, traumatic events occur

suddenly and unexpectedly, allowing insufficient time for the victims to prepare themselves psychologically. Victims perceive that they lack control over traumatic events, causing victims to feel powerless to change the circumstances or outcome. Because traumatic events are sudden and out of one's control, individuals are unable to use past experience when attempting to cope with traumatic events. The traumatic event is likely also to result in an irreversible outcome, such as the death of friend or permanent injury (PTSD Alliance, 2004).

The negative psychological impact of traumatic events may include emotional numbness with accompanying shock and disbelief. Disturbing images of the traumatic event may intrude into the victim's thoughts and dreams, with reminders of the event acting as triggers for these intrusive recollections. Repetitive dreams bring the survivor back to the situation of danger and surprise in order that he or she can attempt to master it (van der Kolk, 1987). The survivor of trauma may experience fear and anxiety as well as remain more vigilant for clues of the occurrence of another similar event (Comer, 2003). Those who live through traumatic experiences that others did not may experience survival guilt, and they may blame themselves for things they either did or did not do at the time. Studies have found that survivors of trauma may also be angry, irritable, or depressed. They may ruminate about the traumatic event in the attempt to comprehend why it happened without ever achieving an understanding (NCPTSD, 2006). If symptoms appear immediately after the traumatic event and last less than a month, the pattern is diagnosed as acute stress disorder (American Psychiatric Association, 2000). If the symptoms continue longer than a month, then PTSD is diagnosed. PTSD may begin many months or years after the traumatic event.

2.1.2 Historical Perspective on the Evolution of PTSD

An examination of the history of the diagnosis of PTSD reveals how social biases, cohort effects, and historical context have influenced its development. Although scattered accounts of reactions to combat appear throughout recorded history, it was not until World War I that the medical and scientific community began an organized effort to describe and understand these reactions (Schlenger, Fairbank, Jordan & Caddell, 1999). The concept that combat exposure, rather than cowardice or poor discipline, contributed to physiological symptoms and mental breakdown began to evolve slowly during that era. The term “shell shock” was used to describe a variety of syndromes thought to result from minute brain hemorrhages or concussions caused by close proximity to exploding shells (Comer, 2003). Shell shock was considered a temporary condition that would disappear after the soldier was away from the battlefield. Men who continued to suffer from shell shock were thought to be weak in character, suffering from a pre-existing mental illness, or desiring government compensation (Binneveld, 1997). This stigma was reflective of the larger societal misunderstanding of mental illness during the early 20th century.

The experience during World War I showed that 20% of all casualties were from war-related neurosis (Jones, 1987). Shell shock symptoms of irritability, nightmares, startle reactions, and confused fear are found in the literature. Soldiers suffering from shell shock did not always recover as quickly as expected, even after they were discharged. After the end of World War I, shell shock was referred to as “war neurosis” by Freud, who compared it to traumatic neurosis found in the general public. Freud believed that victims of war neurosis experienced intrusive recollections and dreams caused by repression of the traumatic experience (Freud, 1920b).

There was some early evidence of the chronic nature of war-related neurosis following World War I. Referring to victims of shell shock, Freud theorized that war trauma presented the mind with powerful stimuli that could not be dealt with normally, resulting in permanent disturbance (Freud, 1920a). He wrote of a repetition-compulsion in which people keep going back to recollections of traumatic experiences in the effort to master them and produce a positive outcome; however, Freud did not complete a theory on trauma (van der Kolk, Weisaeth & van der Hart, 1996).

Kardiner and Spiegel (1947, p. 38) wrote that people soon forgot about war-related neurosis after World War I:

The subject of neurotic disturbances consequent upon war has, in the past 25 years, been submitted to a good deal of capriciousness in public interest and psychiatric whims. The public does not sustain its interest, which was very great after World War I and neither does psychiatry. Hence these conditions are not subject to continuous study...but only to periodic efforts which cannot be characterized as very diligent... Though not true in psychiatry generally, it is a deplorable fact that each investigator who undertakes to study these conditions considers it his sacred obligation to start from scratch and work at the problem as if no one had ever done anything with it before.

2.1.3 World War II

Kardiner (1941) was one psychiatrist who continued to research and write on war-related neurosis between World War I and World War II. His seminal report on the chronic nature of war-related neurosis influenced the military to attempt to reduce the incidence of psychiatric

casualties during World War II (Clipp & Elder, 1996). The military initiated the pre-screening of enlistees and draftees during World War II using Rorschach and other personality tests in the attempt to eliminate those with character flaws or mental illness. Despite attempts to accept only the most intelligent and healthy recruits, the number of soldiers discharged from duty due to psychiatric reasons exceeded the number of draftees at one point during World War II, creating a manpower crisis (Bourne, 1970). Psychiatric disorders were found in three times the number of soldiers in World War II than in the First World War. However, few provisions had been made for psychiatric casualties at the beginning of the war, despite the military's experience during World War I (van der Kolk et al., 1996).

After symptoms of war-related neurosis were reported in combat soldiers, the military recognized the need to initiate treatments of rest and relaxation at the front. The government promoted the study of the psychological effects of warfare and employed psychiatrists as consultants to serve in the war zone. The term used to refer to the constellation of symptoms observed during World War II was changed from traumatic neurosis to "combat fatigue" or "combat exhaustion," reflective of the belief at the time that the condition was temporary and curable by rest (Glass, 1954). Combat exhaustion was interpreted as a normal response to battle, not as a psychological or psychiatric disorder. The chronic nature of combat exhaustion began to emerge in studies conducted in the first decade after the end of World War II (Schnurr, 1991).

In 1942, two psychiatrists assigned to the war zone wrote a report on combat neurotic and psychotic reactions in their unit. This report was dismissed at first by the military establishment (Jones, 1987). The report was later published as the classic *Men Under Stress* (Grinker & Spiegel, 1945) in which the psychiatrists concluded that even psychologically healthy men without previous emotional disorders or personality defects could develop pathological reactions

to extreme stress if subjected to enough emotional strain in the war zone. For those with more serious psychological wounds, the symptoms of combat exhaustion could persist even after that soldier was removed from battle. For soldiers overwhelmed by extreme stress, “recovery from the symptoms takes place only after a long time or after vigorous psychotherapy” (Grinker & Spiegel, 1945, p. 83). Grinker and Spiegel believed that former servicemen who continued to display symptoms of war neurosis were unable to discriminate between the hostile environment of the battlefield and the safe environment of home. Table 2 presents the ten most frequent symptoms seen in returnees with operational fatigue syndrome by Grinker and Spiegel, in order of frequency (p. 210):

Table 2: Symptoms of Operational Fatigue Syndrome in Order of Frequency

1. Restlessness
2. Irritability and aggressive behavior
3. Fatigue on arising and lethargy
4. Difficulty in falling asleep
5. Subjective anxiety
6. Easy fatigue
7. Startle reaction
8. Feeling of tension
9. Depression
10. Personality changes and memory disturbances

2.1.4 Studies of Survivors of Concentration Camps

At the end of World War II, an independent line of research began that studied the long-term effects of the Holocaust. Investigators found symptoms in these survivors that were similar to ones found in soldiers with combat exhaustion. The most consistent finding from these studies was the devastating effect of extreme and long-lasting trauma on health. The term “concentration camp syndrome” was used to describe the biological, psychological, and social consequences of

the Holocaust, including a decreased capacity to cope with subsequent stressors (van der Kolk, Weisaeth & van der Hart, 1996). Symptomatology consistently found in survivors of Nazi persecution included: (a) anxiety, (b) numbing of affect, (c) depression, (d) dysphoria, (e) cognitive and memory impairment, (f) somatoform complaints, and (g) sleep disturbances (Aarts & Op den Velde, 1996).

2.1.5 The Korean War

World War II had demonstrated that cases of combat exhaustion became harder to treat the further soldiers were removed from their units. Psychiatrists assigned to manage the care of ground troops during the Korean War thought that the best course of action was to treat the soldier on the frontline and return him to battle as soon as possible (Jones & Palmer, 2000). The Korean War was the first conflict in which clinicians provided frontline treatment for psychiatric casualties consisting primarily of rest and possibly medication. Although this treatment evolved from the recognition that combat stress had a detrimental effect on soldiers, the main purpose of frontline treatment was to preserve manpower and achieve military goals. Soldiers were able to regain function and resume their assignments, but the long-term value of frontline treatment in preventing PTSD has not been established (Raphael & Dobson, 2001). Follow-up studies of soldiers in the Israeli army have shown that exposing soldiers to repeated stress reactions by returning them to battle may lead to an increased susceptibility to developing PTSD (Solomon, 1989).

During the first phase of the Korean War, a period of fierce fighting to regain territory that occurred from June 1950 to November 1951, the military recorded the highest number of battle casualties as well as the greatest number of cases of combat fatigue (Kaiman, 2003). After

the frontline stabilized near the 38th parallel, the war became one of stagnant attrition (Blair, 1987). As the number of battle casualties decreased, the incidence of combat fatigue also decreased (Jones & Palmer, 2000). Thus, a direct correlation was made during the Korean War between the intensity of battle and the number of psychiatric casualties.

The Korean War, referred to as the “forgotten war,” produced little new information on the etiology and course of reactions to traumatic combat exposure (Kaiman, 2003). Combat fatigue was considered a temporary and reversible condition that could occur in individuals without a previous history of mental illness. Soldiers who served in the Korean War were expected to be able to handle their traumatic combat experiences without assistance from the military. Societal stigma against mental illness continued to discourage veterans from seeking treatment.

Unlike World War II soldiers, who returned to a grateful nation with a hero’s welcome, Korean War soldiers fought an unpopular war and did not receive a similar welcome upon their return (Fontana & Rosenheck, 1994). World War II involved massive mobilization of almost all able-bodied young men and ended with a clear victory; in contrast, the Korean War was a limited war with the mobilization of only a small percentage of draft-age men and without a clear victory (Blair, 1987). Korean War veterans have rarely been studied on their own despite differences in these groups of veterans due to cohort effects (Schnurr, 1991). The few studies available in the literature report that veterans of Korea experienced greater postwar readjustment difficulties. Fontana and Rosenheck (1994) found higher rates of PTSD symptoms in veterans of Korea; the authors attributed the difference to the unpopularity of the Korean War and the lack of respect for these veterans in the home community.

Spiro, Schnurr and Aldwin (1994) examined the long-term effects of combat exposure on World War II and Korean War veterans who participated in the Normative Aging Study. Veterans of Korea who had been exposed to combat had higher rates than other veterans, demonstrating the positive association between both serving in Korea and the amount of combat exposure on the intensity of PTSD symptoms. The first study to compare older veterans of the two wars on measures of PTSD symptomatology was not conducted until 2000. Korea veterans reported significantly more severe symptoms on both interview and self-report measures. The authors suggested that stressful postmilitary homecoming experiences may have played a role the higher rates found in this cohort of aging veterans (McCraine & Hyer, 2000).

2.1.6 Rates of Psychiatric Casualties during World II and Korea

Although prevalence rates of PTSD following the end of WWII and the Korean War are unknown because it was not yet a formal diagnosis, a review of military statistics provides some insight into the possible rates of psychiatric casualties and posttraumatic stress symptoms in these two wars. Table 3 summarizes the statistics reviewed in the following paragraphs from World War II and the Korean War.

Table 3: Military Statistics: World War II and Korean War

War	Served	% Exposed To combat	Rate of Psychiatric Casualties	% Reporting Symptoms at Discharge
World War II	16,112,556	54%	23 to 50%	11.2%
Korean War	5,720,000	35%	6 to 25%	3.7%

Sixteen million men served in WWII, and an estimated 54% of these soldiers were exposed to combat (Spiro et al., 1994). The overall rate of psychiatric casualties for ground troops has been estimated at 23%; however, this percentage rises to as high as 50% for air crews and soldiers with repeated combat missions (Grinker & Spiegel, 1945). The rates of psychiatric casualties increased in direct proportion to the length of time spent in combat. Schnurr (1991) indicates that the collection of symptoms known as combat exhaustion during World War II is similar to the syndrome now recognized as PTSD. These symptoms included nightmares, preoccupation with the traumatic event, irritability, increased startle response, angry outbursts, and general impairment of functioning. Lee, Vaillant, Torrey, and Elder (1995) reported on data from a longitudinal study that surveyed World War II veterans at the end of the war. The results of this study showed that, upon returning to civilian life in 1946, 11.2% reported two or more posttraumatic stress symptoms as defined in the DSM-III. Using the rate of 11.2% found by Lee et al., one can estimate that 2.6 million World War II veterans experienced posttraumatic stress symptoms at the end of the war.

Although little is known about the rate of combat exhaustion in war-zone soldiers, more is known about World War II prisoners of war (POWs) because examinations and follow-up research have been done on this group of veterans since the end of the war. The literature shows that, although they did not anticipate traumatic stress reactions in combat soldiers, the military establishment recognized that POWs who were exposed to extreme trauma would need treatment for psychiatric conditions and continuing help with readjustment after the war. In contrast to the lack of data kept war-zone soldiers, the government has maintained a data file on World War II POWs that is available to the public. A long-term follow-up of POWs began in the 1950s and has provided some of the most comprehensive data on the medical and psychological effects of

trauma (Page, Engdahl & Eberly, 1991). Lifetime PTSD rates ranging from 67% to 78% have been found in World War II POW survivors (Kluznik, Speed, Van Valkenburg, & Magraw, 1986; Sutker et al., 1993).

There were 5.7 million American men and women who served in theater during Korean War period of service (DVA, 2000). The official period during which hostilities occurred is from June 27, 1950 to July 27, 1953, during which time 35% of soldiers were exposed to combat (Spiro et al., 1994). Jones and Palmer (2000) analyzed psychiatric reports from the Korean War and found that the war fell into two phases determined by the intensity of combat, which, in turn, influenced the rate of psychiatric disorders encountered. In the first phase of the war, the rate of psychiatric casualties was estimated at 25%. The introduction of psychiatrists at the front and the reduction of the intensity of battle reduced the rate to 6%, although the incidence of cases may have been unintentionally underreported.

The approach of treating soldiers at the front was considered at the time to be a success; however, the syndrome of traumatic stress reactions continued to be poorly understood. Symptoms were expected to disappear after one year unless the veteran had been a POW. Korean War POWs are listed on a government-maintained database that is available to the public, providing documented records on this group of veterans for use in research. PTSD was found in 86% of a sample of Korean War POWs 50 years after the end of the conflict (Sutker, Allain, & Winstead, 1993).

2.1.7 Cohort Effects on Reporting Posttraumatic Symptoms

Veterans of these two wars have been inclined to avoid seeking treatment or to underreport symptoms (Weintraub & Ruskin, 1999). The literature reports that soldiers who

served in World War II and the Korean War tended to ignore their symptoms as they tried to get back to their normal lives. When these veterans have been interviewed about their experiences, the vast majority of them report that they never talked about the war with their family or friends. Raphael and Dobson (2001) refer to forgetting or denying traumatic experiences as the only option for those who were required to move on with their lives. The traumatic event, however, is not forgotten, but rather it is set aside. Lipton and Schaffer (1986) described the “John Wayne” syndrome in which men in these cohorts denied symptoms due to being sensitive to admitting weakness. Veterans believed that others would not understand what they experienced or would think less of them for their reactions, reflective of the larger societal stigma against mental illness (Kaiman, 2003).

Various coping mechanisms were commonly used by these cohorts of veterans to repress symptoms of traumatic stress reactions, including immersing oneself in work, alcohol abuse, or avoiding reminders of the war. Clinicians have failed to connect addictive disorders in World War II and Korean War veterans with PTSD (Clipp & Elder, 1996). In aging war veterans, PTSD may have gone unnoticed by health care professionals for decades (Spiro et al., 1994). The few empirical studies found in the literature report that a substantial number of these veterans continued to experience PTSD symptoms decades after exposure (Cuervo-Rubio, 1995). Although some veterans fail to experience sufficient symptoms to meet the criteria for a PTSD diagnosis, veterans with only one or two symptoms are still being negatively affected by the legacy of traumatic exposure (Cliff & Elder, 1996).

World War II and Korean War veterans are more likely to report emotional and mental health problems as somatic complaints (Cook, 2001). They tend to seek help from their primary care physicians rather than from mental health professionals; thus, the present study, which

aimed to screen for previously unreported posttraumatic stress symptoms in community-dwelling older veterans, was conducted in the primary care setting.

2.1.8 Evolution of PTSD in the Diagnostic and Statistical Manuals

The symptoms of Operational Fatigue Syndrome described by Grinker and Spiegel (1945) formed the basis of the diagnostic criteria for “gross stress reaction” included in the first Diagnostic and Statistical Manual (DSM-I) published in 1952. Gross stress reaction was intended for reactions to military or civilian catastrophes. One of the criteria for the diagnosis of gross stress reaction in the DSM-I was that it was temporary and reversible (Clipp & Elder, 1996). The symptoms were to either resolve over time or progress to anxiety neurosis or depression (American Psychiatric Association, 1952). Following the publication of the DSM-I, reports of continued symptoms led clinicians to question the acute nature of the diagnosis of gross stress reaction. Brill and Beebe (1955) found evidence of chronic psychological disturbance after ten years among approximately 1,500 subjects who had experienced psychiatric casualties during World War II. Archibald and Tuddenham (1965) published the results of their study of combat veterans conducted 20 years after the end of the war. They found continued problems of sleep disturbance, startle reactions, dizziness, blackouts, and avoidance of activities that were similar to combat experiences.

The medical and scientific community’s interest in gross stress reaction declined after the Korean War. The diagnosis was omitted from the DSM-II, which was published in 1968. In the DSM-II, traumatic stress reactions were considered an “adjustment reaction to adult life” under the general heading of “transient situational disorder;” adjustment reaction included “fear associated with military combat manifested in trembling, running, and hiding” (American

Psychiatric Association, 1968). It was considered a temporary disorder, even though evidence existed at the time supporting the chronic nature of traumatic stress reactions (Ozer, Best, Lipsey & Weiss, 2003). If symptoms persisted, the DSM-II required that the neurotic illness be classified according to the presenting symptoms.

2.1.9 Vietnam and the Development of Posttraumatic Stress Disorder

The acknowledgment of PTSD as a diagnosis resulted from the Vietnam Conflict; therefore, a brief review of it is provided in this section. The Vietnam Conflict appeared initially to incur fewer cases of traumatic stress reactions than either World War II or Korea. The practice of treating psychiatric casualties on the frontline, considered a success during the Korean War, was repeated in Vietnam. The reduction in cases was also attributed to the shorter tour of duty during this conflict. The twelve-month rotation of all service personnel during Vietnam was thought to give soldiers sufficient opportunity for rest and relaxation. However, some psychiatric casualties may have been misdiagnosed as character problems, drug and alcohol abuse, schizophrenia, or other mental disorders. Some returning soldiers first experienced traumatic stress reaction symptoms months and even years after discharge (Figley, 1978). Although the official military position remained that combat-related trauma was a temporary condition, symptoms continued for many veterans for years. By the late 1970s, tens of thousands of veterans experiencing posttraumatic stress symptoms sought treatment at VA hospitals (Kaimen, 2003). The VA's official position, however, was that any psychiatric disorder occurring more than one year after discharge was not related to military service.

Several influential books were published during the 1970s, including *Home from the War: Vietnam Veterans: Neither Victims nor Executioners* (Lifton, 1973) and *Stress Disorders*

among Vietnam Veterans (Figley, 1978), which described the post-war adjustment problems of Vietnam veterans. A Vietnam Veterans Working Group was organized in 1975 by psychiatrists in the VA system that advocated for a separate diagnostic category in the DSM-III to address the continuing psychological problems of this cohort of veterans. The working group applied the label of posttraumatic stress disorder to the interpersonal difficulties experienced not only by soldiers but also people in the general population who were exposed to traumatic experiences.

During the same that traumatic stress reactions were first recognized in Vietnam veterans, trauma in women and children began to be examined in 1974 in studies of female rape victims and battered children. These studies found symptoms in women and children that resembled those found in male combat trauma victims (van der Kolk et al., 1996). The term “rape trauma syndrome” was used to describe a group of symptoms observed in female victims of sexual assault that included being on guard, easily startled, avoidant, and flooded with memories of the assault (Ozer, Best, Lipsey & Weiss, 2003). Studies consistently showed a positive association between the severity of the traumatic stressor and the likelihood of the development of negative psychological sequelae in both military and civilian populations, a phenomenon first described by Hocking (1970) as a dose-dependent relationship.

Members of the DSM-III task force were reluctant to include a syndrome tied to a historical event such as the Vietnam Conflict; however, evidence that similar symptoms were experienced in survivors of other trauma such as rape and concentration camps helped convince them to include a diagnosis category for a traumatic stress syndrome in the new edition (McNally, 2003). The American Psychiatric Association (1980) added PTSD as a diagnostic category to the third edition of its *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III). The diagnostic criteria were based on Kardiner’s (1941) observations of World War I

veterans (Brett, 1996). A significant paradigm change occurred in relation to previous theory and practice in that, in the DSM-III, reactions were considered the result of a traumatic event outside of the individual rather than by an internal weakness. The traumatic event was conceptualized for the DSM-III as one that was outside of the range of normal human experience such as war, torture, rape, or natural disasters. The assumption was that, although most individuals are able to cope with stressors such as illness, job loss, or divorce, their adaptive capacity would be overwhelmed when experiencing a traumatic event. The definition of PTSD in the DSM-III included an acknowledgment that the disorder may be long lasting or have permanent effects by providing the specifier of “chronic,” intended for use when symptoms last longer than three months (Yehuda & McFarlane, 1995). Table 4 presents a summary of the diagnostic criteria for posttraumatic stress disorder in the DSM-III.

Table 4: DSM III: Diagnostic Criteria for Posttraumatic Stress Disorder

Criteria and Related Symptoms
A. Existence of a recognizable stressor that would evoke significant symptoms of distress in almost everyone.
B. Reexperiencing of the trauma (at least one of the following): <ol style="list-style-type: none"> 1. recurrent and intrusive recollections of the event 2. recurrent dreams of the event 3. acting or feeling as if the traumatic event were reoccurring
C. Numbing of responsiveness or reduced involvement in the world (at least one of the following): <ol style="list-style-type: none"> 1. diminished interest in significant activities 2. feeling detached or estranged from others 3. constricted affect
D. Other symptoms (at least two of the following): <ol style="list-style-type: none"> 1. hyperalertness or exaggerated startle response 2. sleep disturbance 3. guilt about surviving or behavior required for survival 4. memory impairment or trouble concentrating 5. avoidance of similar activities to traumatic event 6. intensification of systems when exposed to similar events

2.1.10 Evolution of the Diagnosis Since 1980

The acknowledgment of the formal category of PTSD in the DSM III was a critical first step that opened up scientific investigation of the etiology, manifestation, and treatment of the effects of trauma (van der Kolk & McFarlane, 1996). VA hospitals began to provide treatment aimed at war-related trauma in Vietnam veterans (Figley, 2004). It is largely through observation and documentation of the postwar experiences of Vietnam veterans that the syndrome known as PTSD has continued to evolve (Clipp & Elder, 1996). The largest study to date on PTSD is the National Vietnam Veterans Readjustment Study (NVVRS), conducted in 1988. The estimated lifetime prevalence of PTSD among American Vietnam theater veterans was 30.9% for men and 26.9% for women. An additional 22.5% of men and 21.2% of women had experienced partial PTSD at some point after discharge. Thus, the NVVRS found that more than half of all male Vietnam veterans and almost half of all female Vietnam veterans, approximately 1,700,000 in all, had experienced clinically significant traumatic stress reactions. Prevalence rates for PTSD at the time of the survey were 15.2% of all male Vietnam theater veterans and 8.5% of all female Vietnam theater veterans (Kulka et al., 1990). Table 5 presents a summary of the data on prevalence rates of PTSD from the NVVRS. Results of the survey demonstrated the chronic nature of the disorder and that there is a positive association between the intensity of combat exposure and experiencing posttraumatic stress symptomatology. A high rate of comorbidity with depression was found in the NVVRS; 26% of Vietnam veterans with PTSD also met criteria for major depressive disorder (Kulka et al., 1990).

Table 5: Rates of PTSD of Participants: National Vietnam Veteran Readjustment Study

	Men	Women
Lifetime Rate of PTSD	30.9%	26.9%
Lifetime Rate of Partial PTSD	22.5%	21.2%
1988 Rate of PTSD (at time of study)	15.2%	8.5%

Clinical experience after the publication of the DSM-III showed that there are individual differences in the coping capacity of the population-at-large. Further studies have supported the view that subgroups other than veterans are also at risk of developing PTSD following exposure to extreme events. These subgroups include victims of crime, sexual assault, child abuse, and natural or man-made disasters. Rates of PTSD in the general population vary with the type of traumatic event with those involving interpersonal attacks, such as rape or child abuse, having higher rates than those involving natural disasters (Schlenger et al., 1999). The scientific community recognized that PTSD can develop in persons with no previous history of psychopathology.

The National Comorbidity Study (NCS) (Kessler, Sonnega, Bromet, Hughes & Nelson, 1995), conducted from 1990 to 1992, studied PTSD rates in the general population. The estimated lifetime prevalence of PTSD across all types of traumatic experiences was 7.8%. Results from the NCS indicated that 60.7% of men and 51.2% of women reported at least one traumatic event, with many of these having multiple exposures. More than 10% of men and 6% of women reported four or more types of trauma during their lifetimes. The traumatic events most often associated with PTSD in men were rape, combat exposure, childhood neglect, and childhood physical abuse. For women, the most common events were rape, sexual molestation,

physical attack, being threatened with a weapon, and childhood physical abuse. Conclusions drawn from the NCS were that PTSD is a highly prevalent lifetime disorder that often persists for years and that the qualifying events for PTSD are common in the general population. The results of the NCS also demonstrated substantial comorbidity between major depressive disorder (MDD) and PTSD. Forty-eight percent of the PTSD-diagnosed individuals also met criteria for MDD (Kessler et al., 1995).

The symptoms of PTSD were studied by Horowitz and his colleagues and described in a series of publications (Horowitz, 1976; Horowitz, Wilnes, Kaltreider & Alvarez, 1980; Krupnick & Horowitz, 1981). Common themes described by these authors include:

1. Fear of repetition: the fear that a trauma that has already occurred will reoccur. This includes the fear of repetitive thoughts about the event as well as the reoccurrence of the actual event.
2. Feeling of vulnerability: the concern that one will be unable to prevent a subsequent traumatic event. The trauma survivor feels useless to be able to control the negative outcomes that may follow.
3. Rage at the source: anger at any figure believed to be responsible for the traumatic experience. This includes the need to find someone to blame and rage at fate for being unfair in choosing who suffered during the traumatic experience.
4. Rage at persons exempted: anger at persons who were spared from the traumatic event.
5. Guilt over responsibility: feeling, however irrational, that one's actions either caused or failed to prevent the traumatic event.
6. Survivor guilt: the belief that one survived at the expense of others.
7. Sadness over loss: despondency over the loss of other people or an aspect of the self.

The DSM-III-R, published in 1987, provided information about symptoms in a broader range of populations, including traumatized children (American Psychiatric Association, 1987). The number of symptoms of PTSD increased from 12 in the DSM-III to 17 in the DSM-III-R. Survivor guilt, previously included as a criteria D symptom in the DSM-III, was not included in the DSM-III-R. Table 6 presents the criteria and symptoms of PTSD found in the DSM-III-R. The major contribution of the DSM-III-R was the clearer specification of the type of stressor that might produce PTSD symptoms. It defined the precipitating stressor (criterion A event) as being “outside the range of normal human experience” and “markedly distressing to almost anyone” (American Psychiatric Association, 1987, p. 247).

The DSM-IV (American Psychiatric Association, 1994) and the subsequent evidence-based text revision, DSM-IV-TR (American Psychiatric Association, 2000), require that two criteria, A1 and A2, are both met before making a diagnosis of PTSD. Criterion A1 specifies that there must be exposure to an “extreme traumatic stressor” (American Psychiatric Association, 1994, p. 424). The DSM-IV broadened the definition of the qualifying stressor to be not only an event that involves actual or threatened death or serious injury or the witnessing of such an event occurring to another person, but also learning about such an event occurring to a family member or a close associate. Criterion A2 requires that the event engender “intense fear, helplessness, or horror” (American Psychiatric Association, 1994, p. 428). Three clusters of symptoms are described as: (1) reexperiencing the traumatic event (Criterion B); (2) avoidance of stimuli and numbing of responsiveness (Criterion C); and (3) autonomic hyperarousal (Criterion D). The symptoms must be present for at least one month (Criterion E), and the disorder must cause significant impairment in important areas of functioning (Criterion F).

Table 6: DSM-III-R: Diagnostic Criteria for PTSD

Criteria and Related Symptoms

- A. The person has experienced an event that is outside the range of usual human experience that would be markedly distressing to almost anyone.
- B. Reexperiencing the traumatic event (at least one of the following):
1. recurrent and intrusive recollections of the event
 2. recurrent distressing dreams of the event
 3. suddenly acting or feeling as if the event were recurring (sense of reliving the experience, hallucinations, flashbacks)
 4. distress at exposure to events that are reminders of the event
- C. Persistent avoidance of stimuli associated with the trauma or numbing of responsiveness (at least three of the following):
1. efforts to avoid thoughts or feelings associated with the trauma
 2. efforts to avoid recollections of the trauma
 3. inability to recall important aspect of the trauma
 4. lost of interest in significant activities
 5. detachment or estrangement from others
 6. restricted range of affect
 7. sense of foreshortened future
- D. Symptoms of increased arousal:
1. difficulty falling or staying asleep
 2. irritability or outbursts of anger
 3. difficulty concentrating
 4. hypervigilance
 5. exaggerated startle response
 6. physiologic reactivity at exposure to similar events
-

The specifiers of acute, chronic, and delayed onset are used to indicate onset and duration of the symptoms of PTSD (American Psychiatric Association, 1994). No changes were made to the diagnostic criteria and specifiers for the DSM-IV-TR edition (American Psychiatric

Association, 2000). Table 7 presents a summary of the diagnostic criteria for the DSM-IV and the DSM-IV-TR.

Table 7: DSM-IV and DSM-IV-TR: Diagnostic Criteria for PTSD

Criteria and Symptoms

- A. The person has been exposed to a traumatic event in which both of the following were present:
1. the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.
 2. the person's response involved intense fear, helplessness, or horror.
- B. The traumatic event is persistently reexperienced in one (or more) of the following ways:
1. recurrent and intrusive distressing recollections of the event
 2. recurrent distressing dreams of the event
 3. acting or feeling as if the traumatic event were recurring (includes hallucinations or flashbacks)
 4. intense distress at exposure to cues of the event
 5. physiological reactivity on exposure to cues of the event
- C. Avoidance of stimuli associated with the trauma or numbing of general responsiveness (three or more of the following):
1. efforts to avoid thoughts or feelings associated with the trauma
 2. efforts to avoid recollections of the trauma
 3. inability to recall important aspect of the trauma
 4. lost of interest in significant activities
 5. detachment or estrangement from others
 6. restricted range of affect
 7. sense of foreshortened future
- D. Hyperarousal (two or more of the following):
1. difficulty falling or staying asleep
 2. irritability or outbursts of anger
 3. difficulty concentrating
 4. hypervigilance
exaggerated startle response
-

Although survival guilt continued to be omitted from the diagnostic criteria in the DSM-IV, it is described as an associated feature and disorder of PTSD (American Psychiatric Association, 1994). Individuals with PTSD may experience “painful guilt feelings” (p. 425) about surviving when others did not, or about acts they may have omitted or committed in order to survive. The present study included two questions on survival guilt in order to explore for the presence of these symptoms in World War II and Korean War veterans.

2.1.11 Psychobiology of PTSD

Recent research findings have shed light on the biologic mechanisms related to PTSD, helping to explain the chronic nature of the disorder. Studies support the notion that trauma can cause alternations in the survivor’s reactions to stress years after the trauma. Individuals with PTSD show a variety of changes in memory and attention, as well as brain structure and function (Schnurr & Friedman, 1999). The activation of the sympathetic nervous system (SNS) plays an important role in the body’s response to stressful or dangerous situations, preparing it for the “flight or fight” response. In individuals who develop PTSD, however, the SNS becomes hyperresponsive to trauma-related stimuli. A growing body of research of the psychophysiological sequelae of chronic PTSD found a significantly higher resting heart rate in trauma survivors with PTSD compared to those in the non-PTSD group (Shalev et al., 1998). A faster resting heart rate is associated with higher risk of developing high blood pressure and a greater incidence of cardiovascular morbidity and mortality (Forneris, 2004).

The availability of positron-emission tomography (PET) and magnetic resonance imaging (MRI) has aided researchers in identifying changes in areas of the brain involved with fear and memory in PTSD patients. Alterations have been found in the amygdala and hypothalamic-pituitary-adrenocortical axis (HPA) as well as a reduced hippocampal volume in persons with chronic PTSD (Lewine et al., 2002). Changes have been found in systems involved in coordinating the body's response to stress, including increased norepinephrine, testosterone, and thyroid hormone levels, and decreased levels of cortisol (Weintraub & Ruskin, 1998; Yehuda, 2002).

The concept of allostasis and allostatic load are reported to be fundamental to the understanding of the psychobiology of PTSD. Allostasis refers to the body's effort to maintain stability through change when loads or stressors place demands on normal levels of adaptive functioning. Allostasis is in contrast to homeostasis or healthy steady state (Wilson, Friedman & Lindy, 2001). Many bodily systems need to remain in a homeostatic state or within restricted limits; otherwise, a human being will die. Body temperature is one such system must stay within a narrow range of values. Allostasis, or the body's ability to change to adapt to changes in the environment, is also an important process for survival (McEwen & Lasley, 2002).

When a person is confronted with a traumatic stressor, change or allostasis is produced in an organized set of bodily systems that compromise the stress response. The brain, which perceives a threat, is linked to the endocrine system, which produces hormones that mobilize the remainder of the body to defend itself against a life-threatening situation. The fight or flight response is produced in which the entire body is prepared to fight or flee a predator to ensure survival. Allostasis can cause wear and tear if it is triggered in situations in which fight or flight is not an option or if it does not shut off when the threat or challenge is over. The damage that

allostasis can cause when it is functioning improperly is described as allostatic load (McEwen & Lasley, 2002)

When victims of trauma fail to resolve or integrate the traumatic event within a healthy baseline of normal functioning, the allostatic mechanisms used to cope and adapt are not shut off once the experience is over. This new steady state is not a temporary change from a homeostatic state, but a chronic state of distress that is numb, avoidant, and alienated (Lindy & Wilson, 2001). Survivors become vulnerable to environmental cues that trigger pathological responses. The persistent hyperarousal mechanisms are reactivated by traumatic memories, causing abrupt changes in well-being (Wilson et al., 2001). Allostasis becomes an allostatic load that can have damaging effects on physical and mental health through the excess production to stress hormones (McEwen & Lasley, 2002).

2.1.12 PTSD in the Elder Survivor of Trauma

Although the focus of research through the 1980s was on Vietnam veterans, a few case studies of World War II veterans found in the literature reported on the apparent initial onset of symptoms in later life, referred to in the literature as “delayed PTSD” (Clipp & Elder, 1996). The sudden presentation of symptoms was believed to be the consequence of experiencing an event that reminded the veteran of a wartime trauma. Van Dyke et al. (1985) reported on a WWII combat veteran who had been well-functioning until forced to retire because of medical problems, when he began to have war-related nightmares. Recent research, however, has refuted the notion of delayed PTSD; rather, symptoms can be seen as recurring after decades of remaining dormant (Port, Engdahl & Frazier, 2001). Posttraumatic complaints can be absent or in remission for extended periods of time (Aarts & op den Velde, 1996). What appeared to be

delayed PTSD has been redefined as delayed help-seeking, delayed recognition of symptoms, or an exacerbation of sub-clinical PTSD (Dirkzwager, Bramsen & van der Ploeg, 2001).

Archibald and Tuddenham (1965) first reported that posttraumatic stress symptoms increased with age in their study of World War II veterans. Lipton and Schaffer (1986) concluded that stressors associated with aging weaken previously adequate defenses. Other studies published during the 1980s reported on the exacerbation of symptoms during periods of new wars or socioeconomic instability (Clipp & Elder, 1996). These findings are consistent with those that found that prior exposure to traumatic stress increases subsequent responses to stressors. Studies that show a reappearance or increase in symptomatology in late-life suggest that the initial experience of symptoms may leave the victim vulnerable to relapse as they age (Aarts & Op den Velde, 1996; Clipp & Elder, 1996; Op den Velde et al., 1996). Life events that normally occur with aging, such as the death of loved ones, retirement, and decreasing physical and mental health act as stressors that may trigger unresolved grief, wartime memories, or survivor guilt (Kaimen, 2003). Cliff and Elder (1996) suggested that losses in late-life resemble the lack of control that is present in wartime trauma.

A few surveys on the prevalence rates of PTSD in older adults are found in the literature. Lee et al. (1995), in their analysis of data from a 50-year prospective study of World War II veterans, found that 5% of participants experienced one or more posttraumatic stress symptoms, and veterans who survived heavy fighting in World War II developed more chronic physical illnesses in late-life and died sooner than those who experienced little or no combat. A survey conducted in 1994 estimated that 210,000 World War II veterans in their 70s and 80s experienced symptoms of PTSD (Engdahl & Eberly, 1994). Blake et al. (1990) found that 30% of Korean War veterans and 18.5% of World War II veterans experienced PTSD symptoms in

late-life. Rosen, Fields, Hand, Falsettie, and Van Kammen (1989) found that 27% of patients in a geropsychiatric ward met criteria for a PTSD diagnosis. A study of World War II and Korea POWs showed severe psychological sequelae 40-50 years after captivity, and indicate that trauma severity during captivity is the best predictor of posttraumatic stress symptomatology in late-life (Gold, Engdahl, Eberly, Blake, Page & Frueh, 2000). The literature on prevalence rates of PTSD in older veterans, however, remains underdeveloped.

Frueh et al. (2004) reported that, although the average age of veterans treated at on VA Medical Center in 2004 was approximately 59 years, only 8% of treatment-seeking veterans at the outpatient PTSD specialty clinic were over age 60, indicating that relatively few older veterans are currently seeking care or being referred to PTSD specialty care. However, these figures indicate a trend in more World War II and Korean War veterans currently seeking treatment than at any other point in history. Cuervo-Rubio (2004) offers several explanations for the current increase: (1) commemorative events such as the 50th anniversaries of both wars stirs painful memories in veterans; (2) increased awareness of the psychological effects of war has created greater willingness to explore issues that were previously avoided; (3) the stigma attached to PTSD has faded somewhat which has helped diminish the shame and guilt associated with the condition; and (4) clinicians are better acquainted with the disorder.

The literature reports that PTSD in the older veteran population remains vastly underdiagnosed and undertreated. One aim of this dissertation research is to identify veterans, age 65 and older, who are primary care patients in a VA health care system with previously unrecognized symptoms of PTSD. The results of this study indicate that routine screening for posttraumatic stress symptoms in older veterans is needed in primary care to improve case identification, and thereby improve health outcomes.

2.2. HEALTH-RELATED QUALITY OF LIFE

The concept of health-related quality of life refers to a person's perceived physical and mental health over time. Researchers use health-related quality of life to measure the effects of numerous disorders, short- and long-term disabilities, and diseases in different populations. Tracking health-related quality of life in different populations can identify subgroups with poor physical or mental functioning and can help guide policies or interventions to improve health. Because people generally seek health care only when they believe that they are unhealthy, self-perceptions of health status are predictive of future burdens on the healthcare delivery system (CDC, 2004). Self-reported health-related quality of life in older adults is described in the literature as highly associated with objective health measures, related to functional health, associated with increased healthcare use and institutionalization, and predictive of decline and mortality (Pinquart, 2001; Quinn, Johnson, Poon & Martin, 1999).

Health-related quality of life (HRQL) is an outcome variable that is used repeatedly in VA settings to measure overall functioning. The 2001 National Survey of Veterans (DVA, 2001) used a self-report HRQL measure to collect general information on veterans' perceptions of their health status. The trend showed a decreasing proportion reported excellent or very good health status as age increased. In the 65-74 age group, made up of over 5 million veterans, the largest proportion rated their health as excellent or very good (38.3%). In the 75 or older group (3.7 million veterans), the largest proportion rated their health as fair or poor (37.9%). The results of the Veterans Health Study showed that veterans using VA health care services have substantially worse health status than the general population in the United States (Kazis, Miller, Clark, Skinner, Lee, Rogers, et al., 1998).

Several researchers have studied the relationship between past trauma and self-reported physical and mental health status in late-life. Traumatic war-related events in combat veterans has been found to be associated with increased psychiatric and medical comorbidity, reduced overall functioning, and greater use of health services by veterans (Kulka et al., 1990; Schnurr & Spiro, 1999). Elder and colleagues used the life course perspective when examining the data from the Terman Study for effects of military experience during World War II on emotional and physical health immediately after return to civilian life and on long-term patterns of health and aging. The men in the study were between the ages of 19 and 40 at the start of World War II, and most were subject to the draft. Exposure to heavy combat was predicted to increase the risk of posttraumatic stress symptoms. The results showed that combat exposure increased the risk of physical and mental health problems both immediately after the war and long-term in this cohort of veterans. Veterans in the Terman Study with more combat exposure tended to die younger than those with less combat exposure (Elder 1985).

CHAPTER 3. THEORY

3.1. CONCEPTUAL AND THEORETICAL FRAMEWORK

3.1.1 Life Course Perspective

The life course perspective provides the conceptual framework for the present study. This perspective is a multidimensional model of aging that includes the age of the individual, historical period describing the larger society, and cohort or aggregate of persons of the same age. Life experiences are recognized as being interconnected, both within individuals' personal histories and within the broader social-historical context (Hatch, 2000). Using this conceptual framework helps researchers in aging understand how the last stage of life is the result of the cumulative effect of previous stages and that individual reactions to age-related changes differ according to life histories (Aarts & Op den Velde, 1996).

The life course perspective considers aging at both the micro and macro levels. At the micro or individual level, prior histories of experience are key to understanding people's current circumstances. People enter late life with differing personal histories of experience that affect them in unique and diverse ways. Some events and experiences are also shared with others of the same generation, referred to in the life course perspective as a cohort. A cohort is a group of persons who were born during the same historical period and experience the same social changes

and historical events in the same sequence and at the same age (Elder, 1986). When viewed through the lens of the life course perspective, persons in the World War II cohort are likely to have more in common with each other than with persons in the Korean War cohort.

At the macro level, this perspective considers the impact of the larger social-historical context on both the individual and cohort. Researchers study the intersection of history with individuals in order to understand how cohorts are shaped by the past (Elder, 1985). Veterans from World War II and the Korean War represent two cohorts born during the first few decades of the twentieth century who experienced dramatic historical events and social changes. Macro-level events such as World War II and the Korean War shape the course and content of people's lives, as do the social institutions and policies in place at a given place and point in time (Elder, Shanahan & Clipp, 1994). Being in either the World War II cohort or Korean War cohort impacts physical health and social and psychological outcomes of individuals (Elder & Johnson & Crosnoe, 2003).

Elder (1974) developed the life course perspective when working on the Berkeley Guidance Study that examined development in persons born in Berkeley, California in 1928-1929, starting in infancy through the end of World War II with two follow-ups. In order to understand the data from the Berkeley Study, Elder felt that it was important to consider the life course in a changing society. In order to explore for differences between cohorts, the results of the Berkeley Study were compared with that of an older cohort of persons born during 1920-1921 from the Oakland Growth Study. The men in the Berkeley Study were more likely to serve in the Korean War, the men in the Oakland Study in World War II. The cohort from the Berkeley Study was more likely to join the service to take advantages of the benefits available through the G.I. Bill because of the economic hardships that they had endured during the Depression. This

cohort was economically resilient, being able to use the education provided by the G.I. Bill to lift them out of economic deprivation. The participants in the Oakland Study, who served in World War II, were older at the end of the war and had less time to use the education provided to them to their advantage. Elder (1986) reports that veterans most likely to be impacted negatively by service during World War II and the Korean War were those who served in combat, were wounded or taken captive, or observed killing by others.

Life events can serve as important turning points in people's lives, modifying their life trajectories. Life events are changes in life patterns that disrupt usual patterns of behavior and are likely stressful. This type of event includes the death of a loved one, personal illness, and relocation. A trajectory is a long-term pattern of stability and change over a person's lifetime. A turning point is a special life event that produces a lasting shift in the life course trajectory. The impact of the life event on the life trajectory depends on the nature of the event, how the event is defined, and the person's adaptation to the event. Military service during World War II was a defining event in the lives of three out of four American men, the effects of which can be realized throughout the life course (Laub & Sampson, 2005). If a soldier experiences trauma during wartime service, the impact of that event on the life trajectory will be greater and more negative (Elder, 1985; Elder, 1986).

The timing of an event in the individual's life is also important. Timing is considered important because humans desire predictability in their lives (Hagestad, 1988), and there are age norms for life events in society (Hooyman & Kiyak, 2002). A war disrupts the timing of life events, causing them to occur off-time. When events occur off-time, there is a greater likelihood that there will be social sanctions including a lack of support by peers (Hatch, 2000). In World War II, almost all able-bodied men were drafted and served in the military, making it a major life

event that disrupted the flow of the life trajectory for an entire generation (Laub & Sampson, 2005). Although life events such as marriage, children and careers subsequently occurred off-time, they did so for the entire generation who could support each other. In the Korean War, only a small percentage of draft-age men served in the war theater. When they returned from the war and had to continue the sequence of their life events off-time, they were more likely to do so alone, facing social disapproval and a lack of support.

Individual transformation refers to the development of the person over the life course in response to critical life issues and related changes. To cope with a traumatic event, the person may have to modify his or her roles, tasks, or worldview, integrating the traumatic event into the new reality. A traumatic event is referred to in the life course perspective as a second-order change that is neither expected nor predictable, thus requiring a changed worldview. A survivor of past trauma alters relationships with family members, which in turn requires the family members to make changes in their roles, tasks, and worldview (Edwards, 1995).

As a framework for social work research, the life course perspective has several advantages over other theories of human development. It encourages greater attention to the impact of a changing environment on individuals and groups. It is a multidimensional perspective that looks at the biopsychosocial processes in the life trajectory and emphasizes the interdependence of lives. The use of the life course perspective in the present study facilitates the examination of the impact of a historical event, war, at two levels of analysis, the individual level and the cohort or group level. It provides a framework for looking at the influence of larger societal attitudes, such as the stigma associated with mental illness and the unpopularity of the Korean War, on the experience of war-related posttraumatic stress symptoms by veterans.

3.1.2 Freud's Work on Traumatic Neurosis and Repression

Freud's insight into traumatic neurosis and repression as a response to trauma provides the theoretical background for understanding the appearance or reappearance of posttraumatic stress symptoms in veterans decades after exposure. Following World War I, Freud's attention was drawn to the issue of psychological trauma in veterans, noting that the fixation on the trauma seen in war neurosis was similar to that found in his earlier work with patients with hysterical conversion reaction and accident victims with traumatic neurosis (van der Kolk, 1987). Freud postulated that the fixation on the trauma was caused by repression, describing it as the unconscious process of removing from consciousness, or preventing the emergence into consciousness, material that would produce anxiety or guilt (Comer, 2003). Patients with war-related traumatic neurosis appeared to Freud to lack a conscious preoccupation with memories of the experience, leading him to conclude "perhaps they are more concerned with not thinking about it" (Freud, 1920b, p. 19). According to Freud, although one may be able to push remembrance of traumatic events from consciousness, fragments later emerge in flashbacks or dreams. Freud postulated that traumatic repetitive dreams brought the victim back to traumatic situations, reproducing the event without modifying it. The aim of these dreams was an attempt to master the traumatic experience by the victim.

In his work *Beyond the Pleasure Principle* (1920b), Freud described traumatic events as those powerful enough to break through the protective shell of the ego, which normally serves to keep out stimuli that might otherwise overwhelm the self. War neurosis was a conflict in which the ego defends itself against life-threatening danger. Freud believed that war neurosis, similar to traumatic neurosis in the general population, was the result of fright that occurs when one has run into danger without being prepared for it, emphasizing the factor of surprise. A trauma, in

psychodynamic theory, is an event in the subject's life, defined by its intensity, by the subject's incapacity to respond adequately to it, and by the upheaval and long-lasting effects that it brings about in the psychic organization. Research by Kardiner (1941) and Grinker and Spiegel (1945) supported Freud's notion that every individual has a breaking point and that there are limits to the amount of stress that each individual can tolerate, even those without prior histories of mental illness. In one of his last works, Freud (1939) suggested that unresolved trauma caused traumatic reexperiencing in later life.

Freud also alluded to the construct that later became known as state-dependent memory, that is, if a person encoded an event under a severely altered mood-state he or she may be unable to retrieve that event in his or her normal state. However, it may reemerge when the original mood-state is reinstated. The entire event encoded under trauma may be available in memory, but accessible only in a state of trauma (Metcalf, 2006). The literature reports that traumatic memories are triggered by events that are similar to the trauma (American Psychiatric Association, 2000). Thus, Freud's notion of state-dependent memory can provide a framework for understanding the reappearance or appearance of posttraumatic stress symptoms in older adults who are experiencing age-related stressful events such as personal illness or the death of a loved one; these events may put them once again in a state of trauma.

Recent literature has reported that veterans of World War II and the Korean War consciously as well as unconsciously suppressed unresolved trauma in order that they could resume their normal lives after the war. Suppression is the conscious exclusion of painful or difficult memories or thoughts (Comer, 2003). These reports are consistent with studies that have found that veterans of these wars ignored their symptoms and used coping behaviors such as overwork and alcohol abuse to suppress traumatic memories (Cliff & Elder, 1996).

3.1.3 Cognitive Appraisal Theory of Stress and Coping

The cognitive appraisal theory of stress and coping (Lazarus & Folkman, 1984) will be utilized in this research to examine the main and buffering effects of the risk factor of perceived stress and the protective factor of perceived social support. The theory posits that the ability to cope with negative life events involves making both cognitive and affective appraisals to meet the internal and external demands of an adversity (Wright & Aquilino, 1998). A cognitive appraisal refers to the subjective meaning individuals attach to an encounter. A situation or event in itself is neutral; only after the cognitive appraisal process is the situation or event evaluated as threatening or challenging. The perception of an event may vary between two individuals.

The cognitive appraisal process is composed to two separate steps, a primary and a secondary appraisal (Lazarus & Folkman, 1984). In primary appraisal, individuals evaluate the degree to which their well-being is at risk. The person first perceives a stressor as positive, neutral, or negative; if perceived as negative, the stressor is further evaluated for its potential harm, threat, or challenge. An individual's perceived coping resources largely determine the degree to which he or she appraises an event as threatening. Minimal stress results when the perceived coping resources are high and the harm, threat, or challenge is low.

Secondary appraisal follows, during which the individual assesses whether his or her coping resources are sufficient to overcome the potential negative consequences. Secondary appraisals are either problem-focused or emotion-focused. Problem-focused coping are attempts to deal with the cause of the problem in order to change a negative situation. Emotion-focused coping involves cognitive reappraisal that reduces the emotional impact even though the situation remains the same. The goal of emotion-focused coping is to regulate the emotional response to the event (Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986; Greene &

Conrad, 2000; Lazarus & Folkman, 1984). Older adults have been found to interpret stressful events as less controllable and tend to use more internal, emotion-focused coping strategies (Riley, 2000). Some of the normative age-related life events such as the death of a spouse or personal illness are not amenable to change, and therefore, emotional-focused coping is the only available coping strategy.

Social support has been identified as a coping resource that influences the appraisal of a potentially adverse event. Tangible support, which includes help with chores and personal care, and informational support, which includes problem-solving advice, are two types of social support that facilitates problem-focused coping. Social support in the form of emotional assistance, affectionate support, and positive social interaction helps with the emotion-focused coping process (Sherbourne & Stewart, 1991).

3.1.4 Risk/Resilience Model

As reviewed in a previous section of this chapter, the literature reports that the lifetime prevalence of exposure to a traumatic event is as high as 70% (PTSD Alliance, 2004). Given that the lifetime prevalence rate of PTSD averages between 7% to 10% in the general population (Kessler et al., 1995; PTSD Alliance, 2004), the majority of people appear to rebound from traumatic experiences that involve conditions that can overwhelm coping capabilities. This variation in outcome suggests that the traumatic event alone is not sufficient to explain chronic traumatic stress reactions (King, King, Fairbank, Keane & Adams, 1998; King, Vogt & King, 2004). While some survivors display remarkable resilience, others remain chronically debilitated. Grinker and Spiegel (1945) originally discussed resilience in combat veterans when they speculated why only some traumatized soldiers experienced war-related neurosis. To date,

there has not been a clear consensus on the reasons why some trauma victims, including combat veterans, develop PTSD while others do not. Therefore, further research is needed to determine which risk and protective factors act to exacerbate or mitigate the impact of trauma on the development of PTSD. One purpose of the present study is to examine the relationship between risk and protective factors and the severity of posttraumatic stress symptoms in a subgroup of geriatric trauma survivors, World War II and Korean War veterans.

Resilience generally refers to a class of phenomena characterized by patterns of positive adaptation in the context of significant adversity or loss. The study of resilience emerged from the research on risk and protective factors that was primarily conducted on children. The recurring theme in these studies conducted during the 1970s was that most individuals who face adversity have more positive outcomes than one would predict given the circumstances (Greene & Conrad, 2000; Rutter, 1987; Waller, 2001). Children with successful outcomes were described as being invulnerable to risk and possessing certain effective individual attributes referred to as “protective factors” (Anthony, 1987; Rutter, 1985). Some of these individual protective factors identified in the early literature include: hardiness (Kobasa, 1979); self-mastery, self-efficacy, self-confidence (Rutter, 1985); sense of coherence (Antonovsky, 1987); positive outlook, internal locus of control, self-discipline, good problem-solving skills, humor, attractiveness (Garmezy, 1991); and ongoing relationships with positive adults (Wolin & Wolin, 1993). Although they did not agree on specific protective factors, researchers agreed that that people have the potential to emerge out of childhood environments of risk and trauma relatively well-adjusted and free from psychopathology.

Conceptualizing resilience as an individual attribute proved to be problematic in that it ignored the impact of larger systems such as family, community, and society. As research in

resilience evolved, effective protective factors were found outside of the individual in the larger systems of the environment. Individual protective factors were also found to be more state-dependent, in that they were observed to facilitate resilience under one set of environmental conditions but not under another set of environmental conditions (Fraser, Richman & Galinsky, 1999). Rutter (1985) concluded that the concept of invulnerable children was inaccurate; rather, resilience is an interaction between risk and protective processes, both internal and external to the individual that modifies the effects of adversity. Resilience as a dynamic process is influenced by protective factors, conceptualized as the specific skills and abilities necessary for the process of resilience to occur (Dyer & McGuinness, 1996). From this perspective, it is an interactive and systemic phenomenon, the product of a complex relationship between inner strengths and environmental resources throughout the life span (Greene, 2002).

The Kauai Longitudinal Study (Werner & Smith, 1982; Werner & Smith, 1992; Werner, 1997) provides support for a model of resilience as a process involving complex interaction between individual attributes and environmental resources. Werner and colleagues conducted a 40-year longitudinal study of high-risk children on the Hawaiian island of Kauai that tracked resilience in participants beginning in 1955 at birth, with the latest follow-up study being conducted at age 40. One of the follow-up studies done at age 20 found that one-third of the participants had overcome high-risk environments and developed into competent, caring young adults. At age 40, all but two of the more resilient children had stable employment and marriages, and they reported that they looked forward to continuing to grow. Participants in the resilient group, however, were not invulnerable; many reported stress-related illnesses and difficulties with interpersonal relationships as adults (Werner & Smith, 1992). The findings from

the Kauai Longitudinal Study show that resilience can develop and be nurtured at any age, even in adulthood (Werner, 1997; 2004).

Masten (2001) summarized three decades of research as showing resilience to be a common phenomenon found in every person that results from the operation of basic human adaptational systems. If these adaptational systems are in optimal operating condition, development proceeds even in the context of severe adversity. If these systems are impaired, then a person may be unable to recover from risk and adversity. The resulting loss in developmental capacities increases the likelihood of subsequent physical illness and psychopathology.

Research on resilience has more recently been extended to other parts of the life course, particularly late life (Hardy, Concato & Gill, 2004). The concept of resilience is being used more frequently in aging research as the focus shifts from disease and disability to health and optimal aging. Elders have been referred to in the literature as “role models for resilience” (Gutheil & Congress, 2000, p. 48) because they are by definition survivors of whatever adversities they faced during their younger years. Felten (2000) described resilience in older adults as the ability to achieve, retain, and/or regain a level of physical and mental health after an adverse event, including disease, disability, and a range of other age-related losses, a definition derived from data collected with older adults. With the current social work emphasis on a strengths perspective and the growing numbers of older adults in the population, more research like the present study is needed to clarify both risk and protective factors unique to the aged.

A risk/protection model is used in this study in order to examine for both direct and buffering effects of risk and protective factors in older adults who may be coping with past traumatic events. Viewed through the lens of cognitive appraisal theory, protective factors, such as the perceived availability of quality social support, can be as characteristics that promote

adaptation to adversity (Greene & Conrad, 2000). Perceiving that support will be available if needed contributes to appraising potentially threatening situations less negatively (Lazarus & Folkman, 1984). In contrast, risk factors such as current perceived stress can contribute to the negative appraisal of past traumatic experiences, with the resulting increase in distressing emotions and the need for more emotion-focused coping strategies.

3.1.4.1 Risk Factor: Perceived Stress

Stress subsequent to the traumatic event has been found to be a risk factor in the development of PTSD (Brewin, Andrews, & Valentine, 2000). Stress is defined in this study as the consequence of one's appraisal process, the assessment of whether one's resources are sufficient to meet the demands of the environment. Particular events are not in and of themselves stressful; it is how one perceives a potential stressor that substantially determines whether or not one experiences stress (Lazarus & Folkman, 1984). Findings of studies have consistently shown that the impact of stress on physical and mental health has less to do with the objective severity of the stressor than on an individual's assessment of the threat imposed by the stressor (Cohen & Wills, 1985).

Older individuals face a unique set of stressors associated with aging that are not experienced by younger adults, including health declines, increase in disabilities, loss of friends and spouses, and relocation. The normal stress associated with late life has been associated with the reactivation or development in PTSD in older adults who experienced trauma in earlier life (Weintraub & Ruskin, 1999). Therefore, it is important to consider the role of stress in studies that examine posttraumatic stress symptoms in older adults. Because the various types of stressors are not universal, it has been found to be more valuable to consider a general experience of stress rather than specific life events. As reviewed above, the perception of an

event as stressful has been found to be more important than the severity of the stressor or the particular type of event.

Cohen, Evans, Krantz and Stokols (1986) refer to the cumulative fatigue effect as the draining of biological and psychological energy caused by prolonged coping with stress. Dealing with unpredictable and uncontrollable stressors requires a greater amount of cognitive effort, and can lead to exhaustion and system failure. Unresolved trauma requires an on-going coping effort that can have a cumulative toxic impact on physical and mental health. Research on allostatic load and allostasis, reviewed in an earlier section of this chapter, indicates that changes to the HPA system, involving adaptive change at the receptor level, are manifested behaviorally in reduced stress tolerance in trauma survivors (Friedman, 2001).

In a study of Holocaust survivors, Yehuda et al. (1995) found that the severity of PTSD symptoms was related to both past trauma and current stressful events. Traumatized individuals had a heightened vulnerability to subsequent stressors. Clinicians were advised by these authors to ask clients with PTSD about current stressors in addition to past trauma (Yehuda et al., 1995).

Because the presence of stressful events after the focal trauma has been found to intensify or reactivate posttraumatic stress symptoms, researchers need to consider the impact of subsequent exposure to stress when explaining the persistence and severity of PTSD in older adults. As the above review of the literature suggests, perceived stress in older adults may exacerbate the negative impact of past traumatic experiences on physical and mental health as well as result in the increase in posttraumatic stress symptoms. This study examined the potential of perceived stress to moderate the relationships between past traumatic exposure and the two dependent variables, posttraumatic stress symptomatology and health-related quality of life.

3.1.4.2 Protective Factor: Perceived Social Support

Caplan (1974), working with Israeli soldiers, first identified social support as an effective protective factor in enabling war and disaster victims sustain mental health. Individuals reporting higher levels of social support tend to have lower rates of psychological distress and psychiatric disorder (Cohen & Syme, 1985; Cohen & Williamson, 1991; House, 1981; House et al., 1982; Sherbourne & Hays, 1990). Studies have distinguished between social support networks and perceived social support. Social support networks refer to the number and type of supportive relationships. Perceived social support is the subjective and global evaluations of social support quality and availability. The bulk of evidence in the literature on the protective effects of social support has come from studies focusing on perceived social support (Cohen & Wills, 1985; House, 1981; Ren, Skinner, Lee & Kazis, 1999). Whether or not one actually receives support has been found to be less important for overall health than one's belief that quality social support will be available if needed (Cohen & Wills, 1985; Lazarus & Folkman, 1984). Perceived social support has been found in recent research to be effective in reducing the deleterious effects of trauma on posttraumatic stress symptomatology in late-life (Schnurr, Lunney & Sengupta, 2004).

Cohen and Wills (1985) identified two models of social support, a main or direct effect model and a stress-buffering model. The main effect model refers to the overall beneficial effect of social support on quality of life, irrespective of whether a person is experiencing traumatic stress. The stress-buffering model proposes that perceived social support acts protectively or buffers the person against the harmful effects of adversity. This research examined both the direct and buffering effects of perceived social support on posttraumatic stress symptoms and health-related quality of life. One aim of the present study was to add to the small number of

studies available in the literature on the potential of perceived social support to buffer the negative effects of past trauma in late life.

Social support is understood to be a multidimensional concept in the literature. Functional support refers to the type of support provided. Types of functional support include information and advice, tangible support, emotional support, affection, and positive social interaction. Tangible support is practical help such as assistance with chores and personal care, transportation, and shopping. The present study used a scale that was designed to measure overall perceived social support as well as four types of functional support: (a) emotional/informational support, (b) tangible support, (c) affectionate support, and (d) positive social interaction (Sherbourne & Stewart, 1991).

Many of the life events and health changes that frequently accompany aging can have a negative impact on the availability of quality social support. The loss of loved ones or relocation may reduce important social supports that have previously been valuable resources in the decades subsequent to experiencing traumatic events. Retirement and relocation can have a sudden detrimental impact on the availability of support. Therefore, older adults may perceive that they have less available support as they grow older, redefining the potential for harm posed by past traumatic experiences. As the buffering mechanism of social support is reduced, the older person's appraisal of past trauma may become more negative, which may result in a reoccurrence or delayed onset of posttraumatic symptoms.

3.2. PURPOSE STATEMENT

The purpose of this dissertation research is to examine whether combat exposure is associated with experiencing posttraumatic stress symptomatology in community-dwelling World War II and Korean War veterans over the age of 64. The relationship between combat exposure and health-related quality of life is also assessed. The risk factor of perceived stress and the protective factor of perceived social support are examined for their potential to exacerbate or mitigate the relationships between the independent variable, combat exposure, and the dependent variables, posttraumatic stress symptoms and health-related quality of life. The direct effects of perceived stress and perceived social support on posttraumatic stress symptoms and health-related quality of life are also investigated. Figure 1 presents the model for this study.

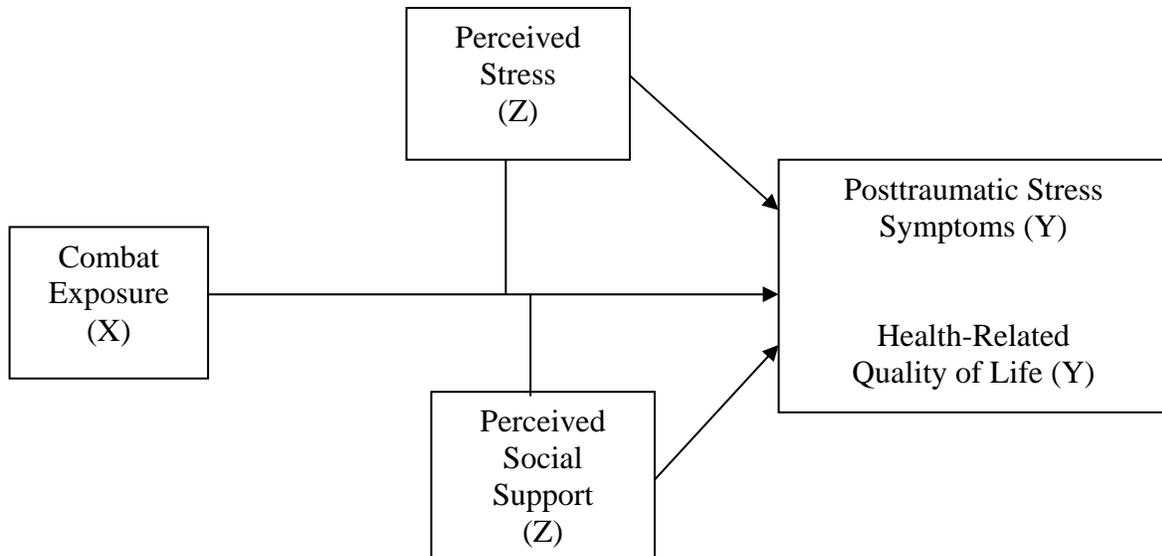


Figure 1. Conceptual Model and Main Study Variables.

3.3. RESEARCH QUESTIONS AND HYPOTHESES

Based on the above review of the relevant literature and the conceptual and theoretical framework for this study, the following research questions and hypotheses are investigated:

Research Question #1: Are World War II and Korean War veterans with greater exposure to combat during military service more likely to experience posttraumatic stress symptoms in late life than those with less combat exposure? Relevant studies in the above literature review report a positive relationship between the amount of combat exposure and the intensity of posttraumatic stress symptoms (Jones & Palmer, 2000; Kulka et al., 1990). Few studies have examined this relationship in older veterans; this study aimed to address this important gap in the literature by utilizing a sample of community-dwelling World War II and Korean War veterans. Hypothesis #1 predicts that combat exposure would be positively associated with posttraumatic stress symptoms.

Research Question #2: Do World War II and Korean War veterans with more combat exposure experience poorer health-related quality of life in late life than those with less combat exposure? The available literature reports that people with past traumatic exposure have a higher risk of physical and mental health problems. Coping with unresolved trauma contributes to an allostatic load that strains the immune and cardiovascular systems and contributes to mental and physical illness. Using the life course perspective as a framework, Elder (1985) found that higher levels of combat exposure was positively associated with increased morbidity and mortality in World War II and Korean War veterans. Hypothesis #2 predicts that combat exposure would be negatively associated with health-related quality of life.

Research Question #3: Will current perceived stress exacerbate the relationship between past combat exposure and experiencing posttraumatic stress symptoms in World War II and

Korean War veterans? To summarize the relevant literature from a previous section, the experience of posttraumatic stress symptoms in late life is a function of both past traumatic exposure and subsequent perceived stress. The literature suggests that the relationship between combat exposure and posttraumatic stress symptoms is higher for those with more perceived stress than for those with less perceived stress. Hypothesis #3 predicts that perceived stress would moderate the relationship between combat exposure and posttraumatic stress symptoms.

Research Question #4: Will current perceived stress exacerbate the relationship between past combat exposure and health-related quality of life? Perceived stress has been found in previous studies to exacerbate the negative impact of trauma on physical health and mental health, contributing to increased mortality rates. Hypothesis #4 predicts that perceived stress would moderate the relationship between combat exposure and health-related quality of life.

Research Question #5: Does perceived social support buffer the negative impact of past traumatic combat exposure on experiencing posttraumatic stress symptoms in late life? When examined through the theoretical framework of cognitive appraisal theory, perceptions of the availability of social support lead to appraising past traumatic events less negatively (Lazarus & Folkman, 1984). There is evidence in the literature that social support acts as a protective factor against experiencing posttraumatic symptomatology in aging World War II and Korean War combat veterans. Hypothesis #5 predicts that perceived social support would significantly moderate the relationship between combat exposure and posttraumatic stress symptoms.

Research Question #6: Does perceived social support buffer the negative impact of past traumatic combat exposure on late-life health-related quality of life? The literature reports that the benefits of perceived social support on physical and mental health are greater for veterans who experienced more war-related trauma. For veterans with less traumatic combat exposure;

there are fewer benefits of perceived social support on health-related quality of life. Research has suggested that social support acts as a protective factor that buffers the negative impact of combat exposure on physical and mental health. Hypothesis #6 predicts that perceived social support would significantly moderate the relationship between combat exposure and health-related quality of life.

Research Question #7: Does perceived stress have a direct effect on experiencing posttraumatic stress symptomatology in late life? In addition to its possible role as a moderator, the direct effect of perceived stress on posttraumatic stress symptoms was also assessed in this study. Hypothesis #7 predicted that perceived stress would be positively associated with posttraumatic stress symptoms

Research Question #8: Does perceived stress have a direct negative impact on late-life health-related quality of life? A large body of literature reports that perceived stress has a direct negative impact on physical and mental health. The direct effect of perceived stress on health-related quality of life for this sample of community-dwelling World War II and Korean War veterans was examined in this study. Hypothesis #8 predicts that perceived stress would be negatively associated with health-related quality of life.

Research Question #9: Is perceived social support associated with experiencing fewer posttraumatic stress symptoms in late life? In addition to its possible role as a moderator, the direct effect of perceived social support on the outcome variable, posttraumatic stress symptoms, was also assessed. Hypothesis #9 predicts that perceived social support would be negatively associated with posttraumatic stress symptoms.

Research Question #10: Will aging combat veterans who perceive that they have more available social support have a better health-related quality of life? Cohen and Wills (1985)

theorized that perceived social support has a beneficial effect on physical and mental health regardless of whether or not one has experienced highly stressful events. The literature suggests that perceived social support has a direct positive effect on health-related quality of life. Hypothesis #10 predicts that perceived social support would be positively associated with health-related quality of life.

Research Question #11: Do Korean War veterans experience significantly more posttraumatic stress symptoms in late life than World War II veterans? The very few studies found in the literature that examine Korean War veterans separately from World War II veterans report that this cohort has higher rates of posttraumatic stress symptoms decades after war-related trauma (Fontana & Rosenheck, 1994; McCraine & Hyer, 2000; Spiro et al., 1994). The authors of these studies attribute the difference in outcomes to the unpopularity of the Korean War and the lack of respect for this cohort of veterans in American society. Utilizing the life course perspective in this study facilitates the examination of differences in the historical and social contexts of these two wars that contribute to cohort effects. The societal attitude that the Korean War is the “forgotten” war has contributed to the lack of previous research that examines these veterans as a distinct group. This study aimed to fill the gap in the literature on the effects of war-related trauma in aging Korean War veterans. Hypothesis #11 predicted that Korean War veterans would experience significantly more posttraumatic stress symptoms than World War II veterans.

Research Question #12: What specific symptoms are World War II and Korean War veterans without a prior history of posttraumatic disorder experiencing in late life? Viewed through the lens of the life course perspective, the cohorts of World War II and Korean War veterans entered adulthood during eras of a societal stigma toward mental illness and a lack of

understanding of the effects of trauma. Veterans of these wars describe ignoring their symptoms and using coping behaviors such as overwork and alcohol abuse to suppress traumatic memories. These cohorts of veterans tend to report psychiatric symptoms as somatic complaints in the primary care setting. Previous studies report that a much larger percentage of World War II and Korean War veterans experience posttraumatic stress symptoms than seek treatment, suggesting that there are a significant number of aging veterans with unacknowledged and unrecognized symptoms. In a descriptive manner, this study looked at which posttraumatic stress symptoms occurred most often in participants.

CHAPTER 4. METHOD

4.1. DESIGN OF THE STUDY

The study employed a cross-sectional, descriptive survey design in which participants were recruited from a consecutive series of veterans who presented to outpatient programs in the Veterans Administration Pittsburgh Healthcare System (VAPHS).

4.2. PARTICIPANTS AND SELECTION CRITERIA

Participants were community-dwelling World War II and Korean War veterans, who were over the age of 64 and enrolled in one of the following outpatient programs at the VAPHS: (a) Primary Care Outpatient Clinics, University Drive and Heinz Divisions; (b) Geriatric Evaluation and Management Clinic (GEM); (c) Mobile Geriatric Unit (MGU), a unit of the Geriatric Research, Education, and Clinical Center (GRECC); and (d) Community Based Outpatient Clinics (CBOCs). In order to be eligible to participate in the study, veterans had no previous history of a diagnosis of or treatment for Posttraumatic Stress Disorder (PTSD).

Inclusion criteria for the study participants consisted of the following:

1. over the age of 64;

2. served in the military during either the official World War II (December 7, 1941 to December 31, 1946) or Korean War (June 27, 1950 to January 31, 1955) periods of service;
3. not previously diagnosed with or treated for PTSD;
4. not previously diagnosed with or treated for dementia;
5. enrolled in a VAPHS Primary Care Outpatient Clinic, GEM, MGU, or CBOC;
6. able to speak, read, and understand English.

Veterans who served during both the World War II and Korean War periods of service were excluded from the study in order that the two groups could be compared on the study variables.

Duration of the participants' involvement in the study consisted of the time required to complete a face-to-face personal interview to gather demographic information and a survey consisting of five (5) self-report measures, which was approximately one hour. The veterans were informed prior to enrolling in the study that the principal investigator (PI) might contact them by telephone as required for any follow-up information or clarification. Participants gave their verbal and written informed consent for their participation in all phases of the study including the follow-up telephone calls prior to beginning the study.

4.3. PROCEDURES

Informational flyers about the study were posted in the clinic waiting rooms and on bulletin boards throughout the VAPHS. A copy of the informational flyer is included in Appendix A. In addition, copies of the informational flyers were distributed to primary care

physicians and other members of the treatment team at the clinics included in the study site for distribution to potentially eligible patients. There were three approaches used to recruit participants:

1. Veterans who telephoned the PI after seeing one of the posted informational flyers were asked to set up a screening appointment with the PI. During the screening appointment, the PI asked him to sign the Request for and Authorization to Release Medical Records and Health Information (HIPPA Form), a standard form used in the VA system for use of protected health information for research purposes. A copy of the HIPPA Form used in this study is located in Appendix B. Potentially eligible veterans who signed the HIPPA Form were given more information about the study and asked to either agree or decline to participate. A testing appointment was scheduled for those veterans who agreed to participate. During the testing appointment, the participant completed the informed consent process and the study. Five out of a total number of 100 participants (5%) were recruited using this approach.
2. Primary care physicians (PCPs) identified potentially eligible patients during their regularly scheduled clinic appointments. The PI was present at the site when this approach was used for recruitment. The PCPs asked those patients who met the inclusion criteria if they were interested in learning more about the study. If the patient was interested in the study, the PCP asked him to sign the HIPPA Form. The PCP gave the PI the signed HIPPA Form and referred the patient to her. The PI informed the patient about the study, and if he agreed to participate, set up a testing appointment at which time the veteran completed the informed consent process and the study. A record was kept by the PI of the eligible patients who refused to participate in the study when this approach was

used. The PCPs informed a total of 182 eligible patients about the study. One-hundred thirty-three (133) veterans were not interested in participating, resulting in a refusal rate of 73%. Forty-nine out of a total number of 100 participants (49%) were recruited using this approach.

3. A member of the treatment team other than the PCP identified eligible patients during a clinic appointment, asking them if they would like to learn more about the study and sign the HIPPA Form. If the patient was interested in the study, the member of the treatment team gave the signed HIPPA Form to the PI and referred the patient to her. The PI gave the patient additional information about the study and scheduled a testing appointment if he agreed to participate. During the testing appointment, the veteran completed the informed consent process and the study. Because the PI was not always present when a member of the treatment team other than the PCP approached a patient about the study, it was impossible to obtain an accurate rate of refusal. Forty-six out of a total number of 100 participants (46%) who completed the study were recruited using this approach.

The order of the procedures at the time of the testing appointment was as follows:

1. PI obtained informed consent;
2. PI conducted a face-to-face interview to gather demographic information;
3. Participant completed a survey consisting of the following self-report measures:
Perceived Stress Scale (PSS), Combat Exposure Scale (CES), MOS Social Support Scale (MOS-SSS), PTSD Checklist – Military Version (PCL-M), and the SF-8 health-related quality of life measure.
4. After the participant completed the study, the PI utilized the Computerized Patient Records System (CPRS) to conduct a chart review in order to verify that the participant

met the inclusion criteria. The Inclusion-Exclusion Checklist designed specifically for this study was completed by the PI and kept in the participant's folder. A copy of the Inclusion-Exclusion Checklist used for this study is included in Appendix C. The completed questionnaires of those participants who did not meet the inclusion criteria based on the chart review were excluded from the data analysis.

A copy of the informed consent form that was approved by the Institutional Review Board and Research and Development Committee at the VA Pittsburgh Healthcare System and the Institutional Review Board at the University of Pittsburgh is included in Appendix D. Participants received a copy of the signed informed consent form for their records during the testing appointment. Participants were paid \$20.00 per person by the Principal Investigator for the one-hour duration of time needed to complete the demographic-gathering interview and five self-report measures.

Study folders were kept for each participant who completed the study that included: (a) the signed Request for and Authorization to Release Medical Records and Health Information (HIPPA Form), (b) signed informed consent form, (3) completed self-report study survey and demographic questionnaire, and (4) completed Inclusion-Exclusion Checklist. Study folders were identified with participant numbers only; no names or other identifiers were kept with the study folders in order to ensure the participants' anonymity and confidentiality. The study folders were kept in a locked file cabinet on the grounds of the VA Pittsburgh Healthcare System, Highland Drive Division, in the offices of the Mental Illness Research, Education and Clinical Center.

There were no risks anticipated to participating in the study aside from the possibility that veterans may experience discomfort when considering past traumatic combat experiences.

Participants were informed before completing the study that they had the right to stop the testing process and withdraw at any time. If a participant's responses during the demographics interview or on the self-report measures indicated that he needed or desired further assessment for PTSD, the PI referred them back to their PCP for a follow-up appointment. No adverse events occurred during the study.

The study began on March 4, 2005 immediately after final approval was obtained from both the VAPHS Research & Development Committee and the University of Pittsburgh Institutional Review Board. Data collection procedures were completed on August 31, 2005.

4.4. MEASURES

The short-form versions of the self-report measures, if available, were used in this study to ease responder burden due to the age of the participants. The questionnaires were printed in 14-point type. A copy of the study survey is contained in Appendix E.

4.4.1 Combat Exposure

The independent variable, Combat Exposure, was operationalized with the seven-item Combat Exposure Scale (CES) (Keane, Fairbank, Caddell, Zimering, Taylor & Mora, 1989). The CES is a self-report measure that assesses the intensity or severity of the veteran's exposure to combat. An example of an item from the CES is "Were you ever under enemy fire?" with responses ranging from "Never" (1) to "More than five months" (5). Another item from the CES is "What percentage of men in your unit was killed, wounded, or missing in action?" with

responses ranging from “No One” (1) to “More than 50%” (4). Higher scores indicate higher combat exposure. Keane et al. (1989) recommend weighting the scale items according to the severity of the experience. Total weighted scores for the CES range from 0 to 41.

The CES was developed for use in National Vietnam Veterans Readjustment Study (NVVRS), a retrospective study of exposure trauma and traumatic military events. In the assessment of psychometric properties, the CES demonstrated an internal consistency value of .85. Test-retest reliability with a one-week interval was assessed using three groups of heterogeneous veterans. The calculation for the three groups combined was $r = .97$. There were no between-group differences in the test-retest correlations, with excellent stability indicated over the one-week interval. A principal-components analysis conducted by Keane et al. (1989) using varimax rotation generated a single factor with an eigenvalue greater than 1.0. Because a single factor accounted for 57.6% of the common variance among the items, the authors concluded that the scale measured a single construct of combat exposure. Construct validity was established by comparing Vietnam veterans’ scores on the CES with whether or not they had been previously diagnosed with PTSD using DSM-III (1980) criteria. The veterans with a diagnosis of PTSD scored significantly higher on the CES ($t = 2.98, p < .005$) than veterans without a diagnosis of PTSD. Scores on the CES significantly correlated with scores on the Mississippi Scale for Combat related PTSD, an established scale measuring combat exposure.

4.4.2 Perceived Stress.

The moderating variable, Perceived Stress, was operationalized by the 10-item Perceived Stress Scale (PSS-10) (Cohen, Kamarck & Mermelstein, 1983; Cohen & Williamson, 1988). The PSS is a self-report, global measure of perceived stress during the past month. The scale includes

items designed to measure the degree individuals appraise their lives during the past month as unpredictable, uncontrollable, and overloading. Two examples of items from the PSS-10 are: “In the past month, how often have you been upset because of something that happened unexpectedly?” and “In the past month, how often have you felt that you were unable to control the important things in your life?” Items are rated on a 5-point scale ranging from never (0) to very often (4). Items 4, 5, 7, and 8 are reversed scored. The items are summed for a total perceived stress score ranging from 0 to 40, with higher scores indicating higher perceived stress.

The PSS-10 is a shortened version of the PSS-14 developed by Cohen and Williamson (1988) based on a study that included older adults. Evidence for construct validity was established using Pearson’s correlations between the PSS-10 and established stress measures, self-reported health and health service measures, health behavior measures, smoking status, and help-seeking behavior. During psychometric testing, higher PSS scores were significantly associated at the $p < .001$ level with failure to quit smoking, greater vulnerability to stress-elicited depressive symptoms, and physical illness. The PSS-10 was found to have a tighter factor structure and a better internal reliability than the PSS-14. An alpha of .78 was found for the PSS-10 with test-retest reliability for two days of .85. Cohen and Williamson (1988) recommended that the shorter version be used in future research.

4.4.3 Perceived Social Support.

The moderating variable, Perceived Social Support, was operationalized by a short form, 12-item version of the 19-item Medical Outcome Study Social Support Survey (MOS-SSS) (Sherbourne & Stewart, 1991). The 12-item version was adapted for use in a series of follow-up studies of cancer patients in order to ease responder burden (Ganz, Rowland, Desmond,

Meyerowitz & Wyatt, 1998; Ganz, Desmond, Leedham, Rowland, Meyerwitz & Belin, 2002). Sherbourne and Stewart developed the MOS-SSS to assess perceived social support. Multitrait scaling analysis, conducted during the Medical Outcome Study with 2987 ambulatory patients having at least one chronic condition, supported the dimensionality of five social support measures: (1) overall functional social support, and (2) four dimensions of functional social support: (a) emotional/informational support, (b) tangible support, (c) positive social interaction, and (d) affectionate support. Evidence of construct validity was found using Pearson Product Moment Correlations between the five social support measures and physical and mental health validity variables thought to be closely related to social support. All correlations were significant at the $p < .01$ level. Internal consistency reliability of $\alpha = .97$ was reported for the total social support index with a one-year stability of $\alpha = .78$. The four functional support subscales were reliable with all alphas $> .91$.

For each item, participants are asked to indicate how often each type of functional social support will be available to them if needed. The five response choices (1 – 5) range from “none of the time” to “all of the time.” Examples of items from the MOS-SSS are “Someone you can count on to listen to you when you need to talk” and “Someone to help you with daily chores if you were sick.” Scores for each of the four support subscales are transformed into a scale from 0 to 100. The total social support score is obtained by calculating the average of the transformed scores for the four subscales. Higher scores indicate more perceived social support.

4.4.4 Posttraumatic Stress Symptoms.

The dependent variable, Posttraumatic Stress Symptoms, was operationalized by the PTSD Checklist – Military Version (PCL-M) (Weathers, Litz, Herman, Huska, & Keane, 1993).

The PCL-M is a self-report rating scale consisting of 17 items that correspond to the DSM-IV (1994) symptoms of posttraumatic stress disorder (PTSD). Participants are instructed to indicate how much they have been bothered by each symptom in the past month using a five-point, Likert-style scale. Severity ratings range from “Not at all” (1) to “Extremely” (5). Examples of items from the PCL-M are “Repeated, disturbing dreams of the stressful military experience?” and “Trouble remembering important parts of the stressful military experience?” Scores from the 17 items are summed for a total score when using the PCL-M to diagnose PTSD. Total scores range from 17 to 85 with a total score of 50 or above considered to be positive for PTSD in military populations. This scoring method was based by the authors on the PTSD module from the Structured Clinical Interview (SCID), considered a gold standard for diagnosing PTSD (Spitzer, Williams, Gibbon & First, 1995).

In addition to the application of using a cut-off score of 50 to diagnose PTSD in military populations, the PCL-M has the capacity to measure symptom severity and whether the appropriate algorithm of symptoms per the DSM-IV is met (Forbes, Creamer & Biddle, 2001). An item cut-off score of 3 is required for a particular symptom to meet the criterion in military populations (Weathers et al., 1993). A diagnosis of PTSD using the DSM-IV algorithm is made when one item in cluster B (reexperiencing), three items in cluster C (avoidance), and two items in cluster D (arousal) have a score greater than or equal to 3.

The PCL-M was developed specifically for use with veterans, with symptoms written for military experiences. Psychometric testing with groups of Vietnam and Persian Gulf veterans yielded internal consistency of .97 and test-retest reliability over a two day period of .96. Convergent/discriminant validity was established with a sample of Vietnam veterans by calculating Pearson Product Moment Correlations between scores and the PCL-M and

established scales of PTSD severity. The PCL-M significantly correlated with the Mississippi Scale for Combat related PTSD ($r = .93$), the Impact of events Scale ($r = .77$), and the MMPI PK scale ($r = .77$) (Weathers & Ford, 1996).

Two exploratory items were added to the PCL-M for this study. These items measured two distinct types of guilt sometimes associated with experiencing traumatic wartime experiences, guilt over acts committed or omitted and survivor guilt. Both items were adapted from the Clinician Administered PTSD Scale (CAPS) (Blake, Weathers, Nagy, Kaloupek, Gusman, Charney et al., 1995).

4.4.5 Health-Related Quality of Life.

The dependent variable, Health-Related Quality of Life, was operationalized by the Rand SF-8 Health Survey, 4-week recall (SF-8) (Ware, Kosinski, Dewey, & Gandek, 2001). The SF-8 was developed from the Medical Outcomes Study Short-Form-36 Health Survey (SF-36), a widely used measure in healthcare settings, in order to ease responder burden. Each of the eight questionnaire items is considered a single-item scale used to measure eight domains. The eight domains are: (a) general health; (b) physical functioning; (c) role physical; (d) bodily pain; (e) vitality; (f) social functioning; (g) mental health; and (h) role emotional. One example of an item from the SF-8 is the question that measures the general health domain: “Overall, how would you rate your health in the past 4 weeks?” with response choices ranging from excellent (1) to very poor (6). The question for the mental health domain is: “During the past 4 weeks, how much have you been bothered by emotional problems (such as feeling anxious, depressed or irritable)?” with response choices ranging from not at all (1) to extremely (5).

The SF-8 has been validated for use to assess health-related quality of life in terms of two summary measures: mental health (the Mental Component Summary Score – MCS-8) and physical health (the Physical Component Summary Score – PCS-8). In this study, the PCS-8 and MCS-8 subscale scores were calculated using the norm-based scoring (NBS) method outlined in the SF-8 manual (Ware et al., 2001). The NBS method was used by the authors of the SF-8 in order to make results comparable across SF-8 and SF-36 forms. The means, variances, and regression weights used to score the SF-8 came from studies in the general U.S. population. By assigning the scale values in the NBS table to the participants' responses, the SF-8 items are reversed scored so that a higher response indicates better health. Normative tables for the summary measures by age group and gender are provided in the manual.

The reliability estimates for the SF-8 (4-week recall) summary measures provided in the scoring manual (Ware et al., 2001) are:

1. alternate forms reliability: PCS-8 = .88; MCS-8 = .82.
2. test-retest reliability (Total Sample): PCS-8 = .73; MCS-8 = .74.

A ninth item adapted from the RAND SF-36 Health Survey was added to the SF-8 measure as an exploratory item. This item, "Change in Health during the Past Year," asked participants to rate the change in their health during the past year on a Likert-type scale with five levels: (1) much better, (2) somewhat better, (3) same, (4) somewhat worse, and (5) much worse. Norm-based scoring was not available for this item; it was reversed scored with higher scores indicating improved health during the past year.

4.4.6 Demographics

A demographics questionnaire was designed specifically for this study to conduct a face-to-face interview with the participant at the beginning of the testing appointment. Information was gathered on the participant's age, marital status, race/ethnicity, period of service, and self-reported cognitive or memory loss. The questionnaire also contained two items that were completed by the Principal Investigator from the Computerized Patient Record System (CPRS) at the VA Pittsburgh Healthcare System after the participant completed the study. One item was whether the participant had either an active or inactive diagnosis of depression on CPRS; the second item was whether the medical records showed an active diagnosis of mild cognitive disorder for the participant.

In addition to the demographic items listed above, two exploratory questions were included on the questionnaire in order to tap into possible sources of perceived stress and perceived social support. The question that explored for potential sources of perceived stress was a checklist of stressful life events that may have occurred during the past year. The six life events on the checklist were: (1) personal illness, (2) illness of a family member or friend, (3) death of a close family member or friend, (4) move or relocation, (5) victim of a crime, and (6) abuse or neglect. A question that asked participants how many children and/or grandchildren participants had living in the local area was utilized to explore for potential sources of perceived social support.

CHAPTER 5. RESULTS

This dissertation examined the relationship between combat exposure and posttraumatic stress symptoms in community-dwelling World War II and Korean War male veterans over the age of 64, and the potential of risk and resilience factors to moderate this relationship. The relationship between past combat exposure and health-related quality of life was also assessed. Risk and resilience factors were examined for their potential to moderate the main effect relationships. The direct effect of the moderating variables, perceived stress and perceived social support, on the dependent variables, posttraumatic stress symptoms and health-related quality of life, was also investigated. The results chapter is divided into five sections. The first section, Descriptive Statistics, describes the demographic characteristics of the sample. The second section provides the univariate analysis of the main study variables and demographic variables. The third section contains the bivariate analysis of the main study variables and demographic variables. The fourth section, Multivariate Analysis, provides results from the multiple and moderated regression analyses. The fifth section contains the descriptive statistics and results from the analysis of the exploratory items in this study and concludes with a summary of the key findings.

The principal investigator (PI) was responsible for all data analysis procedures. Descriptive statistical procedures were used to describe the demographics of the study sample, univariate analysis of scores on the main study variables, and examine the bivariate relationship

between the variables. Hypothesis testing was done using Pearson Product Moment Correlations, t-tests, ANOVA, and multiple and moderated regression procedures. The significance level for all analyses is $p < .05$, two-tailed.

5.1. SECTION I: DESCRIPTIVE STATISTICS

5.1.1 Sample Description

A total of 100 participants completed the study. Demographic characteristics of the sample are shown in Table 8. Only male veterans were included in the study due to the low numbers of female World War II and Korean War veterans which would have made the results statistically insignificant. The age of the veterans ranged from 67 to 88 with a mean age of 77.19. The majority of the veterans reported that they were married (60%); of the remaining 40 veterans, 22 (22%) indicated that they were widowed, 8 (8%) that they had never been married, and 10 (10%) that they were divorced or separated. The majority of the participants identified themselves as Caucasian (86%); the remaining 14 participants were African-American (14%). Fifty-one (51%) of the participants were World War II veterans and 49 (49%) were Korean War veterans. The majority of the participants were tested at either the Primary Care Outpatient Clinic, University Drive Division (45%) or at the Community Based Outpatient Clinic (46%) site. Seventeen veterans (17%) self-reported that they were currently experiencing some mild memory loss. A review of the participants' computerized patient records at the VA Pittsburgh Healthcare System indicated that 18 (18%) had been diagnosed with depression that was either currently active or inactive. Information from the Computerized Patient Record System (CPRS)

also indicated that 3 participants (3%) had an active diagnosis of Mild Cognitive Disorder as defined in the DSM-IV-TR (American Psychiatric Association, 2000).

Table 8: Demographic Characteristics of Participants

Variable	N (%) or M (SD)
Age:	
Range 67—88	M = 77.19 (SD = 4.77)
Marital Status:	
Married	60%
Widowed	22%
Single/Divorced/Separated	18%
Race/Ethnicity:	
Caucasian	86%
African-American	14%
Period of Service:	
World War II	51%
Korean War	49%
Study Site:	
CBOC	46%
University Drive	45%
MGU	4%
Heinz	3%
GEM Clinic	2%
Diagnosis of Depression: (Computerized Medical Records)	
No	82%
Yes	18%
Diagnosis of Mild Cognitive Disorder: (Computerized Medical Records)	
No	97%
Yes	3%
Self-Reported Memory Problems:	
No	83%
Yes	17%

5.2. SECTION II: UNIVARIATE ANALYSIS OF MAIN STUDY VARIABLES AND DEMOGRAPHIC VARIABLES

5.2.1 Central Tendency: Main Study Variables

The main study variables, combat exposure, perceived stress, perceived social support, posttraumatic stress symptoms, and health-related quality-of-life (physical health and mental health summary scores) were analyzed for central tendency, variance, and distribution. Although the skewness for perceived social support and the mental health summary score were close to being outside the acceptable range of $\pm .8$, normality of the score distribution was present for all variables; therefore, no transformations were necessary. Means, standard deviations, skewness, and kurtosis for the main study variables are presented in Table 9 and described below in the following order: (a) the independent variable of combat exposure, (b) the dependent variable of posttraumatic stress symptoms, (c) the dependent variable of health-related quality of life (physical and mental health summary scores), (4) the moderating variable of perceived stress, and (5) the moderating variable of perceived social support.

5.2.2 The Independent Variable: Combat Exposure

Combat exposure, was operationalized using the self-report Combat Exposure Scale (CES; Keane et al., 1989). An exploratory factor analysis using varimax rotation generated two factors with an eigenvalue greater than 1.0 for the present study rather than the one single factor found by the authors of the scale during their psychometric analysis. The second factor included item #3 “Were you ever surrounded by the enemy?” and item #7 “How often were you in danger

of being injured or killed in the line of duty?” These two items give more general descriptions of theater-in-war traumatic experiences than the other five items that describe specific battlefield experiences of infantry soldiers on the frontline (i.e. firing rounds or being fired at by the enemy).

Table 9: Univariate Analysis of the Main Study Variables

Variables	Mean	SD	Skewness	Kurtosis
Combat Exposure	14.14	5.95	.54	-.58
Posttraumatic Stress Symptoms	31.69	9.76	.58	-.27
Physical Health	42.39	9.58	-.18	-.99
Mental Health	48.56	11.35	-.75	-.21
Perceived Stress	15.09	7.99	.11	-.99
Perceived Social Support	51.49	16.07	.76	.56

The results of this factor analysis reflected the verbal comments made to the PI about the CES by participants after they completed the study. Some of the participants remarked that the questions describing specific battlefield experiences did not apply to them because they were in the Navy or Air Force, or they were away from the frontlines even though they were in the war-zone and experienced traumatic exposure. Because the CES did not reflect the military experiences of some of the participants in this study, non-weighted scores were used in the analysis rather than the weighted scores suggested by the authors.

Total possible scores for the non-weighted items ranged from 0 to 33; total scores from this sample ranged from 7 to 30. Table 9 shows the mean, standard deviation, skewness, and kurtosis for the scores from this study. Coefficient alpha was calculated and yielded a value of

.88, an internal consistency that was slightly higher than the alpha of .85 found during the scale's psychometric testing (Keane et al., 1989).

5.2.3 The Dependent Variable: Posttraumatic Stress Symptoms:

Posttraumatic stress symptoms, was operationalized using the self-report PTSD Checklist – Military Version (PCL-M) (Weathers et al., 1993). Table 9 contains the mean, standard deviation, skewness, and kurtosis for the PCL-M. The total scores of the participants ranged from 17 to 55 with a mean score of 31.69 and a standard deviation of 9.76. A score of 50 and above out of a possible 85 is considered to be positive for posttraumatic stress disorder (PTSD) in military populations. Seven participants (7%) scored positive for PTSD according to this criterion. Coefficient alpha was calculated for the total scale and yielded a value of .88, showing a high internal consistency but lower than the alpha of .97 found during the psychometric testing of the scale (Weathers et al.).

An alternative scoring method for the PCL-M suggested by Weathers et al. (1993) is to treat “moderately” and above (responses 3, 4 and 5) as symptomatic for each item, then identify whether the appropriate algorithm of symptoms per the DSM-IV (American Psychiatric Association, 1994) has been met. A diagnosis by this method is made if there is an endorsement of at least one Criterion B (reexperiencing) item, at least three Criterion C (avoidance) items, and at least two Criterion D (arousal) items. Using this scoring method, sixteen (16%) of the participants scored positive for PTSD. Fifty-three (53%) participants had at least one Criterion B item, 28 (28%) had at least three Criterion C items, and 46 (46%) had at least two Criterion D items. The mean number of posttraumatic stress symptoms experienced at the symptomatic level was five. Table 10 presents the descriptive information of the number and percentage of

participants who scored 3 or above for each scale item, and whether the item is a Criterion B, Criterion C, or Criterion D symptom.

Table 10: Frequency of Symptomatic Scores on the PCL-M (N = 100)

Item	Criterion	N(%)
Sleep disturbance	D	67 (67%)
Upset at reminder	B	46 (46%)
Avoiding similar activities	C	44 (44%)
Irritable/angry outbursts	D	37 (37%)
Concentration difficulties	D	37 (37%)
Intrusive recollections	B	28 (28%)
Loss of interest in activities	C	26 (26%)
Repeated dreams	B	23 (23%)
Avoiding thinking/feeling	C	23 (23%)
Feeling Distant/Cut off	C	22 (22%)
Future shortened	C	21 (21%)
Jumpy/easily startled	D	21 (21%)
Emotional numbing	C	17 (17%)
Physical reactions	B	16 (16%)
Flashbacks	B	12 (12%)
Hypervigilance	D	9 (9%)
Trouble remembering	C	7 (7%)

The majority of the participants (67%) scored in the symptomatic range for sleep disturbance. The next four items with the highest frequency of scores at or above the cut-off of 3

were: (a) upset at reminders of the experience (46%), (b) avoidance of similar activities (44%), (c) irritable/angry outbursts (37%), and (d) concentration difficulties (37%).

5.2.4 The Dependent Variable: Health-Related Quality of Life

Health-related quality of life was operationalized using the Rand SF-8 Health Survey, 4-week recall (SF-8) (Ware et al., 2001). The norm-based scoring procedure outlined in the SF-8 manual was used to calculate the scales for the eight domains and the Physical Health Summary Score (PCS-8) and Mental Health Summary Score (MCS-8). The descriptive results for the PCS-8 and MCS-8 are presented in Table 10. The SF-8 manual (Ware et al., 2001) divides the norms of the means and standard deviations for the PCS-8 and the MCS-8 in the U.S. general population into three age categories for males over the age of 65. Table 11 compares these norms with the means and standard deviations from the present study for the three age categories. The comparison of the means and standard deviations for the three age categories indicates that the sample from the present study had poorer physical and mental health than the general U.S. population of older adult males. This finding is consistent with past research that has demonstrated that the elderly veteran population has poorer overall health status than the general population of older people enrolled in Medicare (Selim, Verlowitz, Fincke, Cong, Rogers, Haffer, et al., 2004).

Table 11: Comparison of Norms for Three Age Groups of Geriatric Males with Means from the Present Study

	PCS-8 Physical Health		MCS-8 Mental Health	
	U.S. Population	Present Study	U.S. Population	Present Study
Ages 65-69				
Mean:	47.90	34.25	53.30	51.60
Standard Deviation:	9.37	11.06	7.21	13.40
Ages 70-74				
Mean:	47.92	40.59	53.00	47.14
Standard Deviation:	9.38	8.72	7.75	12.03
Ages 75 and over				
Mean:	46.10	43.52	52.62	49.03
Standard Deviation:	10.56	9.73	7.93	11.09

5.2.5 The Moderating Variable: Perceived Stress

The moderating variable, perceived stress, was operationalized using the self-report Perceived Stress Scale (PSS-10) (Cohen et al., 1983; Cohen & Williamson, 1988). Scores for this study ranged from a minimum of 0 to a maximum of 33 out of a possible maximum score of 40. The mean score was 15.09 and the standard deviation was 7.99. The results for the PSS-10 are presented in Table 10. Norms for the PSS-10 were established during psychometric testing using a group of 296 adults age 65 and older. The mean of 12.0 and standard deviation of 6.30 found by Cohen and Williamson (1988) were lower than the mean and standard deviation for the present study. Coefficient Alpha was calculated and yielded a value of .88, which is higher than the internal consistency of .78 reported by Cohen and Williamson.

5.2.6 The Moderating Variable: Perceived Social Support

The moderating variable, perceived social support, was operationalized using a 12-item version of the Medical Outcome Study Social Support Survey (MOS-SSS) (Ganz, Rowland, Desmond, Meyerowitz & Wyatt, 1998; Ganz, Desmond, Leedham, Rowland, Meyerwitz & Berlin, 2002; Sherbourne & Stewart, 1991). The 12-item MOS-SSS gives a total support score and four subscales scores: (a) emotional/informational support; (b) tangible support; (c) affectionate support; and (d) positive social interaction. The initial reliability calculation resulted in a low alpha of .63 for the scale. The emotional/ informational subscale, made up of the first four items on the measure, showed poor internal consistency with an alpha of .42. The first item on the measure, “Someone to give you information to help you understand a situation,” was omitted from the subsequent reliability calculation, and the internal consistency improved for the scale to .88 and for the emotional/informational support subscale to .84. This item, the only informational item used for this study, was dropped and the subscale relabeled “emotional support.”

The total support score and the four subscale scores were calculated according to the authors’ scoring instructions on a 0 to 100 scale using the following formula:

$$\frac{100 \times (\text{observed score} - \text{minimum possible score})}{(\text{maximum possible score} - \text{minimum possible score})}$$

Total scores from the 11-items ranged from 20.31 to 93.75 out of a possible range of 0 to 100 with a mean score of 51.49 with a standard deviation of 16.07. The skewness of .76 was close to being outside the unacceptable range of +/- .8, however, the scores were not transformed.

The scores for the present study were compared to published means and standard deviations (Sherbourne & Stewart, 1991). Table 12 shows the comparison of the two sets of data.

Table 12: MOS-SSS: Comparison of Means and Standard Deviations with Normative Data

Social Support Measure:	Present Study		Norms	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Overall Social Support Index	51.49	16.07	70.1	24.2
Emotional Support	53.17	23.02	69.6	25.5
Tangible Support	48.69	23.83	69.8	28.5
Affectionate Support	41.30	15.93	73.7	28.3
Positive Social Interaction	42.50	18.33	69.8	26.0

Participants in this study had lower levels of perceived social support on the overall social support index and the four subscales of the MOS-SSS than the population of ambulatory patients with chronic conditions age 18 to 98 used to establish the norms for the scale (Sherbourne & Stewart, 1991).

A factor analysis conducted for this study using varimax rotation found that the 11-item scale loaded on three factors with eigenvalues of 1.00 rather than the four factors found by the authors (Sherbourne & Stewart, 1991). The items that made up the affectionate support and the positive social interaction subscales loaded on one factor. Therefore, these two subscales were combined and analyzed as one subscale labeled affection/positive social interaction in subsequent analyses. Table 13 shows the descriptive information for the three subscales including the mean, standard deviation, skewness, and kurtosis. Coefficient alpha showed good

internal consistency for the three subscales as follows: emotional support = .84; tangible support = .89; and affection/positive social interaction = .90.

Table 13: Univariate Analysis of the MOS-SSS Support Subscales

Subscale	Mean	SD	Skewness	Kurtosis
Emotional Support	53.17	23.02	-.07	-.69
Tangible Support	48.69	23.83	.28	-.41
Affectionate/Positive Social Interaction	52.38	19.96	.50	.26

5.2.7 Demographic Variables

The demographic variables of age, marital status, race/ethnicity, period of service, depression diagnosis, mild cognitive disorder diagnosis, and self-reported memory loss were recoded into dichotomous variables. T-tests were used to compare the group means of the continuous study variables. The results of the t-tests with significant differences in the means for the two groups are reported below.

5.2.8 Marital Status

The five categories of the demographic variable marital status were recoded into two categories, married (n = 60) and not married (n = 40). A comparison of the means of the two groups on the continuous study variables, combat exposure, posttraumatic stress symptoms, the physical and mental health domains of health-related quality of life, perceived stress, and perceived social support, were performed using Student's t-tests for Independent Groups. Significant differences were found between the group means for the following variables: (a)

posttraumatic stress symptoms (PTSS) ($p < .01$); (b) physical health ($p < .05$); and (c) perceived stress ($p < .05$). Married participants reported significantly fewer posttraumatic stress symptoms, better physical health, and less perceived stress than participants in the not married category. Table 14 contains the t-test results for the variables with significant differences in group means.

Table 14: Marital Status: t-test Results

Variable	Married	Not Married	t	p
	Mean	Mean		
PTSS	29.23	35.38	-3.226	.002**
Perceived Stress	13.48	17.50	-2.528	.013*
Physical Health	43.94	40.06	2.019	.046*

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

5.2.9 Study Site

The five study sites were recoded into two categories: urban ($n = 54$) and rural ($n = 46$). The urban category was made up of the four sites in the Metropolitan Pittsburgh area: University Drive Division, Heinz Division, GEM Clinic, and MGU (Van). The rural category was made up of the Community Based Outpatient Clinics (CBOCs) located in rural Westmoreland County, Pennsylvania. Veterans were patients at the sites where they were tested. Comparison of the means found significant differences between the two groups on combat exposure ($p < .001$), posttraumatic stress symptoms ($p < .001$), and perceived stress ($p < .05$). Participants who were tested at the sites in the urban category reported significantly more combat exposure, posttraumatic stress symptoms, and perceived stress than participants at the rural site.

Table 15: Study Site: t-test Results

Variable	Urban	Rural	t	p
PTSS	34.50	28.39	3.269	.001***
Perceived Stress	16.50	13.43	1.938	.049*
Combat Exposure	15.76	12.24	3.070	.003**

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

5.2.10 Depression

Student's t-tests for Independent Groups were conducted to compare the group means between having a depression diagnosis (active or inactive) and no depression diagnosis on the main study variables. Significant differences were found between the group means for posttraumatic stress symptoms (PTSS) ($p < .001$) and combat exposure ($p < .05$). Table 16 presents the findings for the significant t-tests. This finding supports other studies in the literature, including the National Comorbidity Study (Kulka et al., 1990) and the National Vietnam Veterans Readjustment Study (Kessler, et al., 1995) that found high rates of comorbidity of PTSD and major depressive disorder.

Table 16: Depression Diagnosis: t-test Results

Variable	Yes (Active or Inactive)	No	t	p
PTSS	38.28	30.24	3.319	.001***
Combat Exposure	17.06	13.50	2.346	.021*

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

5.3. SECTION III: BIVARIATE ANALYSIS OF MAIN STUDY VARIABLES AND DEMOGRAPHIC VARIABLES

Tests of association for the bivariate analysis were Pearson Product Moment correlations and phi coefficients. Table 17 presents the bivariate associations for the main study and demographic variables. Pearson's correlations revealed significant relationships that were both predicted and not predicted by the model.

Combat exposure, as predicted by the model, was positively correlated with posttraumatic stress symptoms and negatively correlated with mental health component of health-related quality of life. Significant relationships not predicted by the model were that combat exposure was associated with being diagnosed with depression (active or inactive) and living in an urban area. Thus, the World War II and Korean War veterans with a history of greater combat exposure were experiencing more posttraumatic stress symptoms, poorer mental health, greater incidences of depression, and lived in the urban area.

Combat exposure was also positively correlated with perceived stress, which was not predicted by the model. Viewed through the perspective of cognitive appraisal theory, this finding supports previous research that suggests that persons who have been traumatized in the past tend to perceive subsequent events as more stressful than those without a history of trauma. Cognitive appraisal theory also supports the notion that people who perceive that they are currently stressed may interpret past traumatic events more negatively than those who do not perceive that they are stressed (Lazarus & Folkman, 1984).

As predicted by the model, perceived stress was negatively associated with both the physical and mental health domains of health-related quality of life. Posttraumatic stress symptoms was positively associated with combat exposure and perceived stress. Although not predicted by the model, perceived stress was associated with living in the urban area and being not married. The dependent variable posttraumatic stress symptoms was associated with poorer mental health, and the correlation between posttraumatic stress symptoms and the physical health summary scores was negative and close to being significant ($r = -.18$, $p = .07$). Participants experiencing more posttraumatic stress symptoms also lived in the urban area, were not married, and had a history of depression.

Health-related quality of life, using the physical and mental health summary scores, was negatively associated perceived stress, consistent with the model. Poorer mental health was associated with more past combat exposure. Veterans with better physical health tended also to be married. In addition to the significant relationships for the main study variables predicted by the model, experiencing more perceived stress was positively associated with not being married.

Table 17: Bivariate Correlation Matrix for Study Variables

1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1. Combat Exposure	-	.29**	-.05	-.20*	.27**	-.04	.15	.30**	.04	.11	-.12	.23*	.11	.08
2. PTS Symptoms		-	-.18	-.44***	.48***	-.15	-.10	.31***	-.12	-.11	-.31**	.32***	.09	.06
3. HRQL: Physical Health			-	-.03	-.35***	-.02	.07	-.07	.08	-.05	.20*	.04	-.06	-.11
4. HRQL: Mental Health				-	-.56***	.00	.10	.11	.08	.14	.08	-.32***	-.10	-.04
5. Perceived Stress					-	-.06	-.05	.20*	-.15	-.04	-.25*	.09	-.00	.07
6. Percv'd Social Support						-	-.09	-.15	-.14	-.11	.03	.09	-.08	.06
7. Age							-	.09	.17	.67***	.05	-.06	-.02	.22*
8. Site Cat (0 = Rural, 1 = Urban)								-	-.26**	.14	-.22*	.07	.16	.15
9. Race Cat (0 = AA, 1 = Caucasian)									-	.12	.32***	-.04	.07	.03
10. Period of Service (0 = WW2, 1 = Korea)										-	.06	-.11	.06	.12
11. Marital Cat (0 = Not Married, 1 = Married)											-	.11	.14	-.01
12. Dx Depression (0 = No, 1 = Yes)												-	.22*	.27**
13. Dx Mild Cognitive Disorder (0 = No, 1 = Yes)													-	.39***
14. Self-Reported Memory Loss (0 = No, 1 = Yes)														-

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

In contradiction to the model, perceived social support was not negatively correlated with posttraumatic stress symptoms or positively correlated with either the physical health or mental health domains of health-related quality of life. Perceived social support was positively associated with being married. Pearson’s correlations were also performed between the three functional social support subscales (emotional support, tangible support, and affection/positive social interaction) and the outcome variables. The results of this bivariate analysis presented in Table 18 show that the affection and positive social interaction dimension was significantly and negatively associated with posttraumatic stress symptoms ($r = -.38, p < .001$) and perceived stress ($r = -.21, p < .05$). Thus, aging male veterans with higher levels of affectionate support and positive social interaction also experience fewer posttraumatic stress symptoms and less perceived stress.

Table 18: Bivariate Analysis of Direct Effect of Three Dimensions of Perceived Social Support on Posttraumatic Stress Symptoms

Variable	Perceived Stress		PTSS	
	r	p	r	p
Emotional Support	-.08	.43	-.16	.11
Tangible Support	-.10	.35	-.02	.88
Affection/Positive Social Interaction	-.21*	.04	-.38***	.001

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

Significant relationships were found between the following demographic variables: (a) age was positively associated with self-reported memory loss, (b) depression diagnosis was positively associated with being diagnosed with mild cognitive disorder and self-reported memory loss, and (c) being located in the urban area was positively associated with being African-American and not married.

Because significant bivariate relationships were found between the dependent variable posttraumatic stress symptoms, and the demographic variables study site, marital status, and depression, a multiple regression analysis was performed for the independent variable, combat exposure, and the dependent variable, posttraumatic stress symptoms, controlling for these variables. Dummy variables were used in the regression analysis as follows: 1. site (0 = not urban, 1 = urban); 2. marital status (0 = not married, 1 = married); and 3. depression (0 = no, 1 = yes). As shown in Table 19, the positive relationship between combat exposure and posttraumatic stress symptoms holds after controlling for the three demographic variables.

Table 19: Regression Analysis Controlling for Significant Demographic Variables

Variable	B	Beta	R	R2	R2	F	Sig F
					Chg	Chg	Chg
Step 1			.53	.28			
Site	6.31	.31*					
Marital Status	-3.59	-.18					
Depression	9.29	.38**					
Step 2			.58	.34	.06	4.07	.049*
Site	5.28	.26*					
Marital Status	-3.72	-.19					
Depression	8.58	.35**					
Combat Exposure	.43	.25*					

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

5.4. SECTION IV: MULTIVARIATE ANALYSIS

5.4.1 Moderated Regression Analysis: Perceived Stress

5.4.1.1 Dependent Variable: Posttraumatic Stress Symptoms

The moderating effect of perceived stress on the relationship between the independent variable, combat exposure, and the dependent variable, posttraumatic stress symptoms, was analyzed by performing moderated regression procedures. An interaction variable was created by multiplying the independent variable of combat exposure by the risk factor of perceived stress. This interaction variable was entered in the second step of the regression analysis after the main effect variables of combat exposure and perceived stress were entered in the first step. The result of the moderated regression analysis is presented in Table 20. The interaction variable was statistically significant ($p = .036$), indicating that perceived stress acts as a moderator the relationship between combat exposure and posttraumatic stress symptoms. The R² change values in Table 20 show the proportion of explained variance contributed by the interaction variable; the interaction variable added significantly to the explained variance in posttraumatic stress symptoms.

Thus, hypothesis 3, which predicted that perceived stress would moderate the relationship between combat exposure and posttraumatic stress symptoms, was affirmed. The relationship between combat exposure and posttraumatic stress symptoms was higher for those with more perceived stress than for those with less perceived stress.

Table 20: Moderating Effects of Perceived Stress with Combat Exposure on Posttraumatic Stress Symptoms

Variable	B	Beta	R	R2	R2 Chg	F Chg	Sig F Chg
Step 1			.51	.26			
Combat Exposure	.28	.17					
Perceived Stress	.53	.43***					
Step 2			.54	.29	.03	4.51	.036*
Combat Exposure	-.27	-.16					
Perceived Stress	-.01	-.00					
Combat Exposure X Perceived Stress	.04	.64*					

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

A subgroup analysis was also performed to confirm the above findings by assessing the effects of combat exposure on posttraumatic stress symptoms for high and low perceived stress separately. As shown in Table 21, the slope value (B = .00) for the low score subgroup shows that there was no change in the relationship between combat exposure and posttraumatic stress symptoms for older veterans with low levels of perceived stress. For the high score subgroup, the slope value (B = .59) shows that participants with a high level of perceived stress experience significantly more posttraumatic stress symptoms as their combat exposure increased.

Table 21: Bivariate Association between Combat Exposure and Posttraumatic Stress Symptoms: Comparison of Low Stress/High Stress Subgroup Coefficients

	Low Stress		High Stress	
	B	Beta	B	Beta
Combat Exposure	.003	.004	.592	.346*

Moderated regression procedures were performed controlling for the three demographic variables, study site, marital status, and depression diagnosis, which had significant bivariate relationships with posttraumatic stress symptoms, in order to determine if the significance of the interaction term holds. Table 22 shows the results of the moderated regression when controlling

for study site, marital status, and depression. The interaction term remains significant; the p value increases from .036 to .002 when the three variables are controlled. Therefore, perceived stress acts as a moderator in the relationship between combat exposure and posttraumatic stress symptoms when study site, marital status, and depression are controlled.

Table 22: Moderating Effects of Perceived Stress with Combat Exposure on Posttraumatic Stress Symptoms Controlling for Study Site, Marital Status, and Depression

Variable	B	Beta	R	R2	R2 Chg	F Chg	Sig F Chg
Step 1			.53	.28			
Study Site	4.84	.25**					
Marital Status	-5.95	-.30***					
Depression	8.44	.33***					
Step 2			.63	.40	.12	9.38	.001***
Combat Exposure	.07	.05					
Perceived Stress	.43	.35***					
Step 3			.67	.45	.06	9.76	.002**
Combat Exp. X Perc'vd Stress							

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

5.4.1.2 Dependent Variable: Health Related-Quality of Life

The moderating effect of perceived stress on the relationship between the independent variable, combat exposure, and the dependent variable, health-related quality of life was analyzed by performing moderated regression procedures. The interaction variable, created by multiplying combat exposure by perceived stress, was entered in the second step of the regression analysis after the main effect variables of combat exposure and perceived stress were entered in the first step. For the physical health component of health-related quality of life, the result of the moderated regression analysis is presented in Table 23. The interaction variable was not statistically significant ($p = .384$), indicating that perceived stress does not act as a moderator in the relationship between combat exposure and physical health. The R2 change values in Table

23 show the proportion of explained variance contributed by the interaction variable; the interaction variable explained almost none of variance in physical health. Thus, perceived stress did not exacerbate the negative impact of past combat exposure on current physical health in this sample of older veterans.

Table 23: Moderating Effects of Perceived Stress with Combat Exposure on Physical Health

Variable	B	Beta	R	R2	R2 Chg	F Chg	Sig F Chg
Step 1			.36	.13			
Combat Exposure	.08	.05					
Perceived Stress	-.44	-.37***					
Step 2			.36	.13	.01	.77	.384
Combat Exposure	-.16	-.10					
Perceived Stress	-.68	-.56*					
Combat Exposure X Perceived Stress	.02	.29					

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

For the mental health domain of health-related quality of life, the result of the moderated regression analysis is presented in Table 24. The interaction variable was not statistically significant ($p = .876$), indicating that perceived stress does not act as a moderator in the relationship between combat exposure and mental health. The R2 change values in Table 24 show the proportion of explained variance contributed by the interaction variable; the interaction variable explained none of variance in mental health. Perceived stress did not exacerbate the negative impact of past combat exposure on late-life mental health. Hypothesis 4, which predicted that perceived stress would act to moderate the relationship between combat exposure and health-related quality of life, was not supported.

Table 24: Moderating Effects of Perceived Stress with Combat Exposure on Mental Health

Variable	B	Beta	R	R2	R2 Chg	F Chg	Sig F Chg
Step 1			.57	.32			
Combat Exposure	-.09	-.05					
Perceived Stress	-.78	-.55***					
Step 2			.57	.32	.00	.024	.876
Combat Exposure	-.04	-.02					
Perceived Stress	-.74	-.52*					
Combat Exposure X Perceived Stress	.00	-.05					

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

5.4.2 Moderated Regression Analysis: Perceived Social Support

5.4.2.1 Dependent Variable: Posttraumatic Stress Symptoms

The buffering effect of perceived social support on the relationship between the independent variable, combat exposure, and the dependent variable, posttraumatic stress symptoms, was analyzed by performing moderated regression procedures. The interaction variable, created by multiplying combat exposure by perceived social support, was entered in the second step of the regression analysis after the main effect variables of combat exposure and perceived social support were entered in the first step. The result of the moderated regression analysis is presented in Table 25. The interaction variable was not statistically significant ($p = .312$), indicating that perceived social support does not act as a moderator in the relationship between combat exposure and posttraumatic stress symptoms. The R2 change value in Table 25 shows the proportion of explained variance contributed by the interaction variable; the interaction variable explained almost none of the variance in posttraumatic stress symptoms. Thus, having more social support does not buffer the negative impact of past combat exposure on experiencing posttraumatic stress symptoms in late life.

Table 25: Moderating Effects of Perceived Social Support with Combat Exposure on Posttraumatic Stress Symptoms

Variable	B	Beta	R	R2	R2 Chg	F Chg	Sig F Chg
Step 1			.30	.09			
Combat Exposure	.47	.28**					
Perceived Social Support	-.11	-.09					
Step 2			.32	.10	.01	1.032	.312
Combat Exposure	-.24	.14					
Perceived Social Support	-.14	-.23					
Combat Exp. X Perc'd Soc. Support	.02	.17					

**p<.01

Tests for moderation were also performed for the three subscales of the perceived social support measure: (1) emotional support, (2) tangible support, and (3) affection/positive social interaction. None of the interaction terms were significant, therefore, the results are not presented here. Hypothesis 5, which predicted that perceived social support would buffer the relationship between combat exposure and posttraumatic stress symptoms was not affirmed.

5.4.2.2 Dependent Variable: Health-Related Quality of Life

The buffering effect of perceived social support on the relationship between the independent variable, combat exposure, and the dependent variable, health-related quality of life was analyzed by performing moderated regression procedures. The interaction variable, created by multiplying combat exposure by perceived social support, was entered in the second step of the regression analysis after the main effect variables of combat exposure and perceived social support were entered in the first step. For the physical health component of health-related quality of life, the result of the moderated regression analysis is presented in Table 26. The interaction

variable was not statistically significant ($p = .827$), indicating that perceived social support does not act as a moderator in the relationship between combat exposure and physical health.

Table 26: Moderating Effects of Perceived Social Support with Combat Exposure on Physical Health

Variable	B	Beta	R	R2	R2 Chg	F Chg	Sig F Chg
Step 1			.07	.01			
Combat Exposure	-.08	-.05					
Perceived Social Support	-.07	-.05					
Step 2			.07	.01	.00	.05	.827
Combat Exposure	-.08	.05					
Perceived Social Support	-.00	-.00					
Combat Exp. X Perc'd Soc. Support	-.01	-.11					

For the mental health component of health-related quality of life, the result of the moderated regression analysis is presented in Table 27. The interaction variable was not statistically significant ($p = .781$), indicating that perceived social support does not act as a moderator in the relationship between combat exposure and mental health. The R2 change values in Table 27 show that the interaction variable explained none of variance in mental health.

Regression procedures were also performed with the three subscales of the perceived social support measure with both physical health and mental health as dependent variables. None of the interaction terms were significant, therefore, the results are not presented here. It was originally speculated that World War II and Korean War veterans with more combat exposure would have better mental and physical health if they perceived that they had more available social support. The results indicated, however, perceived social support did not play a moderating role in the relationships between combat exposure and health-related quality of life. Therefore, hypothesis 6 was not supported.

Table 27: Moderating Effects of Perceived Social Support with Combat Exposure on Mental Health

Variable	B	Beta	R	R2	R2 Chg	F Chg	Sig F Chg
Step 1			.20	.04			
Combat Exposure	-.38	-.20*					
Perceived Social Support	.01	-.00					
Step 2			.20	.04	.00	.08	.781
Combat Exposure	-.61	-.32					
Perceived Social Support	-.09	-.06					
Combat Exp. X Perc'd Soc. Support	.01	.14					

*p<.05.

5.5. SECTION V: EXPLORATORY ITEMS

The exploratory items for this study were: (a) life events during the past year, (b) children and/or grandchildren living in the local area, (c) change in health in the past year, (d) guilt for acts of commission/omission, and (e) survivor guilt. The descriptive results for these variables are shown in Table 28.

The descriptive analysis of life events during the past year indicated that the majority of the veterans (56%) had had a major personal illness, 26 participants (26%) reported a major illness of a family member or friend, and 12 (12%) reported the death of a close family member or friend. Only a small number of participants (five or fewer) indicated that they had moved or relocated, been a victim of a crime, or experienced abuse or neglect. Most of the participants experienced a total of zero (30%), one (40%), or two (20%) life events during the past year.

Table 28: Descriptive Analysis of Exploratory Variables

Variable	N (%)
Life Events Occurring During the Past Year:	
Major Personal Illness	56 (56%)
Major Illness of a Close Family Member or Friend	26 (26%)
Death of a Close Family Member or Friend	22 (22%)
Move or Relocation	5 (5%)
Victim of a Crime	2 (2%)
Abuse or Neglect	2 (2%)
Total Life Events Occurring During the Past Year:	
One	40 (40%)
Zero	30 (30%)
Two	20 (20%)
Three	8 (8%)
Four	1 (1%)
Five	1 (1%)
Number of Children and/or Grandchildren Living in the Area:	
Two	32 (32%)
One	27 (27%)
Zero	18 (18%)
Three	11 (11%)
Four	10 (10%)
Five	2 (2%)
Self-Reported Change in Health in Past Year:	
Much Better	2 (2%)
Somewhat Better	15 (15%)
Same	42 (42%)
Somewhat Worse	36 (36%)
Much Worse	5 (5%)
Guilt about Acts of Commission or Omission	
Not at all	72 (72%)
A Little Bit	12 (12%)
Moderately	15 (15%)
Quite a Bit	1 (1%)
Extremely	0 (0%)
Survivor Guilt	
Not at all	73 (73%)
A Little Bit	10 (10%)
Moderately	15 (15%)
Quite a Bit	2 (2%)
Extremely	0 (0%)

The exploratory item used to tap potential sources of social support revealed that 32 (32%) had two children and/or grandchildren living in the local area. The remaining 58 participants reported between zero and five children and/or grandchildren. These data were obtained during the face-to-face interview conducted by the PI with the participants to collect demographic information. The PI noted that the verbal comments made to her during this process indicated that participants reported the children and/or grandchildren who they could count on for quality social support even though they may have had others living in the local area.

The exploratory item on change in health status during the past year asked participants to rate any change in their general health on a scale from 1 to 5, with 1 = much better now and 5 = much worse now. The majority of veterans reported that their health was either the same (42%) or somewhat worse (36%) than last year.

The items that explored for two types of guilt associated in the literature with traumatic war-zone experiences, guilt about acts of commission or omission and survivor guilt, were added to the PCL-M, the scale used to measure posttraumatic stress symptoms. Using the scoring rules for the PCL-M, the majority of participants scored in the asymptomatic range of 1 (Not at All) or 2 (A Little Bit) for both types of guilt. Sixteen participants (16%) reported scores in the symptomatic range (3 and above) for guilt about acts of commission/omission and seventeen (17%) for survivor guilt.

5.5.1 Life Events during the Past Year

During the interview to collect demographic data, participants were asked if they experienced any of the following life events during the past year: (a) major personal illness, (b) major illness of a family member or friend, (c) death of a close family member or friend, (d)

move or relocation, (e) victim of a crime, and (f) abuse or neglect. These life events have been found in the literature to be potential sources of stress for older adults. Pearson's correlations showed that, while no single life event was significantly related to higher perceived stress, the total life events experienced during the past year was positively correlated with total perceived stress ($r = .28, p < .01$)

Pearson's correlations were performed between the six life events and the total number of life events and the dependent variables. There were no significant relationships found between any of the six specific life events or the total life events and either posttraumatic stress symptoms or the physical and mental health components of health-related quality of life. As reported above, perceived stress was positively associated with posttraumatic stress symptoms and negatively associated with mental health. The result of these analyses indicates that perceived stress is a more important predictor of posttraumatic stress symptoms and poorer mental health than any one specific life event or total number of life events.

5.5.2 Number of Children and/or Grandchildren Living in the Local Area

Participants were asked during the demographic interview how many children and/or grandchildren they had living in the local area in order to explore for possible sources of social support. Pearson's correlation showed that the total number of children and/or grandchildren was significantly and positively correlated with scores on the perceived social support measure ($r = .40, p < .001$). For this group of older veterans, having children and grandchildren living in the local area was associated with the perception that they have access to quality social support.

5.5.3 Change in Health Status during the Past Year

The five categories of the variable change in health status during the past year were recoded into three categories as follows: (1) worse; (2) same; and (3) better. ANOVA procedures using Tukey post hoc tests showed that the means for category worse were significantly higher for the physical health summary score ($p < .001$), perceived stress ($p < .001$), and posttraumatic stress symptoms ($p < .05$). Therefore, participants who reported that their health had changed for the worse during the past also reported poorer physical health, higher perceived stress, and more posttraumatic stress symptoms. The test for homogeneity of variances, however, was significant for posttraumatic stress symptoms ($p = .024$).

5.5.4 Guilt for Behavior Omitted/Committed and Survivor Guilt

Pearson's correlations found that Guilt for Behavior Omitted/Committed was significantly and positively correlated with combat exposure ($r = .43$, $p < .001$) and posttraumatic stress symptoms ($r = .31$, $p < .01$). It was also close to being significantly associated with perceived stress ($r = .19$, $p = .056$). Pearson's correlations found that Survivor Guilt was significantly and positively correlated with combat exposure ($r = .44$, $p < .001$), perceived stress ($r = .22$, $p < .05$), and posttraumatic stress symptoms ($r = .34$, $p < .001$). These results indicate that participants with more combat exposure also experience more guilt from either acts that they committed or failed to commit during a war-related combat experience or from surviving the experience when others did not. The two forms of guilt were also significantly associated with the other 17 symptoms of posttraumatic stress disorder in the DSM-IV-TR. These results suggest

that the two forms of guilt would be appropriate to include on future measures of posttraumatic stress symptoms in military populations.

5.6. SUMMARY OF THE KEY FINDINGS

The following is a summary of the results of hypothesis testing for this study:

Hypothesis 1: Combat exposure is positively associated with posttraumatic stress symptoms. Pearson's correlation conducted to test this relationship found that combat exposure was significantly and positively associated with posttraumatic stress symptoms ($r = .29$, $p < .001$). More combat exposure during World War II or the Korean War was associated with experiencing a higher level of posttraumatic stress symptoms in late life. Therefore, hypothesis 1 was supported.

Hypothesis 2: Combat exposure is negatively associated with health-related quality of life. Pearson's correlation conducted to test this relationship showed that combat exposure was not significantly and negatively associated with the physical health ($r = -.05$, $p = .64$) summary score. However, the results of the Pearson's correlation showed that combat exposure was significantly and negatively associated with the mental health ($r = -.20$, $p < .05$) summary score. That is, participants with more combat exposure during World War II or the Korean War had poorer mental health. Therefore, hypothesis 2 was partially supported.

Hypothesis 3: Perceived stress significantly moderates the relationship between combat exposure and posttraumatic stress symptoms.

The results of the moderated regression analysis found that the interaction term was significant ($p = .036$), indicating that perceived stress acts as a moderator in the relationship

between combat exposure and posttraumatic stress symptoms. Thus, hypothesis 3 was affirmed. The relationship between combat exposure and posttraumatic stress symptoms was stronger for those with more perceived stress than for those with less perceived stress.

Hypothesis 4: Perceived stress significantly moderates the relationship between combat exposure and health-related quality of life.

The moderating effect of perceived stress on the relationship between the independent variable, combat exposure, and the dependent variable, health-related quality of life was analyzed by performing moderated regression procedures. For the physical health domain of health-related quality of life, the interaction variable was not statistically significant ($p = .384$), indicating that perceived stress does not act as a moderator in the relationship between combat exposure and physical health. For the mental health domain of health-related quality of life, the interaction variable was not statistically significant ($p = .876$), indicating that perceived stress does not act as a moderator in the relationship between combat exposure and mental health. Therefore, hypothesis 4 was not supported.

Hypothesis 5: Perceived social support significantly moderates the relationship between combat exposure and posttraumatic stress symptoms.

Moderated regression procedures found that the interaction variable was not statistically significant, indicating that perceived social support does not buffer the negative impact of past combat exposure and posttraumatic stress symptoms. Thus, hypothesis 5 was not affirmed.

Hypothesis 6: Perceived social support significantly moderates the relationship between combat exposure and health-related quality of life.

The buffering effect of perceived social support on the relationship between the independent variable, combat exposure, and the dependent variable, health-related quality of life

was analyzed by performing moderated regression procedures. For the physical health component of health-related quality of life, the interaction variable was not statistically significant, indicating that perceived social support does not act as a moderator in the relationship between combat exposure and physical health. For the mental health component of health-related quality of life, regression procedures found that the interaction variable was not statistically significant, indicating that perceived social support does not act as a moderator in the relationship between combat exposure and mental health. Thus, hypothesis 6 was not supported.

Hypothesis 7: Perceived stress is positively associated with posttraumatic stress symptoms. A significant direct effect relationship was found between perceived stress and posttraumatic stress symptoms. A Pearson's correlation found that perceived stress was positively associated with posttraumatic stress symptoms ($r = .48, p < .001$). Therefore, hypothesis 7 was supported.

Hypothesis 8: Perceived stress is negatively associated with health-related quality of life. Pearson's correlations found that perceived stress was significantly and negatively associated with both the physical health ($r = -.35, p < .001$) and mental health ($r = -.56, p < .001$) summary scores of the health-related quality of life measure. Therefore, hypothesis 8 was supported.

Hypothesis 9: Perceived social support is negatively associated with posttraumatic stress symptoms. Pearson's correlation between the overall index of perceived social support and posttraumatic stress symptoms found that the relationship was not significant ($r = -.15, p = .14$). Pearson's correlations were also performed between the three social support subscales, emotional support, tangible support, and affection/positive social interaction, and posttraumatic stress symptoms. A significant negative relationship was found between the affection/positive social

interaction subscale and posttraumatic stress symptoms ($r = -.38, p < .001$). Thus, hypothesis 9 was partially supported.

Hypothesis 10: Perceived social support is positively associated with health-related quality of life. Pearson’s correlations found that perceived social support was not significantly associated with either the physical health ($r = .04, p = .35$) or the mental health ($r = .02, p = .88$) domains of health-related quality of life. Therefore, hypothesis 10 was not supported.

Hypothesis 11: Korean War veterans will experience significantly more Posttraumatic Stress Symptoms than World War II veterans. The difference in the means of the scores on the posttraumatic stress measure for the two cohort groups of veterans, World War II and Korean War, was analyzed by performing an independent t-test. Table 31 shows the results of the t-test used to test Hypothesis 11. There was not a significant difference in the means between the two groups ($p = .287$); therefore, hypothesis 11 was not supported.

Table 29: Period of Service: t-test Results

Variable	WWII Mean	Korea Mean	t	p
Posttraumatic Stress Symptoms	30.67	32.76	-1.071	.287

Other significant relationships not predicted by the model included:

1. Posttraumatic stress symptomatology was positively associated with being diagnosed with depression.
2. Combat exposure was positively associated with being diagnosed with depression.
3. Participants who were not married and living in an urban area reported more posttraumatic stress symptoms and perceived stress.

4. Participants with more perceived affectionate support and positive social interaction reported less perceived stress and fewer posttraumatic stress symptoms.
5. Perceived stress was positively associated with combat exposure.

CHAPTER 6. DISCUSSION

The specific aims of this dissertation research were to: (a) examine the impact of traumatic combat exposure during World War II and the Korean War on experiencing posttraumatic stress symptoms in late life; (b) examine the effect of past combat exposure on late-life health-related quality of life; (c) assess perceived stress for its potential to exacerbate the impact of past combat exposure on experiencing posttraumatic stress symptoms and health-related quality of life; (d) assess perceived social support's potential to buffer the effects of combat exposure on experiencing posttraumatic stress symptoms and health-related quality of life; and (e) investigate whether Korean War veterans experienced more posttraumatic stress symptoms than World War II veterans. This chapter begins with a discussion of the significant findings for the direct effect and buffering hypotheses. The findings for the exploratory items in this study are also discussed. The limitations and strengths of the study are discussed in the second section of this chapter. Lastly, implications for social work practice and policy and suggestions for future research are addressed.

6.1. SIGNIFICANT FINDINGS OF THE PRESENT STUDY

The findings of this study add to the emerging literature concerning posttraumatic stress symptoms in trauma survivors in late life. The results of this dissertation research support the

few previous studies found in the literature that veterans with significant combat exposure can experience posttraumatic stress symptoms decades after the end of the war. Combat exposure was positively associated with experiencing posttraumatic stress symptoms, suggesting that the more severe the original trauma, the greater the rate of posttraumatic symptoms in late life. The findings in this study were made using a sample of World War II and Korean War veterans without a prior history of a diagnosis of or treatment for posttraumatic stress disorder, suggesting that there may have been a delayed onset or recurrence of symptoms in these participants. The participants may not have discussed their symptoms or traumatic war experiences with their VA primary care treatment team prior to participating in this study.

The results of this study support what has been largely anecdotal evidence that stress in late life is associated with the experience or reexperience of posttraumatic stress symptoms in trauma survivors. It has been suggested that late-life stress triggers the emotional reliving of a traumatic event. Perceived stress was found in this study to significantly moderate the relationship between past combat exposure and posttraumatic stress symptomatology. Current perceived stress also had a direct effect relationship with posttraumatic stress symptoms and both the physical and mental health domains of health-related quality of life. Participants who perceived that they were currently stressed experienced more symptoms and poorer physical and mental health. The World War II and Korean War veterans in this study with a higher level of current perceived stress were more likely to meet the criteria for a diagnosis of posttraumatic stress disorder.

Although perceived social support did not act as a buffer in the relationship between past combat exposure and posttraumatic stress symptoms, the affection and positive social interaction dimension of social support was associated with lower levels of both perceived stress and

posttraumatic stress symptoms. This supports findings of previous studies on older men that have found that perceived emotional support is protective of mental health (Walter-Ginzburg, Shmotkin, Blumstein & Shorek, 2005). The results of this study suggest that affection and positive social interaction may be effective protective factors that facilitate coping with past traumatic experiences and stress in late life. Married veterans have less perceived stress, fewer posttraumatic stress symptoms, and better physical health than those who were not married, affirming other research that has shown the protective benefits of marriage on health for older men (Rook & Zettel, 2005). Several previous studies have suggested that the health impacts of marriage work through the mechanism of the availability of social support (Rex, 1997; Ren, X. S., Skinner, K., Lee, A. & Kazis, L., 1999).

The number of participants with a diagnosis of PTSD is relatively low in this study. However, it is important to note that the majority of participants who completed the study reported experiencing at least one posttraumatic stress symptom at a symptomatic level. The results indicate that these veterans are still being bothered by one or more trauma-related symptoms decades after exposure. The symptoms most frequently experienced by participants were: (a) sleep disturbance (67%), (b) becoming upset at reminders of the traumatic experience (46%), (c) avoiding activities that are similar to the traumatic experience (44%), (d) irritability or angry outbursts (37%), and (e) concentration difficulties (37%). This is consistent with the literature that reports that, for most older veterans, memories of the war can still be distressing more than 50 years later, and for a smaller number of World War II and Korean War veterans, war trauma memories still cause severe psychological problems in the form of PTSD (NCPTSD, 2006).

The present study filled an important gap in the literature by examining World War II and Korean War veterans as separate groups on the outcome variable of posttraumatic stress symptoms. In previous studies, the two groups of veterans were either studied together or Korean War veterans were not included in the sample, reflective of the literature referring to the Korean War is the “forgotten” war. The findings of this study did not support the notion that veterans of Korea experience more posttraumatic symptoms than World War II veterans due to cohort effects such as the relative unpopularity of the Korean War.

This study makes a valuable contribution to the knowledge of the long-term effects of military service on the physical and mental health of older men. In addition to experiencing more posttraumatic stress symptoms, veterans with more past combat exposure also had poorer overall mental health, were more likely to have been diagnosed with depression, and were experiencing more perceived stress. Despite the well-established notion in the military service is a turning point in the lives of men (Elder et al., 1991), few studies have examined the long-term effects of military traumatic experiences on late-life health-related quality of life. Military service has been called a hidden variable in aging (Spiro et al., 1994). The findings of this study are consistent with previous work using the research framework of the life course perspective, that military service is a significant life event, and if a soldier experiences trauma during wartime service, the impact of that event on the life trajectory will be greater and more negative (Elder 1985; Elder 1986; Kulka et al., 1990; Laub & Sampson, 2005; Schnurr & Spiro, 1999).

This study tested the model proposed by Cohen and Willis (1985) and Lazarus and Folkman (1984) that understanding how one perceives stress is more important than inquiring into specific life events when assessing the negative effects of stress on mental health. Cohen and Willis theorized that individuals perceive potentially stressful events differently; an event that

may be highly stressful for one person is not stressful for another person. An exploratory item asked participants to indicate whether they had experienced specific life events during the past year including personal illness, illness or death of a loved one, relocation, abuse, or victimization. Neither the total number of life events nor any specific event was associated with experiencing more posttraumatic stress symptoms or poorer mental health. Perceived stress, however, was positively related to posttraumatic stress symptoms and negatively related to physical and mental health.

Two exploratory items looked at symptoms of posttraumatic stress disorder found in the literature that are not included in the DSM-IV-TR diagnostic criteria or on the version of the Posttraumatic Stress Disorder Checklist (PCL-M) used in this study. These symptoms are guilt experienced because of acts committed or omitted during a traumatic experience and guilt from surviving the traumatic event when others did not. Both of these two forms of guilt were positively related to combat exposure and posttraumatic stress symptoms. The DSM-III had included “guilt about surviving or behavior required for survival” as a Criteria D symptom (American Psychiatric Association, 1980). However, the symptom was removed from the diagnostic criteria for posttraumatic stress disorder in subsequent editions. Based on the findings of this study, guilt about surviving or behavior required to survive is an appropriate symptom to include in future editions of the DSM and on instruments used to measure posttraumatic stress symptoms and diagnose posttraumatic stress disorder.

6.2. STRENGTHS AND LIMITATIONS OF THE PRESENT STUDY

The main strength of this research was that World War II and Korean War veterans, who had not been previously diagnosed with PTSD in the VA primary care setting, reported posttraumatic stress symptoms in this study. One reason that the veterans reported symptoms in this study may have been the use of self-report surveys, enabling participants to reveal information associated with stigma anonymously. The PI of the study also assured the participants during the informed consent process that the results would remain anonymous and confidential. The veterans may have felt more comfortable about completing the study because they were initially informed about it by either their primary care physician or another member of their treatment team with whom they already had a trusting relationship. Another strength was that there were approximately equal numbers of World War II and Korean War veterans who completed the study.

This study discovered risk and protective factors that had significant relationships with posttraumatic stress symptomatology and health-related quality of life other than the ones predicted by the model. In addition to the direct effect of perceived stress on the outcome variables, the findings indicated that depression is a risk factor for PTSD in late life. Living in an urban area and being single were also associated with an increased level of symptoms and poorer health, possibly working through the mechanism of perceived stress. Affectionate support and positive social interaction have the potential of facilitating resilience, enabling older adults to cope with stress and adapt to traumatic experiences.

Several limitations of this study should be noted. Data were collected retrospectively, decades after the event of combat exposure; thus recall of military experience and combat exposure may be biased. The study is cross-sectional; therefore, data were not available on

prewar psychological functioning. Selective mortality may have operated during the decades between traumatic military experience and the assessment of its impact. Men who experienced PTSD as a result of traumatic combat exposure during World War II and the Korean War may have been less likely to have survived and participated in this study. Other traumatic events may have occurred to the participants in the years after the military experience; thus the data may indicate the effects of exposure to traumatic events in general rather than the specific effects of combat exposure. The use of self-report measures may also have introduced bias.

The generalizability of the findings may be limited due to several factors related to the methodology used to recruit participants for the study. Generalizability to the general population of veterans may be limited due to self-selection bias which is possible because the group of people being studied had control over whether or not to participate. The veterans' decision to participate may be correlated with traits that affect the study, making the participants a non-representative sample. The rate of refusal for the veterans who were initially approached about the study by their primary care physicians was high at 73%. Older veterans who chose to participate may have had better relationships with their primary care physicians and the VA system as a whole than those who refused to participate. Several of the participants who were recruited by this method served as volunteers in the hospital, and a few of the participants commented to the PI that they chose to participate because they liked their PCP. Self-selection bias may also have operated in the recruitment of participants by the use of the promotional flyer. Veterans who responded to the advertisement may have had the characteristics being studied. Several of the participants who were recruited by this method commented to the PI that they hoped that volunteering for the study would make them eligible for additional VA benefits.

Generalizability may also be limited by factors related to the findings of the study. The older veterans in this study had poorer physical and mental health compared with that of the general population of older men used to establish the norms for the health-related quality of life measure. This finding reflects the data from the Veterans Health Study that indicates that the population served by the veteran healthcare system tends to have poorer overall health than the general population of older adults (Kazis, Miller, Clark, Skinner, Lee, Rogers et al., 1998). The posttraumatic stress symptoms were collected using the military version of the PTSD Checklist. Different results may be found when using the civilian version of the measure in the general population.

The scale used to measure combat exposure, the Combat Exposure Scale (Weathers et al., 1993), did not adequately capture the war-zone experiences of this group of World War II and Korean War veterans. The results indicated that many of the participants did not have the specific battlefield experiences that are included on the Combat Exposure Scale. This is especially true for African-Americans veterans due to the existence of segregation during World War II. African-Americans were barred from serving in the Navy, Air Force, or Marines, and of those who did serve in the Army, only a small percentage were allowed to serve in the infantry and use a rifle. Several of the African-American participants commented on the Combat Exposure Scale to the Principal Investigator after completing the study that it did not capture their trauma-related experiences in World War II or the Korean War. These participants, however, believed that they experienced trauma even though their military occupation specialties were limited to support roles. A scale that includes other potentially traumatic war-zone experiences such as being near the frontlines, on a battlefield ship, witnessing the evacuation of

dead soldiers, or flying over part of a country at war should be used to measure combat exposure in future studies.

6.3. IMPLICATIONS FOR SOCIAL WORK PRACTICE AND POLICY

The findings of the study emphasize the importance of social workers asking their clients about military service and traumatic experiences in assessments, regardless of the amount of time that may have elapsed since the event. Wartime military service is not only a major life event that can be a turning point in the lives of those who serve, but it can impact a veteran's remaining life course. The cohorts of World War II and Korean War veterans experienced traumatic combat exposure before the recognition of posttraumatic stress disorder as a diagnosis by mental health professionals. Veterans from these wars tended to either ignore symptoms or report them as somatic complaints in the primary care setting due to the stigma of mental illness. Social workers may be able to establish a trusting and empathetic relationship that will help veterans explore issues that have been repressed or avoided for decades.

An inquiry into posttraumatic stress symptoms is especially important when the client has entered late life. Research has indicated that older adults may experience or reexperience symptoms as a result of additional stress due to age-related changes. The findings of this study suggest that the intensity of symptoms may increase for the aging veteran client if he perceives that he is currently experiencing stress. Perceived stress may also increase the negative impact of past combat exposure on overall mental health. Social workers should be aware that clients with posttraumatic stress symptoms might also be suffering from depression.

Social workers can also assist their veteran clients in applying for benefits from the Department of Veteran Affairs for physical or mental health problems related to traumatic combat experience. If benefits are denied, social workers need to be prepared to advocate for their clients and help them understand the appeals process. Veterans from World War II and the Korean War tend to be less knowledgeable about benefits and the application process than younger veterans. It is important that social workers advocate for veterans at the state and national level by supporting policies that improve benefits for veterans. Currently, the amount of benefits available to veterans for service-connected disabilities varies depending on where the veteran lives. Supporting legislation such as the Post-traumatic Stress Disorder Treatment Improvement Act of 2005 that has been introduced in the current session of Congress is one way that social workers can assist their clients to get the help they need from the VA.

Studies done to date on returnees from Operation Enduring Freedom and Operation Iraqi Freedom indicate that there will be a substantial number of veterans from these conflicts experiencing posttraumatic stress symptoms in the future. A recent study done with returnees from combat units found that approximately 16.4 percent of subjects after duty in Iraq and 11.2 percent after duty in Afghanistan met the screening criteria for PTSD, major depression, or generalized anxiety. Only about one-third of those with a diagnosable disorder sought mental health care, reporting that they were concerned about stigma (Hoge, Castro, Messer, McGurk, Cotting & Koffman, 2004). Thus, social workers will be seeing a new cohort of veterans in the future that is not only coping with posttraumatic stress disorder, but concerned with the stigma of mental illness. In addition to the returnees with a diagnosable disorder, research findings suggest that virtually all combat veterans face readjustment challenges (Kudler, 2006). Social workers

can help these veterans adapt to deployment, and thus reduce the possibility of developing posttraumatic stress disorder in the future.

6.4. SUGGESTIONS FOR FUTURE RESEARCH

Several issues raised by the results of this study are suggested as areas of future research. Future research on aging needs to consider the possible effects of military service, particularly if there was exposure to war-related trauma. The large cohort of over eight million Vietnam veterans are now entering late life, and research is needed to further the understanding of the long-term effects of trauma in order that effective intervention and treatment programs can be developed for this cohort. Research is needed to validate the results of this study with other population groups both within and outside of the VA. There is currently a lack of data on the effects of past trauma in late life on survivors in the general population, including victims of rape, incest, accidents, or natural disasters (Goldberg, 2006). Further research in this area is especially vital due to the increase in life expectancy and growth of the older population. Additional research is also needed to establish the effectiveness of the risk and protective factors with significant direct and buffering effects in the veteran and general population of older adults.

Because segregation in the military existed formally during World War II and informally in subsequent wars, it is important to capture the unique experiences of aging minority veterans. Qualitative research methods such as face-to-face interviews would enable researchers to hear the voices of African-American veterans whose stories may not be able to be captured with self-report questionnaires. Female veterans were not included as participants in the study because their low numbers would have made the results statistically insignificant; however, their war-

related traumatic experiences need to be investigated in future research. Qualitative methods such as case studies, life histories, and interviews would enable researchers to study the military experiences of female veterans from World War II and the Korean War.

The findings of the study point out the importance of expanding the research on risk and protective factors that impact the physical and mental health of older adults. Further research into effective facilitators of resilience is vital due to the current growth of both the veteran and general population of older adults.

6.5. CONCLUSION

The research provides new and important information about the long-term effects of trauma in community-dwelling veterans of World War II and the Korean War. Perceived stress was found to have a significant role in the experience of posttraumatic stress symptoms and mental health in late life. This work challenges social work researchers and practitioners to expand their work in this area in both the veteran and general populations. As medical advances increase the average life expectancy, older adults face a greater risk of the possibility that trauma suffered in earlier years may resurface and develop into posttraumatic stress disorder. Further research is needed with minority veterans, female veterans, and trauma victims in the general population in order to facilitate effective intervention and treatment programs.

APPENDIX A

INFORMATIONAL FLYER

Information on an Important New Study for World War II and Korean War Veterans

Older veterans sometimes feel stress about past memories as well as from some of the normal changes associated with growing older. We are asking for your help to learn more about how your past and present stressful, experiences are currently affecting your quality of life. This study/s being conducted in cooperation with the Geriatric Research, Evaluation and Clinical Center (GRECC), the Mental Illness Research, Education and Clinical Center (MIRECC), the VA Pittsburgh Healthcare System, and the School of Social Work at the University of Pittsburgh.

You are eligible to participate in this study if:

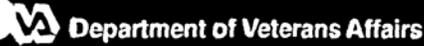
- You are age 65 or older
- You are a veteran of either World War II or the Korean War
- You have not been diagnosed or treated for PTSD or dementia
- You are enrolled in a VAPHS primary care clinic, the Geriatric Evaluation and Management Clinic (GEM), the Mobile Geriatric Unit (Van) program, or a CBOC
- You are able to speak, read, and understand English

Those enrolled in the study will be paid for their participation

Contact:
Carol Hart, Principal Investigator
(412) 608-3051
Email: Carol.Hart@med.va.gov

APPENDIX B

HIPPA FORM



REQUEST FOR AND AUTHORIZATION TO RELEASE MEDICAL RECORDS OR HEALTH INFORMATION

The Paperwork Reduction Act of 1995 requires us to notify you that this information collection is in accordance with the clearance requirements of section 3507 of the Act. We may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a valid OMB number. We expect that the time expended by all individuals completing this form will average 2 minutes. This includes the time to read instructions, gather the necessary facts and fill out the form. The purpose of this form is to specifically outline the circumstances under which we may disclose data.

The execution of this form does not authorize the release of information other than that specifically described below. The information requested on this form is solicited under Title 38, U.S.C. The form authorizes release of information in accordance with the Health Insurance Portability and Accountability Act, 45 CFR Parts 160 and 164, 5 U.S.C. 552a, and 38 U.S.C. 5701 and 7332 that you specify. Your disclosure of the information requested on this form is voluntary. However, if the information including Social Security Number (SSN) (the SSN will be used to locate records for release) is not furnished completely and accurately, Department of Veterans Affairs will be unable to comply with the request. The Veterans Health Administration may not condition treatment, payment, enrollment or eligibility on signing the authorization.

ENTER BELOW THE PATIENT'S NAME AND SOCIAL SECURITY NUMBER IF THE PATIENT DATA CARD IMPRINT IS NOT USED.

TO: DEPARTMENT OF VETERANS AFFAIRS (Print or type name and address of health care facility)	PATIENT NAME (Last, First, Middle Initial)
VA Pittsburgh Healthcare System	
	SOCIAL SECURITY NUMBER (Last 4)

NAME AND ADDRESS OF ORGANIZATION, INDIVIDUAL OR TITLE OF INDIVIDUAL TO WHOM INFORMATION IS TO BE RELEASED
 Carol L. Hart, Principal Investigator and VAPHS employee working under the direction of Gretchen L. Haas, Ph.D.

VETERAN'S REQUEST: I request and authorize Department of Veterans Affairs to release the information specified below to the organization, or individual named on this request. I understand that the information to be released includes information regarding the following condition(s):

- DRUG ABUSE ALCOHOLISM OR ALCOHOL ABUSE TESTING FOR OR INFECTION WITH HUMAN IMMUNODEFICIENCY VIRUS (HIV) SICKLE CELL ANEMIA

INFORMATION REQUESTED (Check applicable box(es) and state the extent or nature of the information to be disclosed, giving the dates or approximate dates covered by each)

COPY OF HOSPITAL SUMMARY COPY OF OUTPATIENT TREATMENT NOTE(S) OTHER (Specify)

Study to be conducted from November 15, 2004 to August 31, 2005. Information to be shared: name, address, telephone number, medical information, psychiatric symptoms.

PURPOSE(S) OR NEED FOR WHICH THE INFORMATION IS TO BE USED BY INDIVIDUAL TO WHOM INFORMATION IS TO BE RELEASED
 Share with the researchers involved in the study your interest in participating in the study, your health information related to your eligibility to take part in the study, and your permission for them to contact you to provide you with additional information.

NOTE: ADDITIONAL ITEMS OF INFORMATION DESIRED MAY BE LISTED ON THE BACK OF THIS FORM

AUTHORIZATION: I certify that this request has been made freely, voluntarily and without coercion and that the information given above is accurate and complete to the best of my knowledge. I understand that I will receive a copy of this form after I sign it. I may revoke this authorization, in writing, at any time except to the extent that action has already been taken to comply with it. Written revocation is effective upon receipt by the Release of Information Unit at the facility housing the records. Redisclosure of my medical records by those receiving the above authorized information may be accomplished without my further written authorization and may no longer be protected. Without my express revocation, the authorization will automatically expire: (1) upon satisfaction of the need for disclosure; (2) on _____ (date supplied by patient); (3) under the following condition(s):

I understand that the VA health care practitioner's opinions and statements are not official VA decisions regarding whether I will receive other VA benefits or, if I receive VA benefits, their amount. They may, however, be considered with other evidence when these decisions are made at a VA Regional Office that specializes in benefit decisions.

DATE	SIGNATURE OF PATIENT OR PERSON AUTHORIZED TO SIGN FOR PATIENT (Attach authority to sign, e.g., POA)

FOR VA USE ONLY

IMPRINT PATIENT DATA CARD (Name, Address, Social Security Number)	TYPE AND EXTENT OF MATERIAL RELEASED
DATE RELEASED	RELEASED BY

APPENDIX C

INCLUSION/EXCLUSION CHECKLIST

Subject ID#: _____

Consent Date: _____

IRB #: 02173

By (initials): _____

INCLUSION/EXCLUSION CHECKLIST

INCLUSION CRITERIA:

Criterion	Comments	Met Criterion Y/N
Age 65 or older		
Served in the military during the wartime period of service in <u>either</u> :		
(1) World War II (1941 to 1946) in the European or Pacific theater of service;		
<u>OR</u>		
(2) Korean War (1950 to 1955) on the Korean Peninsula		
Not previously diagnosed with or treated for PTSD (from electronic medical record)		
Not previously diagnosed with or treated for Dementia (from electronic medical record; DSM-IV TR disorder in the "Dementia" section)		
Enrolled in VAPHS primary care clinics, the GEM, or the MGU program		
Able to speak, read, and understand English		

APPENDIX D

INFORMED CONSENT FORM

VA Department of Veterans Affairs	VA RESEARCH CONSENT FORM
Subject Name: _____ Last 4 SSN: _____ Date: _____	
Title of Study: Stress and Resilience in Older Combat Veterans _____	
Principal Investigator: Carol L. Hart, VA Social Work Pre-Doctoral Fellow, VAMC: <u>Pittsburgh (646)</u>	

LAY TITLE: Stress and Handling It Well in Older Combat Veterans

STUDY CONTACT INFORMATION:

If you have a general question about this research study you may call Carol Hart, Principal Investigator of this study, at (412) 608-3051 at any time during the day (8:00 a.m. to 4:30 p.m.).

If you experience a medical problem that you feel may be related to this study, please call Carol Hart, Principal Investigator of this study, at (412) 608-3051 at any time of the day or night (24 hours a day). In the case of a medical emergency, contact your local emergency medical service or go to your local emergency room.

PRINCIPAL INVESTIGATOR:

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sales@pitt.edu

VA FORM 10-1086 JUNE 1990 (revised 02/2004)

Subject's Initials _____

VAPHS IRB No. 1 approved this version 8-2-04 of the consent form on 9-7-04. Extension beyond 9-20-05 requires re-approval by the IRB. IRB Designee cf

VA Department of Veterans Affairs	VA RESEARCH CONSENT FORM (Page 2 of 7)
Subject Name: _____ Last 4 SSN: _____ Date: _____	
Title of Study: Stress and Resilience in Older Combat Veteran _____	
Principal Investigator: <u>Carol L. Hart, VA Social Work Pre-Doctoral Fellow VAMC: Pittsburgh (646)</u>	

STUDY SPONSOR: None

PURPOSE OF THE RESEARCH STUDY: The purpose of this research study is to examine how past and present stressful experiences currently affect your quality of life. The study includes a total of 150 veterans over the age of 64.

You have been invited to participate in this research study because you:

- Are 65 years of age or older;
- Served in either World War II in the European or Pacific theaters or the Korean War on the Korean Peninsula;
- Are a veteran enrolled in a Primary Care Outpatient Clinic, the Geriatric Evaluation and Management Clinic (GEM), or the Mobile Geriatric Unit (Van);
- Have no problems understanding what people say or reading the English language;
- Do not have a war-related stress disorder or significant problems with memory loss.

DESCRIPTION OF THE RESEARCH STUDY:

1. You will receive the following screening procedures during your appointment:
 - a. A brief interview with the Principal Investigator during which time you will be asked for some personal information about your age, military history, marital status, and previous work history.
 - b. You will be given a packet containing six short questionnaires to complete. These questionnaires will include:
 - Perceived Stress Scale used to assess if you are currently feeling stressed;
 - Combat Exposure Scale which will ask you questions about your military experiences;

VA FORM 10-1086 JUNE 1990 (revised 02/2004)

Subject's Initials _____

VAPHS IRB No. 1 approved this version 8-2-04 of the consent form on 9-21-04. Extension beyond 9-20-05 requires re-approval by the IRB. IRB Designee KJ

Subject Name: _____ Last 4 SSN: _____ Date: _____

Title of Study: Stress and Resilience in Older Combat Veteran _____

Principal Investigator: Carol L. Hart, VA Social Work Pre-Doctoral Fellow VAMC: Pittsburgh (646)

- Social Support Scale used to determine if you currently have friends and family to help you if needed;
 - SF-8 which will ask you questions about your general health and functioning;
 - Geriatric Depression Scale which will assess your mood;
 - PTSD Checklist – Military Version that will ask you whether you have experienced some symptoms that are common reactions to stressful events.
- c. The study is being conducted at the VA Pittsburgh Healthcare System, University Drive Division and Heinz Division.

2. The total duration of your participation in this study will consist of one appointment that is approximately one (1) hour in length.

3. At the end of your testing appointment, your results will be explained to you at your request. If the results show that you are clinically depressed, we will need to inform your primary care physician. It may be necessary for the Principal Investigator to telephone you within a few days of your testing appointment in order to clarify some of the information that you provided.

RISKS AND BENEFITS:

1. Expected Risks of the Study: You may be asked about a topic that makes you feel uncomfortable. You have the right to stop the testing process and withdraw at any time. Also, if you feel distressed or upset after completing the interview and answering the questions, notify the Principal Investigator and she will assist you in getting help within the VA system and inform your primary care physician.

2. Expected Benefits of the Study: There are no expected benefits from your participation in this study other than having participated in a study that may help improve the care of other veterans.

Subject Name: _____ Last 4 SSN: _____ Date: _____

Title of Study: Stress and Resilience in Older Combat Veteran _____

Principal Investigator: Carol L. Hart, VA Social Work Pre-Doctoral Fellow VAMC: Pittsburgh (646)

ALTERNATIVES TO PARTICIPATION: You have the alternative not to participate in this research study.

NEW FINDINGS: You will be informed of any significant new findings during the course of the study, which may affect your willingness to continue to participate.

INVESTIGATOR INITIATED WITHDRAWAL: The investigator(s) may stop your participation in this study without your consent for reasons such as: it will be in your best interest; you do not follow the study plan; you do not qualify to participate in the study; or you experience a study-related injury.

VOLUNTARY PARTICIPATION/RIGHT TO WITHDRAW: You understand that you do not have to take part in this study, and your refusal to participate will involve no penalty or loss of rights to which you are entitled. You may withdraw from this study at any time without penalty or loss of VA or other benefits to which you are entitled. If you withdraw, you may be asked to return for a final study visit in order to assure your safety. You must withdraw in writing in order to withdraw your permission for us to continue to use the protected health information we have already collected about you. Even if you withdraw your permission for us to use the information about you, we are required by regulatory agencies to record any information that relates to the safety of any study-related intervention.

MEDICAL TREATMENT: In the event that you sustain injury or illness as a result of your participation in this VA approved research study, conducted under the supervision of one or more VA employees, all medical treatment (emergent as well as medical treatment beyond necessary emergent care) will be provided by the VA.

However, if such injury or illness occurred as a result of your failure to follow the instructions for this study, you may not be eligible for free care unless you have independent eligibility for such care under Federal Law.

FINANCIAL COMPENSATION: If you sustain an injury or illness as a result of participating in this research study, you may be eligible to receive monetary compensation for your damages pursuant to applicable federal law.

VA FORM 10-1086 JUNE 1990 (revised 02/2004)

Subject's Initials _____

VAPHS IRB No. 1 approved this version 8-2-04 of the consent form on 9-21-04. Extension beyond 9-20-05 requires re-approval by the IRB.
IRB Designee KG



VA RESEARCH CONSENT FORM
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Subject Name: _____ Last 4 SSN: _____ Date: _____
Title of Study: Stress and Resilience in Older Combat Veteran _____
Principal Investigator: Carol L. Hart, VA Social Work Pre-Doctoral Fellow VAMC: Pittsburgh (646)

COST AND PAYMENTS: There will be no cost to you for your participation in this study, however if you are receiving medical care and services from the VA that are not part of this study, and you are a veteran described in federal regulations as a "category 7" veteran, you may be required to make co-payments for the care and services that are not required as part of this research study. You will be paid \$20.00 once you have completed the study protocol for your time and any inconvenience that you may incur.

PRIVACY AND CONFIDENTIALITY:

- Information that will be used: During the course of this study, we will collect private health information such as your name, social security number, and health information. Your health information will be maintained in separate files from the files containing your name and social security number and will be cross-referenced using numbers that are known only to Ms. Hart and her authorized representatives. Your health information will be used only within the VA Pittsburgh Healthcare System. If you have an adverse experience during the course of the study, your entire medical record may be used and disclosed as clinically necessary as well as pursuant to federal and state laws and regulations.
- The People/Organizations Who May Use or Disclose the Information: Your information will be used only as specified above and under the direction of Ms. Carol Hart and her research team. Your private information may also be used by employees of the VA Pittsburgh Healthcare System Research and Development Office, as necessary, to perform their duties regarding research.

VAPHS IRB No. 1 approved this version 8-2-04 of the consent form on 9-21-04. Extension beyond 9-2005 requires re-approval by the IRB. IRB Designee [Signature]

Subject Name: _____ Last 4 SSN: _____ Date: _____

Title of Study: Stress and Resilience in Older Combat Veteran _____

Principal Investigator: Carol L. Hart, VA Social Work Pre-Doctoral Fellow VAMC: Pittsburgh (646)

- The People/Organizations Who Will Receive the Information: You understand that every effort will be made to make sure that the information about you obtained from this study will be kept strictly confidential. Your private health information will not be made available to any outside agencies or organizations. Your information may be disclosed to the Education and Compliance Officer of the VA Pittsburgh Healthcare System in order to perform audit and compliance duties. You understand that your private health information may also be reviewed by the institutional review board, which is a group at this hospital that oversees all research. You understand that research records, just like hospital medical records, may be released or disclosed pursuant to applicable federal and state law as well as to federal and state agencies that are responsible for oversight of medical research. Once your private information is released to outside entities as specified above, further disclosure will be limited by federal and state privacy laws and regulations. We will replace your name and other identifying information on any pages released to the above agencies with a subject number. You also understand that medical information may be shared with your healthcare provider(s) with your consent, and possibly without your consent if permissible under federal laws and regulations. Finally, you consent to the publication of the study results so long as the information about you is anonymous and/or disguised so that your identity will not be disclosed.
- Expiration Date or Event: At the end of your one-hour screening appointment, you will have completed the requirements of this protocol. However, your private health information will be maintained by Ms. Hart until the end of the study or for six years, whichever is later.

RESEARCH SUBJECTS' RIGHTS: You have read or have had read to you all of the above. Ms. Hart, or her authorized representative has explained the study to you and answered all of your questions. You have been fully informed of the risks, discomforts, and possible benefits of this research study. You have been fully informed of other treatment choices available to you.

You understand your rights as a research subject, and you voluntarily consent to participate in this research study. You understand what the study is about and how and why it is being done. You will receive a copy of this signed consent form.

VA FORM 10-1086 JUNE 1990 (revised 02/2004)

Subject's Initials _____

VAPHS IRB No. 1 approved this version 8-2-04 of the consent form on 9-21-04. Extension beyond 8-20-05 requires re-approval by the IRB. IRB Designee KF



VA RESEARCH CONSENT FORM

(Page 7 of 7)

Subject Name: _____ Last 4 SSN: _____ Date: _____
 Title of Study: Stress and Resilience in Older Combat Veteran _____
 Principal Investigator: Carol L. Hart, VA Social Work Pre-Doctoral Fellow VAMC: Pittsburgh (646)

If you have any questions about the research or your rights as a participant in this study, you can call Dr. Steven H. Graham, Associate Chief Of Staff /R&D, VA Subcommittee on Human Studies (SHS) at (412) 688-6104.

As long as the study is renewed as required by the SHS, your signature on this document is valid for the duration of the entire research study and you understand that you will be notified of any changes in the study that will affect you.

By signing this form, you agree to participate in this research study.

_____	_____	
Subject's Signature	Date	
_____	_____	_____
Signature of Subject's Representative*	Subject's Representative (Print)	Date
_____	_____	_____
Signature of Witness	Witness (Print)	Date
_____	_____	_____
Investigator/Person Obtaining Consent**	Researcher (Print)	Date

***Only allowed if subject is not competent. (Such subjects cannot be enrolled without specific IRB approval to enroll incompetent subjects.)**

****If person other than the Investigator is obtaining consent, he/she must be listed on the IRB-approved "List of Authorized Representatives to Administer Informed Consent."**

Version {date and/or version number}

VA FORM 10-1086 JUNE 1990 (revised 02/2004)

Subject's Initials _____

VAPHS IRB No. 1 approved this version 8-2-04 of the consent form on 9-21-04. Extension beyond 9-20-05 requires re-approval by the IRB. IRB Designee KP

APPENDIX E

STUDY SURVEY

Demographics Questionnaire

Participant # _____
Date Administered _____
By _____

Demographics:

1. Age (in yrs) _____
2. Gender: (1) Male (2) Female
3. Race/Ethnicity: (1) Caucasian; (2) African-American; (3) Asian-American;
(4) Hispanic; (5) Native-American; (6) Other
4. Period of Service: (1) World War II; (2) Korean Conflict
5. Marital Status: (1) Married; (2) Never Married; (3) Partner; (4) Divorced/Separated;
(5) Widowed
6. Dx Depression: (1) Yes (Active)
(2) Yes (Inactive)
(3) No
7. Dx Mild Cognitive Impairment: (1) Yes
(2) No

If Yes: DSM-IV-TR# _____

8. Current Complaints of Cognitive or Memory Loss: (1) Yes
(Undiagnosed) (2) No

9. Number of Children and/or Grandchildren living in the local area? _____

10. Life Events occurring during the past year (check all that apply):

a. Major Personal Illness _____

b. Major Illness of a Family Member or Friend _____

c. Death of a Close Family Member or Friend _____

d. Move or Relocation _____

e. Victim of a Crime _____

f. Abuse or Neglect _____

The questions below ask you about your feelings and thoughts **during the last month**. In each case, **circle the number** that corresponds with how often you felt or thought a certain way.

	Never	Almost Never	Some- times	Fairly Often	Very Often
1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous and “stressed”?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

We would now like to ask you for your views about your health. This information will keep track of how you feel and how well you are able to do your usual activities. Answer every question by circling the number below the correct response.

1. Overall, how would you rate your **health** in the past 4 weeks?

Excellent	Very Good	Good	Fair	Poor	Very Poor
1	2	3	4	5	6

2. During the past 4 weeks, how much did **physical health problems** limit your usual physical activities (such as walking or climbing stairs)?

Not at all	Very Little	Somewhat	Quite a lot	Could not do physical activities
1	2	3	4	5

3. During the past 4 weeks, how much difficulty did you have doing your daily work, both at home and away from home, because of your **physical health**?

None at all	A little bit	Some	Quite a lot	Could not do daily work
1	2	3	4	5

4. How much **bodily pain** have you had in the past 4 weeks?

None	Very mild	Mild	Moderate	Severe	Very severe
1	2	3	4	5	6

5. During the past 4 weeks, how much **energy** did you have?

Very Much	Quite a lot	Some	A Little	None
1	2	3	4	5

6. During the past 4 weeks, how much did your **physical health or emotional problems** limit your usual social activities with family or friends?

Not at all	Very Little	Somewhat	Quite a Lot	Could not do social activities
1	2	3	4	5

7. During the past 4 weeks, how much have you been bothered by **emotional problems** (such as feeling anxious, depressed, or irritable)?

Not at all	Slightly	Moderately	Quite a Lot	Extremely
1	2	3	4	5

8. During the past 4 weeks, how much did **personal or emotional problems** keep you from doing your usual work, school, or other activities?

Not at all	Very Little	Somewhat	Quite a Lot	Could not do daily activities
1	2	3	4	5

9. **Compared to one year ago**, how would you rate your health in general now?

Much better now	Somewhat better now	About the Same	Somewhat worse now	Much worse now
1	2	3	4	5

This section contains a list of problems and complaints that veterans sometimes have in response to stressful military experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

	Not at all	A Little Bit	Moderately	Quite a Bit	Extremely
1. Repeated, disturbing memories, thoughts, or images of the stressful military experience?	1	2	3	4	5
2. Repeated, disturbing dreams of the stressful military experience?	1	2	3	4	5
3. Suddenly acting or feeling as if the stressful military experience was happening again (as if you were reliving it)?	1	2	3	4	5
4. Feeling very upset when something reminded you of the stressful military experience?	1	2	3	4	5
5. Having physical reactions such as heart pounding, trouble breathing, or sweating when something reminded you of the stressful military experience?	1	2	3	4	5

	Not at all	A Little Bit	Moder- ately	Quite a Bit	Extremely
6. Avoiding thinking about or talking about the stressful military experience or having feelings related to it?	1	2	3	4	5
7. Avoiding activities or situations because they reminded you of the stressful military experience?	1	2	3	4	5
8. Trouble remembering important parts of the stressful military experience?	1	2	3	4	5
9. Loss of interest in activities that you used to enjoy?	1	2	3	4	5
10. Feeling distant or cut-off from other people?	1	2	3	4	5
11. Feeling emotionally numb or unable to have loving feelings for those close to you?	1	2	3	4	5
12. Feeling as if your future somehow will be cut short?	1	2	3	4	5
13. Trouble falling or staying asleep?	1	2	3	4	5
14. Feeling irritable or having angry outbursts?	1	2	3	4	5
15. Having difficulty concentrating?	1	2	3	4	5
16. Being “superalert” or watchful or on guard?	1	2	3	4	5
17. Feeling jumpy or easily startled?	1	2	3	4	5
18. Feeling guilty about behavior you engaged in or about your failure to act during the stressful military experience?	1	2	3	4	5
19. Feeling guilty about surviving the stressful military experience when others did not?	1	2	3	4	5

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it? Circle one number on each line.

	None of the time	A Little of the time	Some of the time	Most of the time	All of the time
1. Someone to give you information to help you understand a situation	1	2	3	4	5
2. Someone you can count on to listen to you when you need to talk	1	2	3	4	5
3. Someone whose advice you really want	1	2	3	4	5
4. Someone who understands your problems	1	2	3	4	5
5. Someone to help you if you were confined to bed	1	2	3	4	5
6. Someone to take you to the doctor if you needed it	1	2	3	4	5
7. Someone to prepare your meals if you were unable to do it yourself	1	2	3	4	5
8. Someone to help with daily chores if you were sick	1	2	3	4	5
9. Someone to love you and make you feel wanted	1	2	3	4	5
10. Someone who hugs you	1	2	3	4	5
11. Someone to have a good time with	1	2	3	4	5
12. Someone to do something enjoyable with	1	2	3	4	5

Please circle the number above the answer that best describes your military experience.

1. Did you even go on combat patrols or have other very dangerous duty? If so, about how many times?	1 No	2 1-3 Times	3 4-12 Times	4 13-50 Times	5 More than 50 Times
2. Were you ever under enemy fire?	1 Never	2 One Month or Less	3 1-3 Months	4 4-6 Months	5 More than 6 Months
3. Were you ever surrounded by the enemy?	1 Never	2 1-2 Times	3 3-12 Times	4 More than 12 Times	
4. What percentage of soldiers in your unit were killed (KIA), wounded, or missing in action (MIA)?	1 No One	2 1-25%	3 26- 50%	4 More than 50%	
5. How often did you fire rounds at the enemy?	1 Never	2 1-2 Times	3 3-12 Times	4 13-50 Times	5 51 or More Times
6. How often did you see someone hit by incoming or outgoing rounds? (enemy or American)	1 Never	2 1-2 Times	3 3-12 Times	4 13-50 Times	5 51 or More Times
7. How often were you in danger of being injured or killed?	1 Never	2 1-2 Times	3 3-12 Times	4 13-50 Times	5 51 or More Times

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